

# MILLING



# MILLING



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## Guide to Icons



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# Tool Selection Guide

## Face mills

|                       |                   |                                                                                     | TANG SPEED                                                                        | BILL RUSH                                                                         | BILL 2 RUSH                                                                       | BILL 2 RUSH                                                                       | WINMILL                                                                            |
|-----------------------|-------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Series                |                   |                                                                                     | 4T-TF90                                                                           | 3P TF90                                                                           | 6N TF90                                                                           | SCRM90TN                                                                          | TFM90AV                                                                            |
|                       |                   |                                                                                     |  |  |  |  |  |
| Pages                 |                   |                                                                                     | E44                                                                               | E45-E47                                                                           | E48-E50                                                                           | E51-E52                                                                           | E53                                                                                |
| Approach angle        |                   |                                                                                     | 90°                                                                               | 90°                                                                               | 90°                                                                               | 90°                                                                               | 90°                                                                                |
| Max. depth of cut(mm) |                   |                                                                                     | 8.3-12.5                                                                          | 4.7-15                                                                            | 4.1-9.2                                                                           | 13-15                                                                             | 10                                                                                 |
| Diameter range(mm)    |                   |                                                                                     | Ø40-Ø200                                                                          | Ø32-Ø250                                                                          | Ø40-Ø250                                                                          | Ø50-Ø250                                                                          | Ø40-Ø63                                                                            |
| Insert                |                   |                                                                                     | LPK(H)U 0904<br>LPKU 1407                                                         | 3PK(H)T 0603<br>3PK(H)T 1004<br>3PK(H)T 1505<br>3PK(H)T 1906                      | 6NKU 0403<br>6NGU 0604<br>6NGU 0905                                               | TNMX 1806<br>TNM(G)X 2207                                                         | AVKT 1004<br>AVCT 1004-AL                                                          |
| Application           | Facing            |    | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | High feed milling |    |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ○                                                                                  |
|                       | Shouldering       |    | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | Slotting          |   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | Straight ramping  |  | ●                                                                                 | ●                                                                                 |                                                                                   |                                                                                   | ●                                                                                  |
|                       | Helical ramping   |  | ●                                                                                 | ●                                                                                 |                                                                                   |                                                                                   | ●                                                                                  |
|                       | Side slotting     |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Profiling         |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ○                                                                                  |
|                       | Step down         |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ●                                                                                  |
|                       | Counter boring    |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |



# Tool Selection Guide

## Face mills

| CHASE 1 MILL                                                                     | CHASE 2 MILL                                                                      | CHASE 4 MILL                                                                      | CHASE 8 MILL                                                                      | CHASE ALU                                                                         | CHASE FINISH                                                                       |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| TFM90AX<br>2S-TFM90AP<br>TFM90AP                                                 | TFM90AN                                                                           | 4N TF90                                                                           | 8D-TF90                                                                           | TFM90XEV                                                                          | For Finishing<br>4W-TF90                                                           |
|  |  |  |  |  |  |
| E54 -E57                                                                         | E58-E59                                                                           | E60-E61                                                                           | E62-E64                                                                           | E65                                                                               | E66                                                                                |
| 90°                                                                              | 90°                                                                               | 90°                                                                               | 90°                                                                               | 90°                                                                               | -                                                                                  |
| 5.5-17.9                                                                         | 11-15                                                                             | 3.5-13.8                                                                          | 5.0-8.5                                                                           | 16-21                                                                             | 0.5                                                                                |
| Ø32-Ø200                                                                         | Ø40-Ø200                                                                          | Ø32-Ø100                                                                          | Ø32-Ø160                                                                          | Ø40-Ø200                                                                          | Ø50-Ø160                                                                           |
| AXM(C)T 0602<br>APK(C)T 09T3<br>APK(C)T 1204<br>APK(C)T 1705<br>APKT1907         | ANM(H)X 1106<br>ANM(H)X 1607                                                      | 4NK(H)T 0402<br>4NK(H)T 0603<br>4NK(H)T 0904<br>4NKT 1106<br>4NKT 1407            | SQKU 0703<br>SQK(H)U 1004<br>SQK(H)U 1206                                         | XEVT 1605<br>XEVT 2206                                                            | 4WHU 1207                                                                          |
| ●                                                                                | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
| ○                                                                                |                                                                                   | ○                                                                                 |                                                                                   |                                                                                   |                                                                                    |
| ●                                                                                | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 |                                                                                    |
| ●                                                                                | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 |                                                                                    |
| ●                                                                                | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                 |                                                                                    |
| ●                                                                                | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                 |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| ○                                                                                |                                                                                   | ○                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   | ●                                                                                 |                                                                                   | ●                                                                                 |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |

● Recommended, ○ Suitable

# Tool Selection Guide

## Face mills

|                       |                   |                                                                                     |  |  |  |  |  |
|-----------------------|-------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Series                |                   |                                                                                     | For Finishing                                                                     | For Finishing                                                                     |                                                                                   |                                                                                   |                                                                                    |
|                       |                   |                                                                                     | TFM90SNS                                                                          | TQ90SNS                                                                           | LM90TP                                                                            | LM90SE                                                                            | TFM90SN<br>TFM88SN                                                                 |
|                       |                   |                                                                                     |  |  |  |  |  |
| Pages                 |                   |                                                                                     | E67                                                                               | E68                                                                               | E69                                                                               | E70                                                                               | E71-E72                                                                            |
| Approach angle        |                   |                                                                                     | 90°                                                                               | 90°                                                                               | 90°                                                                               | 90°                                                                               | 90°, 88°                                                                           |
| Max. depth of cut(mm) |                   |                                                                                     | 1.0                                                                               | 1.0                                                                               | 17.6                                                                              | 17.0                                                                              | 12.0                                                                               |
| Diameter range(mm)    |                   |                                                                                     | Ø50-Ø250                                                                          | Ø250-Ø400                                                                         | Ø80-Ø315                                                                          | Ø125-Ø315                                                                         | Ø50-Ø200                                                                           |
| Insert                |                   |                                                                                     | SNEX 1204<br>SNET 1205                                                            | SNEX 1204<br>SNET 1205                                                            | TPKN 2204                                                                         | SEKX 2107                                                                         | SNGX 1306<br>SNGX 1306 ZN                                                          |
| Application           | Facing            |    | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | High feed milling |    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Shouldering       |    |                                                                                   |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | Slotting          |   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Straight ramping  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Helical ramping   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Side slotting     |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Profiling         |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Step down         |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Counter boring    |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |

# Tool Selection Guide

## Face mills

| CHASE2QUAD                                                                       | LIONMILL                                                                          | CHASEMILL                                                                         | CHASE10MILL                                                                       | LIONMILL                                                                          | CHASE8SPEED                                                                        |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| TFM75SN                                                                          | LM75SP                                                                            | TFM75AP                                                                           | TFM65PT                                                                           | LM60SC                                                                            | 8D-TF45                                                                            |
|  |  |  |  |  |  |
| E73                                                                              | E74                                                                               | E75                                                                               | E76                                                                               | E77-E78                                                                           | E79-E80                                                                            |
| 75°                                                                              | 75°                                                                               | 75°                                                                               | 65°                                                                               | 60°                                                                               | 45°                                                                                |
| 9.5                                                                              | 9.5-12.5                                                                          | 3.9                                                                               | 3.3-6.5                                                                           | 13.0-18.0                                                                         | 4.2-6                                                                              |
| Ø50-Ø250                                                                         | Ø80-Ø315                                                                          | Ø80-Ø125                                                                          | Ø40-Ø125                                                                          | Ø125-Ø315                                                                         | Ø40-Ø200                                                                           |
| SNM(G)X 1306 EN<br>SNMX 1306 XTN                                                 | SPKN 1203<br>SPKN 1504                                                            | APKT 1705 PER-M<br>APKT 1705 PER-EM                                               | PTKU 0503<br>PTKU 1006                                                            | SCKN 2107<br>SCKN 2708                                                            | SQKU 1105<br>SQKU 1406                                                             |
| ●                                                                                | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
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|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
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● Recommended, ○ Suitable

# Tool Selection Guide

## Face mills

|                       |                   |                                                                                     | CHASE <sup>2</sup> MILL                                                           | CHASE <sup>2</sup> HEPTA                                                          | CHASE <sup>2</sup> HEPTA                                                          | CHASE <sup>2</sup> HEPTA                                                          | CHASE <sup>2</sup> HEPTA                                                           |
|-----------------------|-------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Series                |                   |                                                                                     | 12D-TF45                                                                          | 14D-F45XN                                                                         | 14D-F45XNH                                                                        | 14D-F45XNW                                                                        | 7S-F45                                                                             |
|                       |                   |                                                                                     |  |  |  |  |  |
| Pages                 |                   |                                                                                     | E81-E82                                                                           | E83-E84                                                                           | E85                                                                               | E86                                                                               | E87                                                                                |
| Approach angle        |                   |                                                                                     | 45°                                                                               | 45°                                                                               | 45°                                                                               | 45°                                                                               | 45°                                                                                |
| Max. depth of cut(mm) |                   |                                                                                     | 3.0-5.0                                                                           | 3.5-5.0                                                                           | 3.5-5.0                                                                           | 5.0                                                                               | 3.2                                                                                |
| Diameter range(mm)    |                   |                                                                                     | Ø50-Ø250                                                                          | Ø50-Ø250                                                                          | Ø63-Ø125                                                                          | Ø80-Ø315                                                                          | Ø32-Ø125                                                                           |
| Insert                |                   |                                                                                     | HXK(H)U 0605<br>HXK(H)U 1007                                                      | XNM(H)U 0605<br>XNM(H)U 0906                                                      | XNM(H)U 0605<br>XNM(H)U 0906                                                      | XNHU 0906                                                                         | 7EMT 0604                                                                          |
| Application           | Facing            |    | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | High feed milling |    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Shouldering       |    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Slotting          |   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Straight ramping  |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ●                                                                                  |
|                       | Helical ramping   |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ●                                                                                  |
|                       | Side slotting     |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Profiling         |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Step down         |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Counter boring    |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |

# Tool Selection Guide

## Face mills

| CHASE2QUAD                                                                                                     | CHASE2QUAD                                                                                                       | CHASE2QUAD                                                                                                          | CHASE2QUAD                                                                                                                   | CHASE2MILL                                                                                                      | LIONMILL                                                                                                        |
|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| <div>TFM45SN</div> <div></div> | <div>TFM45SNS</div> <div></div> | <div>TFM45SNS-CA</div> <div></div> | <div>TFM45SNW<br/>TQ45SNW</div> <div></div> | <div>TFM45AN</div> <div></div> | <div>LM45SD</div> <div></div> |
| E88                                                                                                            | E89                                                                                                              | E90                                                                                                                 | E91                                                                                                                          | E92                                                                                                             | E93                                                                                                             |
| 45°                                                                                                            | 45°                                                                                                              | 45°                                                                                                                 | 45°                                                                                                                          | 45°                                                                                                             | 45°                                                                                                             |
| 7.0                                                                                                            | 8.8                                                                                                              | 8.8                                                                                                                 | 8.8                                                                                                                          | 8.4                                                                                                             | 6.5-8.7                                                                                                         |
| Ø40-Ø250                                                                                                       | Ø63-Ø250                                                                                                         | Ø125-Ø315                                                                                                           | Ø80-Ø355                                                                                                                     | Ø50-Ø160                                                                                                        | Ø80-Ø315                                                                                                        |
| SNM(G)X 1306 AN<br>SNMX 1306 XTN                                                                               | SNMX 1607<br>SNHX 1606                                                                                           | SNMX 1607<br>SNHX 1606                                                                                              | SNHX 1606                                                                                                                    | ANHX 1607 ANR-M                                                                                                 | SDKN 1203<br>SDKN 1504                                                                                          |
| ●                                                                                                              | ●                                                                                                                | ●                                                                                                                   | ●                                                                                                                            | ●                                                                                                               | ●                                                                                                               |
|                                                                                                                |                                                                                                                  |                                                                                                                     |                                                                                                                              |                                                                                                                 |                                                                                                                 |
|                                                                                                                |                                                                                                                  |                                                                                                                     |                                                                                                                              |                                                                                                                 |                                                                                                                 |
|                                                                                                                |                                                                                                                  |                                                                                                                     |                                                                                                                              |                                                                                                                 |                                                                                                                 |
|                                                                                                                |                                                                                                                  |                                                                                                                     |                                                                                                                              |                                                                                                                 |                                                                                                                 |
|                                                                                                                |                                                                                                                  |                                                                                                                     |                                                                                                                              |                                                                                                                 |                                                                                                                 |
|                                                                                                                |                                                                                                                  |                                                                                                                     |                                                                                                                              |                                                                                                                 |                                                                                                                 |
|                                                                                                                |                                                                                                                  |                                                                                                                     |                                                                                                                              |                                                                                                                 |                                                                                                                 |
|                                                                                                                |                                                                                                                  |                                                                                                                     |                                                                                                                              |                                                                                                                 |                                                                                                                 |
|                                                                                                                |                                                                                                                  |                                                                                                                     |                                                                                                                              |                                                                                                                 |                                                                                                                 |

● Recommended, ○ Suitable

# Tool Selection Guide

## Face mills

|                       |                   |                                                                                     | <i>LIONMILL</i>                                                                             | <i>CHASE2MOLD</i>                                                                           | <i>CHASEMOLD</i>                                                                           | <i>CHASESPEED</i>                                                                          | <i>CHASESPEED</i>                                                                           |
|-----------------------|-------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Series                |                   |                                                                                     | LM45SE<br> | TFMRNS<br> | TFMRY<br> | TFMRN<br> | TFMRP<br> |
| Pages                 |                   |                                                                                     | E94                                                                                         | E95-E96                                                                                     | E97-E99                                                                                    | E100                                                                                       | E101                                                                                        |
| Approach angle        |                   |                                                                                     | 45°                                                                                         | -                                                                                           | -                                                                                          | -                                                                                          | -                                                                                           |
| Max. depth of cut(mm) |                   |                                                                                     | 6.5-8.7                                                                                     | 5.0-8.0                                                                                     | 4.0-10.0                                                                                   | 6.3                                                                                        | 6.3                                                                                         |
| Diameter range(mm)    |                   |                                                                                     | Ø80-Ø250                                                                                    | Ø32-Ø200                                                                                    | Ø32-Ø250                                                                                   | Ø50-Ø80                                                                                    | Ø50                                                                                         |
| Insert                |                   |                                                                                     | SEKN 1203<br>SEKN 1504                                                                      | RNMU 1004<br>RNMU 1205<br>RNMU 1606                                                         | RYM(H)X 0803<br>RYM(H)X 1004<br>RYM(H)X 1205<br>RYM(H)X 1606<br>RYMX 2007                  | RNGN 1207 FL                                                                               | RPGN 1204 FL                                                                                |
| Application           | Facing            |    | ●                                                                                           | ●                                                                                           | ●                                                                                          | ●                                                                                          | ●                                                                                           |
|                       | High feed milling |    |                                                                                             |                                                                                             |                                                                                            |                                                                                            |                                                                                             |
|                       | Shouldering       |    |                                                                                             |                                                                                             |                                                                                            |                                                                                            |                                                                                             |
|                       | Slotting          |   |                                                                                             |                                                                                             |                                                                                            |                                                                                            |                                                                                             |
|                       | Straight ramping  |  |                                                                                             | ●                                                                                           | ●                                                                                          | ●                                                                                          | ●                                                                                           |
|                       | Helical ramping   |  |                                                                                             | ●                                                                                           | ●                                                                                          | ●                                                                                          | ●                                                                                           |
|                       | Side slotting     |  |                                                                                             |                                                                                             |                                                                                            |                                                                                            |                                                                                             |
|                       | Profiling         |  |                                                                                             | ●                                                                                           | ●                                                                                          | ●                                                                                          | ●                                                                                           |
|                       | Step down         |  |                                                                                             |                                                                                             |                                                                                            |                                                                                            |                                                                                             |
|                       | Counter boring    |  |                                                                                             |                                                                                             |                                                                                            |                                                                                            |                                                                                             |

# Tool Selection Guide

## Face mills

| CERAMIC SPEED                                                                    | CERAMIC SPEED                                                                     | CHASE 10 MILL                                                                     | CHASE 8 SPEED                                                                     | WIN 4 FEED                                                                        | CHASE 4 FEED                                                                       |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| TFMBN-09CH                                                                       | TFMBN-12                                                                          | TFMPT                                                                             | 8D-TF20                                                                           | TFMBLV                                                                            | TFMBL                                                                              |
|  |  |  |  |  |  |
| E102                                                                             | E103                                                                              | E104                                                                              | E105                                                                              | E106                                                                              | E107-E108                                                                          |
| -                                                                                | -                                                                                 | 25°                                                                               | 20°                                                                               | -                                                                                 | -                                                                                  |
| 1.5                                                                              | 2.5                                                                               | 1.5-3.0                                                                           | 1.8-2.5                                                                           | 1.0                                                                               | 1.0-2.0                                                                            |
| Ø40-Ø50                                                                          | Ø50-Ø80                                                                           | Ø40-Ø200                                                                          | Ø50-Ø125                                                                          | Ø32-Ø63                                                                           | Ø32-Ø200                                                                           |
| BNGX 0904                                                                        | BNGX 1207                                                                         | PTKU 0503<br>PTKU 1006                                                            | SQKU 1105                                                                         | BLMV 0603                                                                         | BLMP 0603<br>BLMP 0904<br>BLMP 1105                                                |
| ●                                                                                | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
| ●                                                                                | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| ●                                                                                | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                 | ●                                                                                  |
| ●                                                                                | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                 | ●                                                                                  |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| ●                                                                                | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                 | ●                                                                                  |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   | ●                                                                                 |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |

● Recommended, ○ Suitable

# Tool Selection Guide

## Face mills

|                       |                   |                                                                                     | CHASE <sup>2</sup> FEED                                                           | CHASE <sup>2</sup> FEED                                                           |  |  |
|-----------------------|-------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
| Series                |                   |                                                                                     | TFMBL-13                                                                          | TFMSB                                                                             |  |  |
|                       |                   |                                                                                     |  |  |  |  |
| Pages                 |                   |                                                                                     | E109-E110                                                                         | E111-E112                                                                         |  |  |
| Approach angle        |                   |                                                                                     | -                                                                                 | -                                                                                 |  |  |
| Max. depth of cut(mm) |                   |                                                                                     | 2.0                                                                               | 1.0-2.0                                                                           |  |  |
| Diameter range(mm)    |                   |                                                                                     | Ø40-Ø250                                                                          | Ø32-Ø250                                                                          |  |  |
| Insert                |                   |                                                                                     | BLMP 1306                                                                         | SBMT 0603<br>SBMT 0904<br>SBMT 1306                                               |  |  |
| Application           | Facing            |    | ●                                                                                 | ●                                                                                 |  |  |
|                       | High feed milling |    | ●                                                                                 | ●                                                                                 |  |  |
|                       | Shouldering       |    |                                                                                   |                                                                                   |  |  |
|                       | Slotting          |   |                                                                                   |                                                                                   |  |  |
|                       | Straight ramping  |  | ●                                                                                 | ●                                                                                 |  |  |
|                       | Helical ramping   |  | ●                                                                                 | ●                                                                                 |  |  |
|                       | Side slotting     |  |                                                                                   |                                                                                   |  |  |
|                       | Profiling         |  | ●                                                                                 | ●                                                                                 |  |  |
|                       | Step down         |  |                                                                                   |                                                                                   |  |  |
|                       | Counter boring    |  |                                                                                   |                                                                                   |  |  |



# Tool Selection Guide

## End mills & modular heads

|                       |                     |                                                                                     | WINMILL                                                                                        | TANGSPEED                                                                                     | TANGSPEED                                                                                    | MILLRUSH                                                                                     | MILLRUSH                                                                                      |
|-----------------------|---------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Series                |                     |                                                                                     | 2S-TE90CV<br> | 4T-MTE90<br> | 4T-TE90<br> | 3P-TE90<br> | 6N TE90<br> |
| Pages                 |                     |                                                                                     | E113-E114                                                                                      | E115-E116                                                                                     | E117-E118                                                                                    | E119-E124                                                                                    | E125-E126                                                                                     |
| Approach angle        |                     |                                                                                     | 90°                                                                                            | 90°                                                                                           | 90°                                                                                          | 90°                                                                                          | 90°                                                                                           |
| Max. depth of cut(mm) |                     |                                                                                     | 5.0                                                                                            | 4.6                                                                                           | 4.6-8.3                                                                                      | 3.5-15.0                                                                                     | 4.1-9.2                                                                                       |
| Diameter range(mm)    |                     |                                                                                     | Ø6-Ø20                                                                                         | Ø10-Ø30                                                                                       | Ø10-Ø40                                                                                      | Ø8-Ø50                                                                                       | Ø20-Ø40                                                                                       |
| Insert                |                     |                                                                                     | CVK(H)T 0502                                                                                   | LPHU 05                                                                                       | LPK(H)U 0502<br>LPK(H)U 0904                                                                 | 3PKT 0402<br>3PK(H)T 0603<br>3PK(H)T 1004<br>3PK(H)T 1505<br>3PK(H)T 1906                    | 6NKU 0403<br>6NGU 0604<br>6NGU 0905                                                           |
| Application           | Facing              |    | ●                                                                                              | ●                                                                                             | ●                                                                                            | ●                                                                                            | ●                                                                                             |
|                       | High feed milling   |    | ○                                                                                              |                                                                                               |                                                                                              |                                                                                              |                                                                                               |
|                       | Shouldering         |    | ●                                                                                              | ●                                                                                             | ●                                                                                            | ●                                                                                            | ●                                                                                             |
|                       | Slotting            |    | ●                                                                                              | ●                                                                                             | ●                                                                                            | ●                                                                                            | ●                                                                                             |
|                       | Straight ramping    |  | ●                                                                                              | ●                                                                                             | ●                                                                                            | ●                                                                                            |                                                                                               |
|                       | Helical ramping     |  | ●                                                                                              | ●                                                                                             | ●                                                                                            | ●                                                                                            |                                                                                               |
|                       | Chamfer & serration |  |                                                                                                |                                                                                               |                                                                                              |                                                                                              |                                                                                               |
|                       | Profiling           |  | ○                                                                                              |                                                                                               |                                                                                              |                                                                                              |                                                                                               |
|                       | Plunging            |  |                                                                                                |                                                                                               |                                                                                              |                                                                                              |                                                                                               |
|                       | Step down           |  |                                                                                                |                                                                                               |                                                                                              |                                                                                              |                                                                                               |
|                       | Counter boring      |  |                                                                                                |                                                                                               |                                                                                              |                                                                                              |                                                                                               |

● Recommended, ○ Suitable

# Tool Selection Guide

End mills & modular heads

|                       |                     |                                                                                     |              |            |                  |                                   |            |
|-----------------------|---------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Series                |                     |                                                                                     | SCRM90TN<br> | TE90AV<br> | MTE90AX-06-L<br> | TE90AX<br>2S-TE90AP<br>TE90AP<br> | TE90AN<br> |
| Pages                 |                     |                                                                                     | E127                                                                                          | E128-E129                                                                                   | E130                                                                                              | E131-E139                                                                                                          | E140-E141                                                                                    |
| Approach angle        |                     |                                                                                     | 90°                                                                                           | 90°                                                                                         | 90°                                                                                               | 90°                                                                                                                | 90°                                                                                          |
| Max. depth of cut(mm) |                     |                                                                                     | 13.0                                                                                          | 10.0                                                                                        | 5.5                                                                                               | 5.5-17.9                                                                                                           | 11.0-15.0                                                                                    |
| Diameter range(mm)    |                     |                                                                                     | Ø35-Ø40                                                                                       | Ø16-Ø32                                                                                     | Ø8-Ø30                                                                                            | Ø8-Ø42                                                                                                             | Ø25-Ø50                                                                                      |
| Insert                |                     |                                                                                     | TNMX 1806                                                                                     | AVKT 1004<br>AVCT 1004-AL                                                                   | AXCT 06-L                                                                                         | AXM(C)T 0602<br>APK(C)T 09T3<br>APK(C)T 1204<br>APK(C)T 1705<br>APKT 1907                                          | ANM(H)X 1106<br>ANM(H)X 1607                                                                 |
| Application           | Facing              |    | ●                                                                                             | ●                                                                                           | ●                                                                                                 | ●                                                                                                                  | ●                                                                                            |
|                       | High feed milling   |    |                                                                                               | ○                                                                                           |                                                                                                   | ○                                                                                                                  |                                                                                              |
|                       | Shouldering         |    | ●                                                                                             | ●                                                                                           | ●                                                                                                 | ●                                                                                                                  | ●                                                                                            |
|                       | Slotting            |    | ●                                                                                             | ●                                                                                           | ●                                                                                                 | ●                                                                                                                  | ●                                                                                            |
|                       | Straight ramping    |   |                                                                                               | ●                                                                                           |                                                                                                   | ●                                                                                                                  | ●                                                                                            |
|                       | Helical ramping     |  |                                                                                               | ●                                                                                           |                                                                                                   | ●                                                                                                                  | ●                                                                                            |
|                       | Chamfer & serration |  |                                                                                               |                                                                                             |                                                                                                   |                                                                                                                    |                                                                                              |
|                       | Profiling           |  |                                                                                               | ○                                                                                           |                                                                                                   | ○                                                                                                                  |                                                                                              |
|                       | Plunging            |  |                                                                                               | ●                                                                                           |                                                                                                   |                                                                                                                    |                                                                                              |
|                       | Step down           |  |                                                                                               | ●                                                                                           |                                                                                                   |                                                                                                                    |                                                                                              |
|                       | Counter boring      |  |                                                                                               |                                                                                             |                                                                                                   |                                                                                                                    |                                                                                              |
|                       | Drill mill          |  |                                                                                               |                                                                                             |                                                                                                   |                                                                                                                    |                                                                                              |

# Tool Selection Guide

## End mills & modular heads

| <i>CHASE4MILL</i>                                                                                  | <i>CHASE8MILL</i>                                                                                   | <i>CHASEALU</i>                                                                                            | <i>CHASEALU</i>                                                                                     | <i>MILLRUSH</i>                                                                                    | <i>CHASEQAND</i>                                                                                 |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| <b>4N TE90</b><br> | <b>8D-TE90</b><br> | <b>TE90XEV-HSK63A</b><br> | <b>TE90XEV</b><br> | <b>3P-TCF</b><br> | <b>TSF</b><br> |
| E142-E147                                                                                          | E148-E151                                                                                           | E152                                                                                                       | E153                                                                                                | E154-E155                                                                                          | E156                                                                                             |
| 90°                                                                                                | 90°                                                                                                 | 90°                                                                                                        | 90°                                                                                                 | 30°-60°                                                                                            | 90°                                                                                              |
| 3.5-13.8                                                                                           | 5.0                                                                                                 | 16                                                                                                         | 16-21                                                                                               | -                                                                                                  | 5.6-13.4                                                                                         |
| Ø8-Ø40                                                                                             | Ø16-Ø40                                                                                             | Ø25-Ø50                                                                                                    | Ø25-Ø40                                                                                             | Ø3.3-Ø31                                                                                           | Ø12-Ø50                                                                                          |
| 4NKT 0402<br>4NK(H)T 0603<br>4NK(H)T 0904<br>4NKT 1106<br>4NKT 1407                                | SQKU 0703<br>SQK(H)U 1004                                                                           | XEVT 1605                                                                                                  | XEVT 1605<br>XEVT 2206                                                                              | 3PKT 0402<br>3PK(H)T 0603<br>3PK(H)T 1004                                                          | XOMT 0602<br>SPMG(T) 0904<br>SPMG(T) 1104<br>SPMG(T) 1405                                        |
| ●                                                                                                  | ●                                                                                                   | ●                                                                                                          | ●                                                                                                   |                                                                                                    | ●                                                                                                |
| ○                                                                                                  |                                                                                                     |                                                                                                            |                                                                                                     |                                                                                                    |                                                                                                  |
| ●                                                                                                  | ●                                                                                                   | ●                                                                                                          | ●                                                                                                   |                                                                                                    | ●                                                                                                |
| ●                                                                                                  | ●                                                                                                   | ●                                                                                                          | ●                                                                                                   |                                                                                                    | ●                                                                                                |
| ●                                                                                                  |                                                                                                     | ●                                                                                                          | ●                                                                                                   |                                                                                                    |                                                                                                  |
| ●                                                                                                  |                                                                                                     | ●                                                                                                          | ●                                                                                                   |                                                                                                    |                                                                                                  |
|                                                                                                    |                                                                                                     |                                                                                                            |                                                                                                     | ●                                                                                                  |                                                                                                  |
| ○                                                                                                  |                                                                                                     |                                                                                                            |                                                                                                     |                                                                                                    |                                                                                                  |
|                                                                                                    |                                                                                                     |                                                                                                            |                                                                                                     |                                                                                                    | ●                                                                                                |
| ●                                                                                                  |                                                                                                     | ●                                                                                                          | ●                                                                                                   |                                                                                                    |                                                                                                  |
|                                                                                                    |                                                                                                     |                                                                                                            |                                                                                                     |                                                                                                    | ●                                                                                                |
|                                                                                                    |                                                                                                     |                                                                                                            |                                                                                                     |                                                                                                    |                                                                                                  |

● Recommended, ○ Suitable

# Tool Selection Guide

## End mills & modular heads

| Series                |                     |    |  |  |  |  |
|-----------------------|---------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|                       |                     | TDM                                                                                 | TCF                                                                               | 7S-E45                                                                            | TBR                                                                               | TERNS                                                                              |
|                       |                     |    |  |  |  |  |
| Pages                 |                     | E157                                                                                | E158                                                                              | E159                                                                              | E160-E162                                                                         | E163-E164                                                                          |
| Approach angle        |                     | 90°                                                                                 | 45°-75°                                                                           | 45°                                                                               | 37°-90°                                                                           | -                                                                                  |
| Max. depth of cut(mm) |                     | 12-40                                                                               | -                                                                                 | 3.2                                                                               | 6.3-12.0                                                                          | 5.0-8.0                                                                            |
| Diameter range(mm)    |                     | Ø12-Ø50                                                                             | Ø8.3-Ø38.9                                                                        | Ø32-Ø50                                                                           | Ø12-Ø32                                                                           | Ø25-Ø50                                                                            |
| Insert                |                     | XOMT 0602<br>SPMG(T) 0904<br>SPMG(T) 1104<br>SPMG(T) 1405                           | SPMG(T) 1104                                                                      | 7EMT 0604                                                                         | BRHU 06R2<br>BRHU 12R3                                                            | RNMU 1004<br>RNMU 1205<br>RNMU 1606                                                |
| Application           | Facing              |    | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                  |
|                       | High feed milling   |    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Shouldering         |    | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                       | Slotting            |    | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                       | Straight ramping    |   | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                  |
|                       | Helical ramping     |  | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                  |
|                       | Chamfer & serration |  |                                                                                   | ●                                                                                 |                                                                                   |                                                                                    |
|                       | Profiling           |  |                                                                                   |                                                                                   | ●                                                                                 | ●                                                                                  |
|                       | Plunging            |  | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                       | Step down           |  | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                       | Counter boring      |  | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                       | Drill mill          |  | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |

# Tool Selection Guide

## End mills & modular heads

| <i>CHASEHOLD</i>                                                                 | <i>FINEBALL</i>                                                                   | <i>FINEBALL</i>                                                                   | <i>CHASESPEED</i>                                                                 | <i>DUSTBALL</i>                                                                   | <i>TRIOBALL</i>                                                                    |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| TERY                                                                             | TNF                                                                               | TNFR                                                                              | TERP                                                                              | 2F                                                                                | 3F                                                                                 |
|  |  |  |  |  |  |
| E165-E167                                                                        | E168-E170                                                                         | E171-E173                                                                         | E174-E175                                                                         | E176-E177                                                                         | E178                                                                               |
| -                                                                                | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                  |
| 4.0-10.0                                                                         | -                                                                                 | -                                                                                 | 4.7-6.3                                                                           | 11.8-55.3                                                                         | 39-94                                                                              |
| Ø16-Ø50                                                                          | Ø6-Ø32                                                                            | Ø6-Ø32                                                                            | Ø20-Ø40                                                                           | Ø16-Ø32                                                                           | Ø32-Ø50                                                                            |
| RYM(H)X 0803<br>RYM(H)X 1004<br>RYM(H)X 1205<br>RYM(H)X 1606<br>RYM(H)X 2007     | NFB( NFR )<br>NFLB<br>NFCB                                                        | NFR                                                                               | RPGN 0903 FL<br>RPGN 1204 FL                                                      | 2FB<br>APKT 09T3<br>APKT 1204                                                     | 3FB<br>CNHX 1311<br>CNHX 1606                                                      |
| ●                                                                                |                                                                                   | ●                                                                                 | ●                                                                                 |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
| ●                                                                                | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
| ●                                                                                | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| ●                                                                                | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                                                                                  | ○                                                                                 | ○                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  | ○                                                                                 | ○                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |

● Recommended, ○ Suitable

# Tool Selection Guide

End mills & modular heads

| Series                |                   | CHASE <sup>2</sup> BALL                                                             | CHASE <sup>2</sup> BALL                                                           |   |  |  |
|-----------------------|-------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|--|--|
|                       |                   | TDB50X                                                                              | TDB50X-WT                                                                         |   |  |  |
|                       |                   |    |  |   |  |  |
| Pages                 |                   | E179                                                                                | E180                                                                              |   |  |  |
| Approach angle        |                   | -                                                                                   | -                                                                                 |   |  |  |
| Max. depth of cut(mm) |                   | 59-69                                                                               | 59-69                                                                             |   |  |  |
| Diameter range(mm)    |                   | Ø50                                                                                 | Ø50                                                                               |   |  |  |
| Insert                |                   | 6RBE 50-M                                                                           | 6RBE 50-M                                                                         |   |  |  |
| Application           | Facing            |    |                                                                                   |   |  |  |
|                       | High feed milling |    |                                                                                   |   |  |  |
|                       | Shouldering       |    |                                                                                   |   |  |  |
|                       | Slotting          |    |                                                                                   |   |  |  |
|                       | Straight ramping  |  | ●                                                                                 | ● |  |  |
|                       | Helical ramping   |  | ●                                                                                 | ● |  |  |
|                       | Profiling         |  | ●                                                                                 | ● |  |  |
|                       | Plunging          |  |                                                                                   |   |  |  |
|                       | Step down         |  |                                                                                   |   |  |  |
|                       | Counter boring    |  |                                                                                   |   |  |  |
|                       | Drill mill        |  |                                                                                   |   |  |  |

# Tool Selection Guide

## High feed end mills & modular heads

|                       |                   |                                                                                     |          |          |          |           |          |
|-----------------------|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Series                |                   |                                                                                     | THFN<br> | TEBN<br> | TEPT<br> | TEBLV<br> | TEBL<br> |
| Pages                 |                   |                                                                                     | E181-E182                                                                                 | E183-E184                                                                                 | E185                                                                                      | E186-E188                                                                                  | E189-E196                                                                                  |
| Approach angle        |                   |                                                                                     | 20°                                                                                       | -                                                                                         | 25°                                                                                       | -                                                                                          | -                                                                                          |
| Max. depth of cut(mm) |                   |                                                                                     | 0.3-0.5                                                                                   | 1.0-1.5                                                                                   | 1.5-3.0                                                                                   | 0.7-1.0                                                                                    | 0.5-2.0                                                                                    |
| Diameter range(mm)    |                   |                                                                                     | Ø6-Ø8                                                                                     | Ø16-Ø40                                                                                   | Ø20-Ø40                                                                                   | Ø16-Ø40                                                                                    | Ø8-Ø42                                                                                     |
| Insert                |                   |                                                                                     | HFN 060<br>HFN 080                                                                        | BNGX 0603<br>BNGX 0904                                                                    | PTKU 0503<br>PTKU 1006                                                                    | BLMV 0603                                                                                  | BLMP 0402<br>BLMP 0603<br>BLMP 0904<br>BLMP 1105                                           |
| Application           | Facing            |    | ●                                                                                         | ●                                                                                         | ●                                                                                         | ●                                                                                          | ●                                                                                          |
|                       | High feed milling |    | ●                                                                                         | ●                                                                                         | ●                                                                                         | ●                                                                                          | ●                                                                                          |
|                       | Shouldering       |    | ○                                                                                         | ○                                                                                         | ○                                                                                         | ○                                                                                          | ○                                                                                          |
|                       | Slotting          |    |                                                                                           |                                                                                           |                                                                                           |                                                                                            |                                                                                            |
|                       | Straight ramping  |  | ●                                                                                         | ●                                                                                         | ●                                                                                         | ●                                                                                          | ●                                                                                          |
|                       | Helical ramping   |  | ●                                                                                         | ●                                                                                         | ●                                                                                         | ●                                                                                          | ●                                                                                          |
|                       | Profiling         |  | ●                                                                                         | ●                                                                                         | ●                                                                                         | ●                                                                                          | ●                                                                                          |
|                       | Plunging          |  |                                                                                           |                                                                                           |                                                                                           | ●                                                                                          |                                                                                            |
|                       | Step down         |  |                                                                                           |                                                                                           |                                                                                           | ●                                                                                          |                                                                                            |
|                       | Counter boring    |  |                                                                                           |                                                                                           |                                                                                           |                                                                                            |                                                                                            |
|                       | Drill mill        |  |                                                                                           |                                                                                           |                                                                                           |                                                                                            |                                                                                            |

● Recommended, ○ Suitable

# Tool Selection Guide

High feed end mills & modular heads

| Series                |                   |                                                                                     |             |          |  |  |  |
|-----------------------|-------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--|--|--|
|                       |                   |                                                                                     | TEBL-13<br> | TESB<br> |  |  |  |
| Pages                 |                   |                                                                                     | E197                                                                                         | E198-E200                                                                                 |  |  |  |
| Approach angle        |                   |                                                                                     | -                                                                                            | -                                                                                         |  |  |  |
| Max. depth of cut(mm) |                   |                                                                                     | 2.0                                                                                          | 1.0-2.0                                                                                   |  |  |  |
| Diameter range(mm)    |                   |                                                                                     | Ø32-Ø42                                                                                      | Ø16-Ø42                                                                                   |  |  |  |
| Insert                |                   |                                                                                     | BLMP 1306                                                                                    | SBMT 0603<br>SBMT 0904<br>SBMT 1306                                                       |  |  |  |
| Application           | Facing            |    | ●                                                                                            | ●                                                                                         |  |  |  |
|                       | High feed milling |    | ●                                                                                            | ●                                                                                         |  |  |  |
|                       | Shouldering       |    | ○                                                                                            | ○                                                                                         |  |  |  |
|                       | Slotting          |    |                                                                                              |                                                                                           |  |  |  |
|                       | Straight ramping  |   | ●                                                                                            | ●                                                                                         |  |  |  |
|                       | Helical ramping   |  | ●                                                                                            | ●                                                                                         |  |  |  |
|                       | Profiling         |  | ●                                                                                            | ●                                                                                         |  |  |  |
|                       | Plunging          |  |                                                                                              |                                                                                           |  |  |  |
|                       | Step down         |  |                                                                                              |                                                                                           |  |  |  |
|                       | Counter boring    |  |                                                                                              |                                                                                           |  |  |  |
|                       | Drill mill        |  |                                                                                              |                                                                                           |  |  |  |



# Tool Selection Guide

## Extended flute cutters

|                       |                    |                                                                                     |            |            |                      |                                    |                      |
|-----------------------|--------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Series                |                    |                                                                                     | 4T-TEF<br> | 4T-TES<br> | 4S-TEF<br>4S-TES<br> | 4S-TFP<br>4S-TEF-B<br>4S-TES-B<br> | 3P TEF<br>3P TES<br> |
| Pages                 |                    |                                                                                     | E201                                                                                        | E202                                                                                        | E203-E204                                                                                             | E205-E207                                                                                                           | E208-E209                                                                                              |
| Approach angle        |                    |                                                                                     | 90°                                                                                         | 90°                                                                                         | 90°                                                                                                   | 90°                                                                                                                 | 90°                                                                                                    |
| Max. depth of cut(mm) |                    |                                                                                     | 15-51                                                                                       | 34-56                                                                                       | 52-77.9                                                                                               | 34-76                                                                                                               | 20-83                                                                                                  |
| Diameter range(mm)    |                    |                                                                                     | Ø16-Ø40                                                                                     | Ø50-Ø100                                                                                    | Ø32-Ø80                                                                                               | Ø40-Ø80                                                                                                             | Ø20-Ø100                                                                                               |
| Insert                |                    |                                                                                     | LPK(H)U 0502<br>LPK(H)U 0904                                                                | LPKU 1407                                                                                   | SVKT 0938<br>SVK(H)T 1145                                                                             | SVKT 0938<br>SVK(H)T 1145                                                                                           | 3PK(H)T 0603<br>3PK(H)T 1004<br>3PK(H)T 1505<br>3PK(H)T 1906                                           |
| Application           | Facing             |    |                                                                                             |                                                                                             |                                                                                                       |                                                                                                                     |                                                                                                        |
|                       | High feed milling  |    |                                                                                             |                                                                                             |                                                                                                       |                                                                                                                     |                                                                                                        |
|                       | Shouldering        |    | ●                                                                                           | ●                                                                                           | ●                                                                                                     | ●                                                                                                                   | ●                                                                                                      |
|                       | Slotting           |    |                                                                                             |                                                                                             |                                                                                                       |                                                                                                                     |                                                                                                        |
|                       | Trochoidal milling |   | ●                                                                                           | ●                                                                                           | ●                                                                                                     | ●                                                                                                                   |                                                                                                        |
|                       | Straight ramping   |  |                                                                                             |                                                                                             |                                                                                                       |                                                                                                                     |                                                                                                        |
|                       | Helical ramping    |  |                                                                                             |                                                                                             |                                                                                                       |                                                                                                                     |                                                                                                        |
|                       | Profiling          |  |                                                                                             |                                                                                             |                                                                                                       |                                                                                                                     |                                                                                                        |
|                       | Plunging           |  |                                                                                             |                                                                                             |                                                                                                       |                                                                                                                     |                                                                                                        |
|                       | Step down          |  |                                                                                             |                                                                                             |                                                                                                       |                                                                                                                     |                                                                                                        |
|                       | Counter boring     |  |                                                                                             |                                                                                             |                                                                                                       |                                                                                                                     |                                                                                                        |

● Recommended, ○ Suitable

# Tool Selection Guide

## Extended flute cutters

|                       |                    |                                                                                     |                      |                      |                          |                                   |            |
|-----------------------|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Series                |                    |                                                                                     | TEF-TN<br>TES-TN<br> | TEF-AN<br>TES-AN<br> | TEF-AV10<br>TES-AV10<br> | TEF-AX<br>2S-TEF-AP<br>TEF-AP<br> | TES-AP<br> |
| Pages                 |                    |                                                                                     | E210-E211                                                                                             | E212-E213                                                                                             | E214-E215                                                                                                 | E216                                                                                                               | E217                                                                                         |
| Approach angle        |                    |                                                                                     | 90°                                                                                                   | 90°                                                                                                   | 90°                                                                                                       | 90°                                                                                                                | 90°                                                                                          |
| Max. depth of cut(mm) |                    |                                                                                     | 48-71                                                                                                 | 40-69                                                                                                 | 27-44                                                                                                     | 16-45                                                                                                              | 45-88                                                                                        |
| Diameter range(mm)    |                    |                                                                                     | Ø50-Ø100                                                                                              | Ø32-Ø100                                                                                              | Ø25-Ø50                                                                                                   | Ø16-Ø40                                                                                                            | Ø50-Ø100                                                                                     |
| Insert                |                    |                                                                                     | TNMX 1806                                                                                             | ANM(H)X 1106<br>ANM(H)X 1607                                                                          | AVKT 1004<br>AVCT 1004-AL                                                                                 | AXM(C)T 0602<br>APK(C)T 09T3<br>APK(C)T 1204<br>APK(C)T 1705                                                       | APK(C)T 1204<br>APK(C)T 1705                                                                 |
| Application           | Facing             |    |                                                                                                       |                                                                                                       |                                                                                                           |                                                                                                                    |                                                                                              |
|                       | High feed milling  |    |                                                                                                       |                                                                                                       |                                                                                                           |                                                                                                                    |                                                                                              |
|                       | Shouldering        |    | ●                                                                                                     | ●                                                                                                     | ●                                                                                                         | ●                                                                                                                  | ●                                                                                            |
|                       | Slotting           |    |                                                                                                       |                                                                                                       |                                                                                                           |                                                                                                                    |                                                                                              |
|                       | Trochoidal milling |  |                                                                                                       |                                                                                                       |                                                                                                           | ●                                                                                                                  | ●                                                                                            |
|                       | Straight ramping   |  |                                                                                                       |                                                                                                       |                                                                                                           |                                                                                                                    |                                                                                              |
|                       | Helical ramping    |  |                                                                                                       |                                                                                                       |                                                                                                           |                                                                                                                    |                                                                                              |
|                       | Profiling          |  |                                                                                                       |                                                                                                       |                                                                                                           |                                                                                                                    |                                                                                              |
|                       | Plunging           |  |                                                                                                       |                                                                                                       |                                                                                                           |                                                                                                                    |                                                                                              |
|                       | Step down          |  |                                                                                                       |                                                                                                       |                                                                                                           |                                                                                                                    |                                                                                              |
|                       | Counter boring     |  |                                                                                                       |                                                                                                       |                                                                                                           |                                                                                                                    |                                                                                              |



# Tool Selection Guide

## Slotting cutters

| Series                |                         |                                                                                     | TOP SLOT                                                                          | TOP SLOT                                                                          | TOP SLOT                                                                          | TOP SLOT                                                                          | TOP SLOT                                                                           |
|-----------------------|-------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|                       |                         |                                                                                     | TSM-TS16                                                                          | TSM-SL                                                                            | TSM-FD-Z                                                                          | TSM-FD-ZN                                                                         | TSM-FD-S/W-ZN                                                                      |
|                       |                         |                                                                                     |  |  |  |  |  |
| Pages                 |                         |                                                                                     | E219-E220                                                                         | E221-E222                                                                         | E223-E224                                                                         | E225                                                                              | E226-E228                                                                          |
| Approach angle        |                         |                                                                                     | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                  |
| Max. width of cut(mm) |                         |                                                                                     | 1.2-6.0                                                                           | 3-6                                                                               | 3-10                                                                              | 10-20                                                                             | 10-26                                                                              |
| Diameter range(mm)    |                         |                                                                                     | Ø32.2-Ø80                                                                         | Ø25-Ø63                                                                           | Ø63-Ø250                                                                          | Ø80-Ø125                                                                          | Ø100-Ø315                                                                          |
| Insert                |                         |                                                                                     | TS16                                                                              | SLOT                                                                              | ZNHT                                                                              | ZNHU 080<br>ZNHU 110                                                              | ZNHU 080<br>ZNHU 110<br>ZNHU 140                                                   |
| Application           | Facing                  |    | ●                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Shouldering             |    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Slotting                |    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | T slotting              |    | ●                                                                                 | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                       | Side slotting           |  | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | Internal groove milling |  | ●                                                                                 | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                       | Bottom shouldering      |  | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | Slitting                |  |                                                                                   |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       |                         |                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       |                         |                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |

# Tool Selection Guide

## Slotting cutters

| <i>TOPSLOT</i>                                                                   | <i>TOPSLOT</i>                                                                    | <i>TOPSLOT</i>                                                                    | TSC Slotting Cutter                                                               | <i>TANGSPEED</i>                                                                  | <i>MAXITANG</i>                                                                    |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <u>TSM-FF-Z</u>                                                                  | <u>TSM-FF-ZN</u>                                                                  | <u>TSM-FF-S/W-ZN</u>                                                              | <u>TSC</u>                                                                        | <u>4T-TSM-W</u>                                                                   | <u>4T-TSM-TR</u>                                                                   |
|  |  |  |  |  |  |
| E229                                                                             | E230                                                                              | E231-E233                                                                         | E234                                                                              | E235                                                                              | E236                                                                               |
| -                                                                                | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                  |
| 3-10                                                                             | 10-20                                                                             | 10-26                                                                             | 1.6-4.52                                                                          | 7                                                                                 | 7                                                                                  |
| Ø80-Ø160                                                                         | Ø63-Ø125                                                                          | Ø100-Ø315                                                                         | Ø75-Ø160                                                                          | Ø16-Ø40                                                                           | Ø23-Ø40                                                                            |
| ZNHT                                                                             | ZNHU 080<br>ZNHU 110                                                              | ZNHU 080<br>ZNHU 110<br>ZNHU 140                                                  | TIMC<br>TIMJ<br>TIPV                                                              | LXHU 0502                                                                         | LXHU 0502                                                                          |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| ●                                                                                | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                 | ●                                                                                  |
| ●                                                                                | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| ●                                                                                | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                 | ●                                                                                  |
|                                                                                  |                                                                                   |                                                                                   | ●                                                                                 |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |

● Recommended, ○ Suitable

# Tool Selection Guide

## Slotting cutters

|                       |                         |                                                                                     | <i>MAXITANG</i>                                                                                 | <i>MAXISPEED</i>                                                                          | <i>MAXISPEED</i>                                                                          | <i>MAXISPEED</i>                                                                                          |  |
|-----------------------|-------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|--|
| Series                |                         |                                                                                     | 4T-TE90-TR<br> | TR-S<br> | TR-F<br> | TR-T-W55<br>TR-T-M60<br> |  |
| Pages                 |                         |                                                                                     | E237                                                                                            | E238                                                                                      | E239                                                                                      | E240                                                                                                      |  |
| Approach angle        |                         |                                                                                     | -                                                                                               | -                                                                                         | -                                                                                         | -                                                                                                         |  |
| Max. width of cut(mm) |                         |                                                                                     | 4.6                                                                                             | 3-10                                                                                      | 8-10                                                                                      | 7.7-9.5                                                                                                   |  |
| Diameter range(mm)    |                         |                                                                                     | Ø25-Ø40                                                                                         | Ø24.7-Ø39.7                                                                               | Ø24.25-Ø39.25                                                                             | Ø24.7-Ø39.7                                                                                               |  |
| Insert                |                         |                                                                                     | LPK(H)U 0502                                                                                    | -                                                                                         | -                                                                                         | -                                                                                                         |  |
| Application           | Facing                  |    | ●                                                                                               |                                                                                           | ●                                                                                         |                                                                                                           |  |
|                       | Shouldering             |    | ●                                                                                               |                                                                                           | ●                                                                                         |                                                                                                           |  |
|                       | Slotting                |    |                                                                                                 |                                                                                           |                                                                                           |                                                                                                           |  |
|                       | T slotting              |    |                                                                                                 | ●                                                                                         |                                                                                           |                                                                                                           |  |
|                       | Side slotting           |  |                                                                                                 | ●                                                                                         |                                                                                           |                                                                                                           |  |
|                       | Internal groove milling |  |                                                                                                 |                                                                                           |                                                                                           |                                                                                                           |  |
|                       | Bottom shouldering      |  |                                                                                                 | ●                                                                                         |                                                                                           |                                                                                                           |  |
|                       | Slitting                |  |                                                                                                 |                                                                                           |                                                                                           |                                                                                                           |  |
|                       | External threading      |  |                                                                                                 |                                                                                           |                                                                                           | ●                                                                                                         |  |
|                       | Internal threading      |  |                                                                                                 |                                                                                           |                                                                                           | ●                                                                                                         |  |
|                       |                         |                                                                                     |                                                                                                 |                                                                                           |                                                                                           |                                                                                                           |  |

# Tool Selection Guide

## Milling inserts

|                       |                                                                                                           | WINMILL                                                                                           | MAXITANG                                                                                        | TANGSPEED                                                                                                                      | MILLRUSH                                                                                                                                                       | MILL2RUSH                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Series                |                                                                                                           | CVK(H)T 0502<br> | LXHU 05-04<br> | LPK(H)U 0502<br>LPK(H)U 0904<br>LPKU 1407<br> | 3PKT 0402<br>3PK(H)T 0603<br>3PK(H)T 1004<br>3PK(H)T 1505<br>3PK(H)T 1906<br> | 6NKT 0403<br>6NGU 0604<br>6NGU 0905<br> |
| Material              |                                                                                                           | P M N S                                                                                           | P M K S H                                                                                       | P M K S H                                                                                                                      | P M K N S H                                                                                                                                                    | P M K N S H                                                                                                               |
| Pages                 |                                                                                                           | E273                                                                                              | E277                                                                                            | E276                                                                                                                           | E250-E251                                                                                                                                                      | E254-E255                                                                                                                 |
| Approach angle        |                                                                                                           | 90°                                                                                               | 90°                                                                                             | 90°                                                                                                                            | 90°                                                                                                                                                            | 90°                                                                                                                       |
| Max. depth of cut(mm) |                                                                                                           | 0.5-5                                                                                             | *                                                                                               | 4.6-12.5                                                                                                                       | 3.5-15                                                                                                                                                         | 4.1-9.2                                                                                                                   |
| Application           | Facing<br>               | ●                                                                                                 |                                                                                                 | ●                                                                                                                              | ●                                                                                                                                                              | ●                                                                                                                         |
|                       | High feed milling<br>    | ○                                                                                                 |                                                                                                 |                                                                                                                                |                                                                                                                                                                |                                                                                                                           |
|                       | Shouldering<br>          | ●                                                                                                 |                                                                                                 | ●                                                                                                                              | ●                                                                                                                                                              | ●                                                                                                                         |
|                       | Slotting<br>             | ●                                                                                                 |                                                                                                 | ●                                                                                                                              | ●                                                                                                                                                              | ●                                                                                                                         |
|                       | Straight ramping<br>     | ●                                                                                                 |                                                                                                 | ●                                                                                                                              | ●                                                                                                                                                              |                                                                                                                           |
|                       | Helical ramping<br>    | ●                                                                                                 |                                                                                                 | ●                                                                                                                              | ●                                                                                                                                                              |                                                                                                                           |
|                       | Step down<br>          |                                                                                                   |                                                                                                 |                                                                                                                                |                                                                                                                                                                |                                                                                                                           |
|                       | Profiling<br>          | ○                                                                                                 |                                                                                                 |                                                                                                                                |                                                                                                                                                                |                                                                                                                           |
|                       | T slotting<br>         |                                                                                                   | ●                                                                                               |                                                                                                                                |                                                                                                                                                                |                                                                                                                           |
|                       | Side slotting<br>      |                                                                                                   | ●                                                                                               |                                                                                                                                |                                                                                                                                                                |                                                                                                                           |
|                       | Bottom shouldering<br> |                                                                                                   | ●                                                                                               |                                                                                                                                |                                                                                                                                                                |                                                                                                                           |

▶ \* Marked: For CDX, refer to the cutter page

● Recommended, ○ Suitable

# Tool Selection Guide

## Milling inserts

| Series                |                     |                                                                                     |                               |                  |                 |                                                                               |                   |
|-----------------------|---------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
|                       |                     |                                                                                     | TNMX 1806<br>TNM(G)X 2207<br> | AVK(C)T 1004<br> | AXCT 0602-L<br> | AXM(C)T 0602<br>APK(C)T 09T3<br>APK(C)T 1204<br>APK(C)T 1705<br>APKT 1907<br> | APCT 12-PCD35<br> |
| Material              |                     |                                                                                     | P M K S H                                                                                                      | P M K N S H                                                                                       | P M S                                                                                            | P M K N S H                                                                                                                                                    | N                                                                                                   |
| Pages                 |                     |                                                                                     | E302                                                                                                           | E267                                                                                              | E266                                                                                             | E259-E267                                                                                                                                                      | E260                                                                                                |
| Approach angle        |                     |                                                                                     | 90°                                                                                                            | 90°                                                                                               | 90°                                                                                              | 90°                                                                                                                                                            | 90°                                                                                                 |
| Max. depth of cut(mm) |                     |                                                                                     | 13-15                                                                                                          | 1.0-10                                                                                            | 5.5                                                                                              | 0.5-17.9                                                                                                                                                       | 3.5                                                                                                 |
| Application           | Facing              |    | ●                                                                                                              | ●                                                                                                 | ●                                                                                                | ●                                                                                                                                                              | ●                                                                                                   |
|                       | High feed milling   |    |                                                                                                                | ○                                                                                                 |                                                                                                  | ○                                                                                                                                                              |                                                                                                     |
|                       | Shouldering         |    | ●                                                                                                              | ●                                                                                                 | ●                                                                                                | ●                                                                                                                                                              | ●                                                                                                   |
|                       | Slotting            |    | ●                                                                                                              | ●                                                                                                 | ●                                                                                                | ●                                                                                                                                                              | ●                                                                                                   |
|                       | Straight ramping    |   |                                                                                                                | ●                                                                                                 |                                                                                                  | ●                                                                                                                                                              |                                                                                                     |
|                       | Helical ramping     |  |                                                                                                                | ●                                                                                                 |                                                                                                  | ●                                                                                                                                                              |                                                                                                     |
|                       | Chamfer & serration |  |                                                                                                                |                                                                                                   |                                                                                                  |                                                                                                                                                                |                                                                                                     |
|                       | Profiling           |  |                                                                                                                | ○                                                                                                 |                                                                                                  | ○                                                                                                                                                              |                                                                                                     |
|                       | Plunging            |  |                                                                                                                |                                                                                                   |                                                                                                  |                                                                                                                                                                |                                                                                                     |
|                       | Step down           |  |                                                                                                                |                                                                                                   |                                                                                                  |                                                                                                                                                                |                                                                                                     |
|                       | Counter boring      |  |                                                                                                                |                                                                                                   |                                                                                                  |                                                                                                                                                                |                                                                                                     |



# Tool Selection Guide

## Milling inserts

| CHASE2MILL                                                                        | CHASE4MILL                                                                        | CHASE3MILL                                                                        | CHASE6SPEED                                                                       | CHASEALU                                                                          | CHASE4FINISH                                                                      |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| ANM(H)X 1106<br>ANM(H)X 1607                                                      | 4NKT 0402<br>4NK(H)T 0603<br>4NK(H)T 0904<br>4NKT 1106<br>4NKT 1407               | SQKU 0703<br>SQK(H)U 1004<br>SQK(H)U 1206                                         | SQKU 1105<br>SQKU 1406                                                            | XEVT 1605<br>XEVT 2206                                                            | 4WHU 1207                                                                         |
|  |  |  |  |  |  |
| P M K N S H                                                                       | P M K N S H                                                                       | P M K S H                                                                         | P M K S H                                                                         | N                                                                                 | P M K N S H                                                                       |
| E258                                                                              | E252-E253                                                                         | E297                                                                              | E298                                                                              | E305                                                                              | E254                                                                              |
| 90°                                                                               | 90°                                                                               | 90°                                                                               | 20°,45°                                                                           | 90°                                                                               | 90°                                                                               |
| 11-15                                                                             | 0.5-13.8                                                                          | 5.0-8.5                                                                           | 1.8-6.0                                                                           | 14-21                                                                             | 0.5                                                                               |
| ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 |
|                                                                                   | ○                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| ●                                                                                 | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                 |                                                                                   |
| ●                                                                                 | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                 |                                                                                   |
| ●                                                                                 | ●                                                                                 |                                                                                   |                                                                                   | ●                                                                                 |                                                                                   |
| ●                                                                                 | ●                                                                                 |                                                                                   |                                                                                   | ●                                                                                 |                                                                                   |
|                                                                                   |                                                                                   |                                                                                   | ●                                                                                 |                                                                                   |                                                                                   |
|                                                                                   | ○                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|                                                                                   | ●                                                                                 |                                                                                   |                                                                                   | ●                                                                                 |                                                                                   |
|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

● Recommended, ○ Suitable

# Tool Selection Guide

## Milling inserts

|                       |                     |                                                                                     | CHASE2QUAD                                                                        | LIONMILL                                                                          | LIONMILL                                                                          | CHASEVQUAD                                                                        | CHASE2QUAD                                                                         |
|-----------------------|---------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|                       |                     |                                                                                     | SNEX 1204<br>SNET 1205                                                            | TPKN 2204                                                                         | SEKX 2107                                                                         | SVK(H)T 1145                                                                      | SNGX 1306...<br>SNGX 1306 ZN                                                       |
| Series                |                     |                                                                                     |  |  |  |  |  |
| Material              |                     |                                                                                     | P K                                                                               | P M K                                                                             | P K                                                                               | P M K S H                                                                         | P M K                                                                              |
| Pages                 |                     |                                                                                     | E291                                                                              | E303                                                                              | E289                                                                              | E299                                                                              | E291                                                                               |
| Approach angle        |                     |                                                                                     | 75°                                                                               | 75°                                                                               | 65°                                                                               | 60°                                                                               | 45°                                                                                |
| Max. depth of cut(mm) |                     |                                                                                     | 9.5-12.5                                                                          | 3.9                                                                               | 3.3-6.5                                                                           | 13-18                                                                             | 3.0-5.0                                                                            |
| Application           | Facing              |    | ●                                                                                 | ●                                                                                 | ●                                                                                 |                                                                                   | ●                                                                                  |
|                       | High feed milling   |    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Shouldering         |    |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | Slotting            |    |                                                                                   | ●                                                                                 |                                                                                   | ●                                                                                 |                                                                                    |
|                       | Straight ramping    |    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Helical ramping     |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Chamfer & serration |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Profiling           |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Plunging            |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Step down           |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Counter boring      |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |

# Tool Selection Guide

## Milling inserts

| CHASE2QUAD                                                                                                                                  | LIONMILL                                                                                                                        | CHASEMILL                                                                                                         | CHASE10MILL                                                                                                                     | LIONMILL                                                                                                                        | CHASE12MILL                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <div>SNM(G)X 1306 EN...<br/>SNMX 1306 XTN</div> <div></div> | <div>SPKN 1203<br/>SPKN 1504</div> <div></div> | <div>APKT 1705</div> <div></div> | <div>PTKU 0503<br/>PTKU 1006</div> <div></div> | <div>SCKN 2107<br/>SCKN 2708</div> <div></div> | <div>HXX(H)U 0605<br/>HXX(H)U 1007</div> <div></div> |
| <div>P M K</div>                                                                                                                            | <div>P M K</div>                                                                                                                | <div>P M K N S H</div>                                                                                            | <div>P M K</div>                                                                                                                | <div>P K</div>                                                                                                                  | <div>P K</div>                                                                                                                        |
| E292                                                                                                                                        | E296                                                                                                                            | E262                                                                                                              | E282                                                                                                                            | E288                                                                                                                            | E275                                                                                                                                  |
| 75°                                                                                                                                         | 75°                                                                                                                             | 75°                                                                                                               | 65°                                                                                                                             | 60°                                                                                                                             | 45°                                                                                                                                   |
| 9.5                                                                                                                                         | 9.5-12.5                                                                                                                        | 3.9                                                                                                               | 3.3-6.5                                                                                                                         | 13-18                                                                                                                           | 3.0-5.0                                                                                                                               |
| ●                                                                                                                                           | ●                                                                                                                               | ●                                                                                                                 | ●                                                                                                                               | ●                                                                                                                               | ●                                                                                                                                     |
|                                                                                                                                             |                                                                                                                                 |                                                                                                                   |                                                                                                                                 |                                                                                                                                 |                                                                                                                                       |
|                                                                                                                                             |                                                                                                                                 |                                                                                                                   |                                                                                                                                 |                                                                                                                                 |                                                                                                                                       |
|                                                                                                                                             |                                                                                                                                 |                                                                                                                   |                                                                                                                                 |                                                                                                                                 |                                                                                                                                       |
|                                                                                                                                             |                                                                                                                                 |                                                                                                                   |                                                                                                                                 |                                                                                                                                 |                                                                                                                                       |
|                                                                                                                                             |                                                                                                                                 |                                                                                                                   |                                                                                                                                 |                                                                                                                                 |                                                                                                                                       |
| ●                                                                                                                                           | ●                                                                                                                               |                                                                                                                   | ●                                                                                                                               | ●                                                                                                                               | ●                                                                                                                                     |
|                                                                                                                                             |                                                                                                                                 |                                                                                                                   |                                                                                                                                 |                                                                                                                                 |                                                                                                                                       |
|                                                                                                                                             |                                                                                                                                 |                                                                                                                   |                                                                                                                                 |                                                                                                                                 |                                                                                                                                       |
|                                                                                                                                             |                                                                                                                                 |                                                                                                                   |                                                                                                                                 |                                                                                                                                 |                                                                                                                                       |
|                                                                                                                                             |                                                                                                                                 |                                                                                                                   |                                                                                                                                 |                                                                                                                                 |                                                                                                                                       |

● Recommended, ○ Suitable

# Tool Selection Guide

## Milling inserts

|                       |                                                                                                            | CHASE <sup>2</sup> HEPTA                                                                                          | CHASE <sup>+</sup> HEPTA                                                                       | CHASE <sup>2</sup> QUAD                                                                                                  | CHASE <sup>2</sup> QUAD                                                                                     | CHASE <sup>2</sup> MILL                                                                         |
|-----------------------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Series                |                                                                                                            | XNM(H)U 0605<br>XNM(H)U 0906<br> | 7EMT 0604<br> | SNM(G)X 1306 AN...<br>SNMX 1306 XTN<br> | SNMX 1607<br>SNHX 1606<br> | ANHX 1607<br> |
| Material              |                                                                                                            | P M K                                                                                                             | P M K                                                                                          | P M K N                                                                                                                  | P M K                                                                                                       | P M K N S                                                                                       |
| Pages                 |                                                                                                            | E306-E307                                                                                                         | E257                                                                                           | E292                                                                                                                     | E294                                                                                                        | E258                                                                                            |
| Approach angle        |                                                                                                            | 45°                                                                                                               | 45°                                                                                            | 45°                                                                                                                      | 45°                                                                                                         | 45°                                                                                             |
| Max. depth of cut(mm) |                                                                                                            | 1.0-5.0                                                                                                           | 3.2                                                                                            | 6-7                                                                                                                      | 8.8                                                                                                         | 8.4                                                                                             |
| Application           | Facing<br>                | ●                                                                                                                 | ●                                                                                              | ●                                                                                                                        | ●                                                                                                           | ●                                                                                               |
|                       | High feed milling<br>     |                                                                                                                   |                                                                                                |                                                                                                                          |                                                                                                             |                                                                                                 |
|                       | Shouldering<br>           |                                                                                                                   |                                                                                                |                                                                                                                          |                                                                                                             |                                                                                                 |
|                       | Slotting<br>              |                                                                                                                   |                                                                                                |                                                                                                                          |                                                                                                             |                                                                                                 |
|                       | Straight ramping<br>      |                                                                                                                   | ●                                                                                              |                                                                                                                          |                                                                                                             |                                                                                                 |
|                       | Helical ramping<br>     |                                                                                                                   | ●                                                                                              |                                                                                                                          |                                                                                                             |                                                                                                 |
|                       | Chamfer & serration<br> | ●                                                                                                                 | ●                                                                                              | ●                                                                                                                        | ●                                                                                                           |                                                                                                 |
|                       | Profiling<br>           |                                                                                                                   |                                                                                                |                                                                                                                          |                                                                                                             |                                                                                                 |
|                       | Plunging<br>            |                                                                                                                   |                                                                                                |                                                                                                                          |                                                                                                             |                                                                                                 |
|                       | Step down<br>           |                                                                                                                   |                                                                                                |                                                                                                                          |                                                                                                             |                                                                                                 |
|                       | Counter boring<br>      |                                                                                                                   |                                                                                                |                                                                                                                          |                                                                                                             |                                                                                                 |

# Tool Selection Guide

## Milling inserts

| <i>LIONMILL</i>                                                                  | <i>SPEEDBARREL</i>                                                                | <i>CHASE2MOLD</i>                                                                 | <i>CHASEMOLD</i>                                                                  | <i>CHASESPEED</i>                                                                 | <i>CERAMICSPEED</i>                                                                |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| SDKN 1203<br>SDKN 1504<br>SEKN 1203<br>SEKN 1504                                 | BRHU 06R2<br>BRHU 12R3                                                            | RNMU 1004<br>RNMU 1205<br>RNMU 1606                                               | RYM(H)X 0803<br>RYM(H)X 1004<br>RYM(H)X 1205<br>RYM(H)X 1606<br>RYMX 2007         | RNGN 1207 FL<br>RPGN 0903 FL<br>RPGN 1204 FL                                      | BNGX 0603<br>BNGX 0904                                                             |
|  |  |  |  |  |  |
| P                                                                                | P M K S H                                                                         | P M K S H                                                                         | P M K S H                                                                         | S                                                                                 | S                                                                                  |
| E288-E289                                                                        | E272                                                                              | E284                                                                              | E285-E286                                                                         | E283                                                                              | E271                                                                               |
| 45°                                                                              | 90°,75°,45°                                                                       | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                  |
| 6.5-8.7                                                                          | 4.2-12.0                                                                          | 5-8                                                                               | 4-10                                                                              | 4.7-6.3                                                                           | 1.5                                                                                |
| ●                                                                                |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ●                                                                                  |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   | ○                                                                                  |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                                                                                  |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
| ●                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |

● Recommended, ○ Suitable

# Tool Selection Guide

## Milling inserts

| Series                |                     | CERAMICSPEED                                                                        | CHASE10MILL                                                                       | WIN4FEED                                                                          | CHASE4FEED                                                                        | CHASE2FEED                                                                         |
|-----------------------|---------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|                       |                     | BNGX 1207                                                                           | PTKU 0503<br>PTKU 1006                                                            | BLMV 0603                                                                         | BLMP 0402<br>BLMP 0603<br>BLMP 0904<br>BLMP 1105                                  | BLMP 1306                                                                          |
|                       |                     |    |  |  |  |  |
| Material              |                     | S                                                                                   | P M K                                                                             | P M K S H                                                                         | P M K S H                                                                         | P M K S H                                                                          |
| Pages                 |                     | E271                                                                                | E282                                                                              | E270                                                                              | E268                                                                              | E269                                                                               |
| Approach angle        |                     | -                                                                                   | 25°                                                                               |                                                                                   | -                                                                                 | -                                                                                  |
| Max. depth of cut(mm) |                     | 2.5                                                                                 | 1.5-3.0                                                                           | 0.7-1.0                                                                           | 0.5-2.0                                                                           | 2.0                                                                                |
| Application           | Facing              |    | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | High feed milling   |    | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | Shouldering         |    | ○                                                                                 | ○                                                                                 | ○                                                                                 | ○                                                                                  |
|                       | Slotting            |    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Straight ramping    |    | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | Helical ramping     |   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | Chamfer & serration |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Profiling           |  | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | Plunging            |  |                                                                                   | ●                                                                                 |                                                                                   |                                                                                    |
|                       | Step down           |  |                                                                                   | ●                                                                                 |                                                                                   |                                                                                    |
|                       | Counter boring      |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Drill mill          |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |

# Tool Selection Guide

## Milling inserts

| CHASEFEED                                                                        | MILLRUSH                                                                          | CHASEQUAD                                                                         | NANRUSH                                                                           | FINEBARREL                                                                        | FINEBARREL                                                                         |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| SBMT 0603<br>SBMT 0904<br>SBMT 1306                                              | 3PKT 0402<br>3PK(H)T 0603<br>3PK(H)T 1004                                         | SPMG(T) 0904<br>SPMG(T) 1104<br>SPMG(T) 1405<br>XOMT 0602                         | HFN 060<br>HFN 080                                                                | NFLB                                                                              | NFCB                                                                               |
|  |  |  |  |  |  |
| P M K S H                                                                        | P M K N S H                                                                       | P M K                                                                             | P M K S H                                                                         | P M K S H                                                                         | P M K S H                                                                          |
| E287                                                                             | E250                                                                              | E295                                                                              | E274                                                                              | E279                                                                              | E279                                                                               |
| -                                                                                | 30°-60°                                                                           | 15°-45°, 90°                                                                      | 20°                                                                               | -                                                                                 | -                                                                                  |
| 1.0-2.0                                                                          | -                                                                                 | -                                                                                 | 0.3-0.5                                                                           | -                                                                                 | -                                                                                  |
| ●                                                                                |                                                                                   | ●                                                                                 | ●                                                                                 |                                                                                   |                                                                                    |
| ●                                                                                |                                                                                   |                                                                                   | ●                                                                                 |                                                                                   |                                                                                    |
| ○                                                                                |                                                                                   | ●                                                                                 | ○                                                                                 |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
| ●                                                                                |                                                                                   | ●                                                                                 | ●                                                                                 |                                                                                   |                                                                                    |
| ●                                                                                |                                                                                   | ●                                                                                 | ●                                                                                 |                                                                                   |                                                                                    |
|                                                                                  | ●                                                                                 | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
| ●                                                                                |                                                                                   |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                                                                                  |                                                                                   | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                                                                                  |                                                                                   | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |

● Recommended, ○ Suitable

# Tool Selection Guide

## Milling inserts

| Series                |                     |                                                                                     | <i>FINEBALL</i>                                                                   | <i>FINEBALL</i>                                                                   | <i>DUETBALL</i>                                                                   | <i>TRIOBALL</i>                                                                   | <i>CHASEBALL</i>                                                                   |
|-----------------------|---------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|                       |                     |                                                                                     | NFB                                                                               | NFR                                                                               | 2FB                                                                               | 3FB                                                                               | 6RBE                                                                               |
|                       |                     |                                                                                     |  |  |  |  |  |
| Material              |                     |                                                                                     | P M K S H                                                                         | P M K S H                                                                         | P M K S H                                                                         | P M K S H                                                                         | P M K S H                                                                          |
| Pages                 |                     |                                                                                     | E278                                                                              | E280-E281                                                                         | E248/                                                                             | E249                                                                              | E256                                                                               |
| Approach angle        |                     |                                                                                     | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                  |
| Max. depth of cut(mm) |                     |                                                                                     | -                                                                                 | -                                                                                 | 11.8-44.7                                                                         | 39-94                                                                             | 59-69                                                                              |
| Application           | Facing              |    |                                                                                   | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                       | High feed milling   |    |                                                                                   | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                       | Shouldering         |    |                                                                                   | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                       | Slotting            |    |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | Straight ramping    |    | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | Helical ramping     |   | ●                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Chamfer & serration |  |                                                                                   | ○                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | Profiling           |  | ●                                                                                 | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                       | Plunging            |  | ○                                                                                 | ○                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                       | Step down           |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Counter boring      |  | ○                                                                                 | ○                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                       | Drill mill          |  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |



# Tool Selection Guide

## Slotting inserts

|                       |                         | TOP SLOT                                                                            | TOP SLOT                                                                          | TOP SLOT                                                                          | TOP SLOT                                                                          | TSC slotting cutter                                                                |
|-----------------------|-------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Series                |                         | TS16                                                                                | SLOT                                                                              | ZNHT                                                                              | ZNHU                                                                              | TIMC<br>TIMJ<br>TIPV                                                               |
|                       |                         |    |  |  |  |  |
| Material              |                         | P M K S H                                                                           | P M K                                                                             | P M K N                                                                           | P M K                                                                             | P M K N                                                                            |
| Pages                 |                         | E304                                                                                | E290                                                                              | E308                                                                              | E309                                                                              | E300-E301                                                                          |
| Approach angle        |                         | -                                                                                   | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                  |
| Max. depth of cut(mm) |                         | 4.8                                                                                 | *                                                                                 | *                                                                                 | *                                                                                 |                                                                                    |
| Application           | Facing                  |    | ●                                                                                 |                                                                                   |                                                                                   |                                                                                    |
|                       | Shouldering             |    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Slotting                |    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | T slotting              |    |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Side slotting           |    | ●                                                                                 | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       | Internal groove milling |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Bottom shouldering      |  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       | Slitting                |  |                                                                                   | ●                                                                                 | ●                                                                                 | ●                                                                                  |
|                       |                         |                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       |                         |                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       |                         |                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
|                       |                         |                                                                                     |                                                                                   |                                                                                   |                                                                                   |                                                                                    |

► \*: For CDX, refer to the cutter page

● Recommended, ○ Suitable

# Tool Selection Guide

## Tailor-made inserts

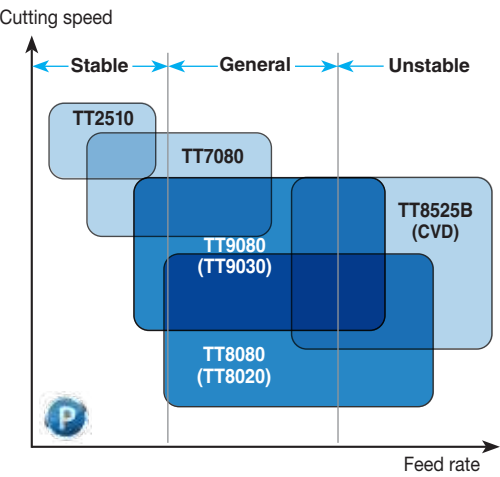
| Series                |                         | Tailor-made Insert                                                                  |   |  |  |  |
|-----------------------|-------------------------|-------------------------------------------------------------------------------------|---|--|--|--|
|                       |                         | LNC<br>PMIN<br>SNA<br>SNB                                                           |   |  |  |  |
|                       |                         |    |   |  |  |  |
| Material              |                         | P M K N S H                                                                         |   |  |  |  |
| Pages                 |                         | E310-E311                                                                           |   |  |  |  |
| Approach angle        |                         | -                                                                                   |   |  |  |  |
| Max. depth of cut(mm) |                         | -                                                                                   |   |  |  |  |
| Application           | Facing                  |    | ● |  |  |  |
|                       | Shouldering             |    | ● |  |  |  |
|                       | Slotting                |    | ● |  |  |  |
|                       | T slotting              |    |   |  |  |  |
|                       | Side slotting           |    | ● |  |  |  |
|                       | Internal groove milling |   |   |  |  |  |
|                       | Bottom shouldering      |  |   |  |  |  |
|                       | Slitting                |  |   |  |  |  |
|                       |                         |                                                                                     |   |  |  |  |
|                       |                         |                                                                                     |   |  |  |  |

● Recommended, ○ Suitable

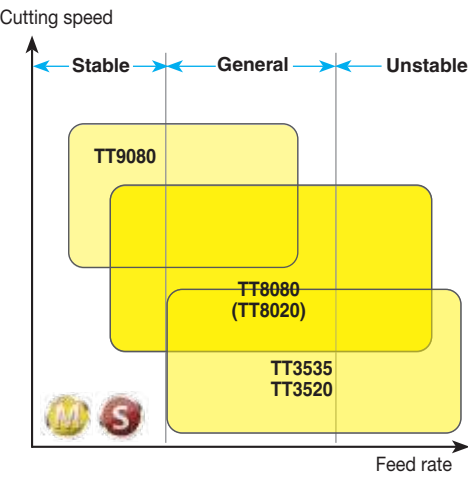
# Grades

## Selection guide for milling grades

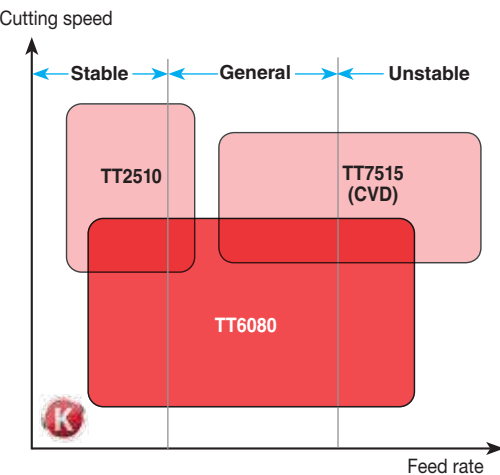
### For steel



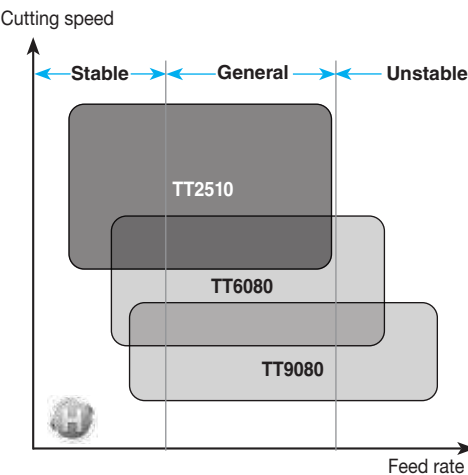
### For stainless steel & super alloy



### For cast iron



### For hardened material



# Grades

## Carbide grades

| Grades                       | ISO                                                                                              | Characteristics & applications                                                                                                                                                         |
|------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>K10</b><br>Carbide        | <b>K05 – K15</b><br><b>N05 – N15</b><br><b>S05 – S15</b>                                         | <ul style="list-style-type: none"> <li>General machining of cast iron, aluminum alloys and non-ferrous materials</li> </ul>                                                            |
| <b>TT2510</b><br>PVD coated  | <b>P05 – P25</b><br><b>H05 – H25</b>                                                             | <ul style="list-style-type: none"> <li>High speed milling of pre-hardened steel and hardened steel</li> </ul>                                                                          |
| <b>TT3535</b><br>PVD coated  | <b>M30 – M50</b><br><b>S30 – S50</b>                                                             | <ul style="list-style-type: none"> <li>Interrupted and rough machining of stainless steel</li> <li>Low speed and interrupted machining of Ti-Alloy and heat-resistant alloy</li> </ul> |
| <b>TT3520</b><br>CVD coated  | <b>M30 – M50</b><br><b>S30 – S50</b>                                                             | <ul style="list-style-type: none"> <li>Interrupted and rough machining of stainless steel</li> <li>Low speed and interrupted machining of Ti-Alloy and heat-resistant alloy</li> </ul> |
| <b>TT6080</b><br>PVD coated  | <b>K05 – K25</b><br><b>H05 – H25</b>                                                             | <ul style="list-style-type: none"> <li>General machining for gray and ductile cast iron</li> <li>Finish and medium machining of hardened steel</li> </ul>                              |
| <b>TT7080</b><br>PVD coated  | <b>P05 – P25</b><br><b>K05 – K25</b>                                                             | <ul style="list-style-type: none"> <li>General milling of steel</li> <li>Heavy interrupted cutting of cast iron</li> </ul>                                                             |
| <b>TT9080</b><br>PVD coated  | <b>P20 – P40</b><br><b>M20 – M40</b><br><b>S20 – S40</b>                                         | <ul style="list-style-type: none"> <li>General machining of steel, stainless steel and heat-resistant alloy</li> </ul>                                                                 |
| <b>TT9030</b><br>PVD coated  | <b>P20 – P40</b><br><b>M20 – M40</b><br><b>S20 – S40</b>                                         | <ul style="list-style-type: none"> <li>General machining of steel, stainless steel and heat-resistant alloy</li> </ul>                                                                 |
| <b>TT8080</b><br>PVD coated  | <b>P30 – P50</b><br><b>M30 – M50</b><br><b>S30 – S50</b>                                         | <ul style="list-style-type: none"> <li>Interrupted and rough machining of steel and stainless steel</li> <li>Low speed and interrupted machining of heat-resistant alloy</li> </ul>    |
| <b>TT8020</b><br>PVD coated  | <b>P30 – P50</b><br><b>M30 – M50</b><br><b>S30 – S50</b>                                         | <ul style="list-style-type: none"> <li>Interrupted and rough machining of steel and stainless steel</li> <li>Low speed and interrupted machining of heat-resistant alloy</li> </ul>    |
| <b>TT5515</b><br>PVD coated  | <b>P10 – P30</b><br><b>M10 – M30</b><br><b>K10 – K30</b><br><b>S10 – S30</b><br><b>H10 – H30</b> | <ul style="list-style-type: none"> <li>High speed milling of steel and hardened steel</li> <li>General milling of stainless steel, cast iron and heat-resistant alloy</li> </ul>       |
| <b>TT5525</b><br>PVD coated  | <b>P20 – P40</b><br><b>M20 – M40</b><br><b>S20 – S40</b>                                         | <ul style="list-style-type: none"> <li>General machining of steel, stainless steel and heat-resistant alloy</li> </ul>                                                                 |
| <b>TT7515</b><br>CVD coated  | <b>K05 – K25</b><br><b>H05 – H25</b>                                                             | <ul style="list-style-type: none"> <li>General machining for gray and ductile cast iron</li> <li>Finish and medium machining of hardened steel</li> </ul>                              |
| <b>TT8525B</b><br>CVD coated | <b>P30 – P45</b><br><b>M30 – M45</b>                                                             | <ul style="list-style-type: none"> <li>Rough milling &amp; high speed drilling of carbon &amp; alloy steel</li> <li>Medium speed milling of stainless steel</li> </ul>                 |

### Cermet, ceramic and CBN grades



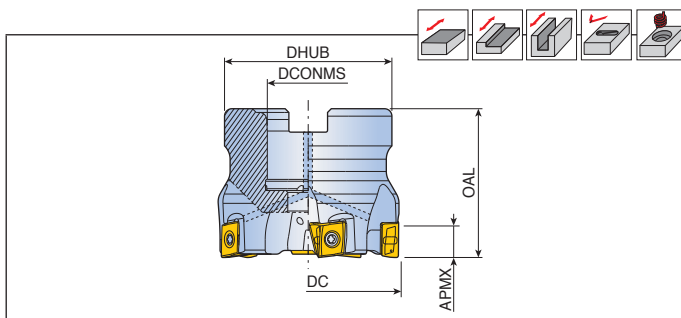
**TaeguTec**  
Member IMC Group



# Milling Cutters



## Face mills

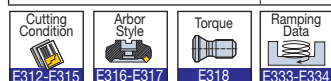


| Designation               |  | Dimension (mm) |        |      |     |      | Coolant<br>hole | Arbor<br>style |  Kg | Mounting<br>bolt | Insert                                                                                                        |
|---------------------------|-----------------------------------------------------------------------------------|----------------|--------|------|-----|------|-----------------|----------------|--------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------------------|
|                           |                                                                                   | DC             | DCONMS | DHUB | OAL | APMX |                 |                |                                                                                      |                  |                                                                                                               |
| <b>4T-TF90-640-16R-09</b> | 6                                                                                 | 40             | 16     | 38   | 40  | 8.3  | ●               | A              | 0.3                                                                                  | SH M8x30         | LPK(H)U<br>0904...<br> E276 |
| <b>550-22R-09</b>         | 5                                                                                 | 50             | 22     | 45   | 40  | 8.3  | ●               | A              | 0.4                                                                                  | SH M10x30        |                                                                                                               |
| <b>750-22R-09</b>         | 7                                                                                 | 50             | 22     | 45   | 40  | 8.3  | ●               | A              | 0.4                                                                                  | SH M10x30        |                                                                                                               |
| <b>663-22R-09</b>         | 6                                                                                 | 63             | 22     | 47   | 40  | 8.3  | ●               | A              | 0.5                                                                                  | SH M10x30        |                                                                                                               |
| <b>1063-22R-09</b>        | 10                                                                                | 63             | 22     | 47   | 40  | 8.3  | ●               | A              | 0.5                                                                                  | SH M10x30        |                                                                                                               |
| <b>4T-TF90-440-16R-14</b> | 4                                                                                 | 40             | 16     | 38   | 40  | 12.5 | ●               | A              | 0.3                                                                                  | SH M8x30         | LPKU<br>1407...<br> E276    |
| <b>450-22R-14</b>         | 4                                                                                 | 50             | 22     | 45   | 40  | 12.5 | ●               | A              | 0.3                                                                                  | SH M10x30        |                                                                                                               |
| <b>650-22R-14</b>         | 6                                                                                 | 50             | 22     | 45   | 40  | 12.5 | ●               | A              | 0.3                                                                                  | SH M10x30        |                                                                                                               |
| <b>563-22R-14</b>         | 5                                                                                 | 63             | 22     | 47   | 40  | 12.5 | ●               | A              | 0.5                                                                                  | SH M10x30        |                                                                                                               |
| <b>863-22R-14</b>         | 8                                                                                 | 63             | 22     | 47   | 40  | 12.5 | ●               | A              | 0.5                                                                                  | SH M10x30        |                                                                                                               |
| <b>780-27R-14</b>         | 7                                                                                 | 80             | 27     | 58   | 50  | 12.5 | ●               | A              | 1.0                                                                                  | SH M12x35        |                                                                                                               |
| <b>1080-27R-14</b>        | 10                                                                                | 80             | 27     | 58   | 50  | 12.5 | ●               | A              | 1.2                                                                                  | SH M12x35        |                                                                                                               |
| <b>8100-32R-14</b>        | 8                                                                                 | 100            | 32     | 85   | 50  | 12.5 | ●               | A              | 2.0                                                                                  | SH M16x35        |                                                                                                               |
| <b>12100-32R-14</b>       | 12                                                                                | 100            | 32     | 85   | 50  | 12.5 | ●               | A              | 2.1                                                                                  | SH M16x35        |                                                                                                               |
| <b>10125-40R-14</b>       | 10                                                                                | 125            | 40     | 85   | 63  | 12.5 | ●               | A              | 3.1                                                                                  | SH M20x40        |                                                                                                               |
| <b>14125-40R-14</b>       | 14                                                                                | 125            | 40     | 85   | 63  | 12.5 | ●               | A              | 3.3                                                                                  | SH M20x40        |                                                                                                               |
| <b>12160-40R-14</b>       | 12                                                                                | 160            | 40     | 110  | 63  | 12.5 | x               | C              | 4.1                                                                                  | -                |                                                                                                               |
| <b>16160-40R-14</b>       | 16                                                                                | 160            | 40     | 110  | 63  | 12.5 | x               | C              | 4.3                                                                                  | -                |                                                                                                               |
| <b>14200-60R-14</b>       | 14                                                                                | 200            | 60     | 130  | 63  | 12.5 | x               | C              | 5.7                                                                                  | -                |                                                                                                               |
| <b>18200-60R-14</b>       | 18                                                                                | 200            | 60     | 130  | 63  | 12.5 | x               | C              | 5.8                                                                                  | -                |                                                                                                               |
|                           |                                                                                   |                |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                               |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

| Designation       | Screw       | Wrench       | Wrench handle |       |  |
|-------------------|-------------|--------------|---------------|-------|--|
|                   |             |              |               |       |  |
| <b>4T-TF90-09</b> | TS 30D082-P | TBLD T08P-W4 | THND 4W       | -     |  |
| <b>4T-TF90-14</b> | TS 40G110I  | TBLD T15-W6  | -             | SW6-T |  |
|                   |             |              |               |       |  |
|                   |             |              |               |       |  |

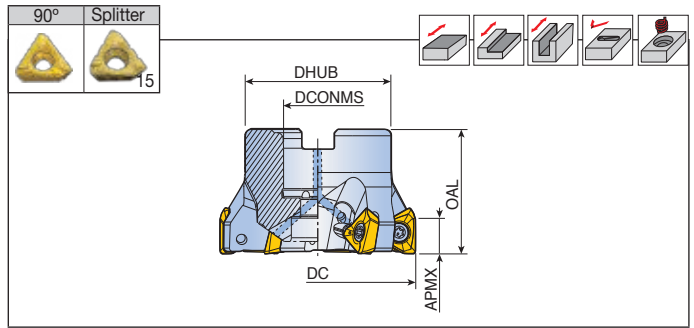
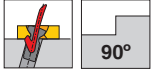




# 3P TF90-06/10/15



## Face mills



| Designation                |  | Dimension (mm) |        |      |     |      | Coolant<br>hole | Arbor<br>style |  Kg | Mounting<br>bolt | Insert                                                                                                        |           |
|----------------------------|-----------------------------------------------------------------------------------|----------------|--------|------|-----|------|-----------------|----------------|--------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------------------|-----------|
|                            |                                                                                   | DC             | DCONMS | DHUB | OAL | APMX |                 |                |                                                                                      |                  |                                                                                                               |           |
| <b>3P TF90- 632-16R-06</b> | 6                                                                                 | 32             | 16     | 30   | 32  | 4.7  | ●               | A              | 0.1                                                                                  | SH M8x30         | 3PK(H)T 0603...<br> E250     |           |
|                            | 732-16R-06                                                                        | 7              | 32     | 16   | 30  | 32   | 4.7             | ●              | A                                                                                    | 0.1              |                                                                                                               | SH M8x30  |
|                            | 735-16R-06                                                                        | 7              | 35     | 16   | 30  | 35   | 4.7             | ●              | A                                                                                    | 0.1              |                                                                                                               | SH M8x30  |
|                            | 840-16R-06                                                                        | 8              | 40     | 16   | 38  | 40   | 4.7             | ●              | A                                                                                    | 0.2              |                                                                                                               | SH M8x30  |
|                            | 840-22R-06                                                                        | 8              | 40     | 22   | 38  | 40   | 4.7             | ●              | A                                                                                    | 0.2              |                                                                                                               | SH M10x30 |
| <b>3P TF90- 540-16R-10</b> | 5                                                                                 | 40             | 16     | 38   | 40  | 7    | ●               | A              | 0.3                                                                                  | SH M8x30         | 3PK(H)T 1004...<br> E250     |           |
|                            | 640-16R-10                                                                        | 6              | 40     | 16   | 38  | 40   | 7               | ●              | A                                                                                    | 0.3              |                                                                                                               | SH M8x30  |
|                            | 650-22R-10                                                                        | 6              | 50     | 22   | 45  | 40   | 7               | ●              | A                                                                                    | 0.4              |                                                                                                               | SH M10x30 |
|                            | 750-22R-10                                                                        | 7              | 50     | 22   | 45  | 40   | 7               | ●              | A                                                                                    | 0.4              |                                                                                                               | SH M10x30 |
|                            | 663-22R-10                                                                        | 6              | 63     | 22   | 45  | 40   | 7               | ●              | A                                                                                    | 0.5              |                                                                                                               | SH M10x30 |
|                            | 863-22R-10                                                                        | 8              | 63     | 22   | 47  | 40   | 7               | ●              | A                                                                                    | 0.5              |                                                                                                               | SH M10x30 |
|                            | 963-22R-10                                                                        | 9              | 63     | 22   | 47  | 40   | 7               | ●              | A                                                                                    | 0.5              |                                                                                                               | SH M10x30 |
| <b>3P TF90- 450-22R-15</b> | 4                                                                                 | 50             | 22     | 45   | 40  | 11   | ●               | A              | 0.3                                                                                  | SH M10x30        | 3PK(H)T 1505...<br> E250-251 |           |
|                            | 550-22R-15                                                                        | 5              | 50     | 22   | 45  | 40   | 11              | ●              | A                                                                                    | 0.3              |                                                                                                               | SH M10x30 |
|                            | 463-22R-15-B                                                                      | 4              | 63     | 22   | 47  | 40   | 11              | ●              | A                                                                                    | 0.5              |                                                                                                               | SH M10x30 |
|                            | 463-27R-15-B                                                                      | 4              | 63     | 27   | 47  | 50   | 11              | ●              | A                                                                                    | 0.5              |                                                                                                               | SH M12x35 |
|                            | 663-22R-15                                                                        | 6              | 63     | 22   | 47  | 40   | 11              | ●              | A                                                                                    | 0.5              |                                                                                                               | SH M10x30 |
|                            | 480-27R-15-B                                                                      | 4              | 80     | 27   | 58  | 50   | 11              | ●              | A                                                                                    | 1.0              |                                                                                                               | SH M12x35 |
|                            | 780-27R-15                                                                        | 7              | 80     | 27   | 58  | 50   | 11              | ●              | A                                                                                    | 1.0              |                                                                                                               | SH M12x35 |
|                            | 880-27R-15                                                                        | 8              | 80     | 27   | 58  | 50   | 11              | ●              | A                                                                                    | 1.0              |                                                                                                               | SH M12x35 |
|                            | 6100-32R-15-B                                                                     | 6              | 100    | 32   | 85  | 50   | 11              | ●              | A                                                                                    | 1.8              |                                                                                                               | LH M16x35 |
|                            | 8100-32R-15                                                                       | 8              | 100    | 32   | 85  | 50   | 11              | ●              | A                                                                                    | 1.9              |                                                                                                               | LH M16x35 |
|                            | 10100-32R-15                                                                      | 10             | 100    | 32   | 85  | 50   | 11              | ●              | A                                                                                    | 1.9              |                                                                                                               | LH M16x35 |
|                            | 7125-40R-15-B                                                                     | 7              | 125    | 40   | 85  | 63   | 11              | ●              | A                                                                                    | 3.0              |                                                                                                               | SH M20x40 |
|                            | 8125-40R-15                                                                       | 8              | 125    | 40   | 85  | 63   | 11              | ●              | A                                                                                    | 3.0              |                                                                                                               | SH M20x40 |
|                            | 10125-40R-15                                                                      | 10             | 125    | 40   | 85  | 63   | 11              | ●              | A                                                                                    | 3.1              |                                                                                                               | SH M20x40 |
|                            | 12125-40R-15                                                                      | 12             | 125    | 40   | 85  | 63   | 11              | ●              | A                                                                                    | 3.1              |                                                                                                               | SH M20x40 |
|                            | 8160-40R-15                                                                       | 8              | 160    | 40   | 85  | 63   | 11              | x              | C                                                                                    | 4.4              |                                                                                                               | -         |
|                            | 12160-40R-15                                                                      | 12             | 160    | 40   | 110 | 63   | 11              | x              | C                                                                                    | 4.4              |                                                                                                               | -         |
|                            | 15160-40R-15                                                                      | 15             | 160    | 40   | 110 | 63   | 11              | x              | C                                                                                    | 4.4              |                                                                                                               | -         |
|                            | 15200-60R-15                                                                      | 15             | 200    | 60   | 130 | 63   | 11              | x              | C                                                                                    | 6.0              |                                                                                                               | -         |
|                            | 18200-60R-15                                                                      | 18             | 200    | 60   | 130 | 63   | 11              | x              | C                                                                                    | 5.8              |                                                                                                               | -         |
|                            |                                                                                   |                |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                               |           |
|                            |                                                                                   |                |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                               |           |
|                            |                                                                                   |                |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                               |           |

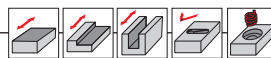
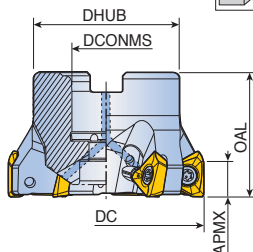
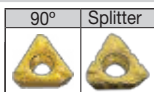
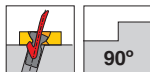


► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

# 3P TF90-19



## Face mills



| Designation                |  | Dimension (mm) |        |      |     |      | Coolant<br>hole | Arbor<br>style |  Kg | Mounting<br>bolt | Insert                                                                                                                           |
|----------------------------|-----------------------------------------------------------------------------------|----------------|--------|------|-----|------|-----------------|----------------|--------------------------------------------------------------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------|
|                            |                                                                                   | DC             | DCONMS | DHUB | OAL | APMX |                 |                |                                                                                      |                  |                                                                                                                                  |
| <b>3P TF90- 463-22R-19</b> | 4                                                                                 | 63             | 22     | 47   | 40  | 15   | ●               | A              | 0.4                                                                                  | SH M10x30        | <div>3PK(H)T 1906...</div> <div> E250-251</div> |
| <b>663-22R-19</b>          | 6                                                                                 | 63             | 22     | 47   | 40  | 15   | ●               | A              | 0.9                                                                                  | SH M10x30        |                                                                                                                                  |
| <b>480-27R-19</b>          | 4                                                                                 | 80             | 27     | 58   | 50  | 15   | ●               | A              | 0.9                                                                                  | SH M12x35        |                                                                                                                                  |
| <b>780-27R-19</b>          | 7                                                                                 | 80             | 27     | 58   | 50  | 15   | ●               | A              | 1.0                                                                                  | SH M12x35        |                                                                                                                                  |
| <b>6100-32R-19</b>         | 6                                                                                 | 100            | 32     | 85   | 50  | 15   | ●               | A              | 1.8                                                                                  | LH M16x35        |                                                                                                                                  |
| <b>8100-32R-19</b>         | 8                                                                                 | 100            | 32     | 85   | 50  | 15   | ●               | A              | 2.6                                                                                  | LH M16x35        |                                                                                                                                  |
| <b>6125-40R-19</b>         | 6                                                                                 | 125            | 40     | 85   | 63  | 15   | ●               | A              | 3.0                                                                                  | SH M20x40        |                                                                                                                                  |
| <b>8125-40R-19</b>         | 8                                                                                 | 125            | 40     | 85   | 63  | 15   | ●               | A              | 3.0                                                                                  | SH M20x40        |                                                                                                                                  |
| <b>10125-40R-19</b>        | 10                                                                                | 125            | 40     | 85   | 63  | 15   | ●               | A              | 3.1                                                                                  | SH M20x40        |                                                                                                                                  |
| <b>8160-40R-19</b>         | 8                                                                                 | 160            | 40     | 110  | 63  | 15   | x               | C              | 4.2                                                                                  | -                |                                                                                                                                  |
| <b>12160-40R-19</b>        | 12                                                                                | 160            | 40     | 110  | 63  | 15   | x               | C              | 4.3                                                                                  | -                |                                                                                                                                  |
| <b>10200-60R-19</b>        | 10                                                                                | 200            | 60     | 130  | 63  | 15   | x               | C              | 6.0                                                                                  | -                |                                                                                                                                  |
| <b>14200-60R-19</b>        | 14                                                                                | 200            | 60     | 130  | 63  | 15   | x               | C              | 6.0                                                                                  | -                |                                                                                                                                  |
| <b>12250-60R-19</b>        | 12                                                                                | 250            | 60     | 160  | 63  | 15   | x               | C              | 10.5                                                                                 | -                |                                                                                                                                  |
| <b>16250-60R-19</b>        | 16                                                                                | 250            | 60     | 160  | 63  | 15   | x               | C              | 10.5                                                                                 | -                |                                                                                                                                  |
|                            |                                                                                   |                |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                                                  |
|                            |                                                                                   |                |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                                                  |
|                            |                                                                                   |                |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                                                  |
|                            |                                                                                   |                |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                                                  |
|                            |                                                                                   |                |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                                                  |
|                            |                                                                                   |                |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                                                  |
|                            |                                                                                   |                |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                                                  |
|                            |                                                                                   |                |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                                                  |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

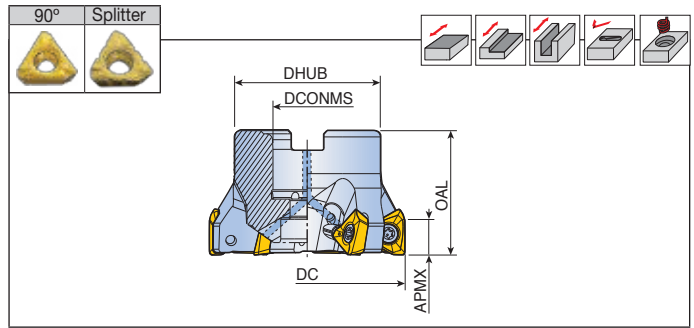
| Designation       | Screw          | Wrench |       |  |  |
|-------------------|----------------|--------|-------|--|--|
|                   |                |        |       |  |  |
| <b>3P TF90-06</b> | TS 20043I/HG-P | TD 6P  | -     |  |  |
| <b>3P TF90-10</b> | TS 25C065I/HG  | TD 8   | -     |  |  |
| <b>3P TF90-15</b> | TS 40B100I     | TD 15  | -     |  |  |
| <b>3P TF90-19</b> | TS 45120I      | -      | T-T20 |  |  |



# 3P TF90-15/19



Face mills (Inch bore)



| Designation                   |  | Dimension (mm) |        |      |     |      | Coolant hole | Arbor style |  Kg | Mounting bolt | Insert                                                                                                        |
|-------------------------------|-----------------------------------------------------------------------------------|----------------|--------|------|-----|------|--------------|-------------|--------------------------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------|
|                               |                                                                                   | DC             | DCONMS | DHUB | OAL | APMX |              |             |                                                                                      |               |                                                                                                               |
| <b>3P TF90-480-25.4R-15-B</b> | 4                                                                                 | 80             | 25.4   | 70   | 50  | 11   | ●            | A           | 1.2                                                                                  | SH M12x35     |  3PK(H)T 1505...<br>E250-251 |
| <b>780-25.4R-15</b>           | 7                                                                                 | 80             | 25.4   | 70   | 50  | 11   | ●            | A           | 1.0                                                                                  | SH M12x35     |                                                                                                               |
| <b>880-25.4R-15</b>           | 8                                                                                 | 80             | 25.4   | 70   | 50  | 11   | ●            | A           | 1.0                                                                                  | SH M12x35     |                                                                                                               |
| <b>6100-31.75R-15-B</b>       | 6                                                                                 | 100            | 31.75  | 80   | 50  | 11   | ●            | B           | 1.5                                                                                  | -             |                                                                                                               |
| <b>8100-31.75R-15</b>         | 8                                                                                 | 100            | 31.75  | 80   | 50  | 11   | x            | B           | 1.9                                                                                  | -             |                                                                                                               |
| <b>10100-31.75R-15</b>        | 10                                                                                | 100            | 31.75  | 80   | 50  | 11   | x            | B           | 1.9                                                                                  | -             |                                                                                                               |
| <b>7125-38.1R-15-B</b>        | 7                                                                                 | 125            | 38.1   | 80   | 63  | 11   | x            | B           | 2.4                                                                                  | -             |                                                                                                               |
| <b>10125-38.1R-15</b>         | 10                                                                                | 125            | 38.1   | 80   | 63  | 11   | x            | B           | 3.1                                                                                  | -             |                                                                                                               |
| <b>12125-38.1R-15</b>         | 12                                                                                | 125            | 38.1   | 80   | 63  | 11   | x            | B           | 3.1                                                                                  | -             |                                                                                                               |
| <b>8160-50.8R-15</b>          | 8                                                                                 | 160            | 50.8   | 100  | 63  | 11   | x            | B           | 2.6                                                                                  | -             |                                                                                                               |
| <b>12160-50.8R-15</b>         | 12                                                                                | 160            | 50.8   | 100  | 63  | 11   | x            | B           | 4.4                                                                                  | -             |                                                                                                               |
| <b>15160-50.8R-15</b>         | 15                                                                                | 160            | 50.8   | 100  | 63  | 11   | x            | B           | 4.4                                                                                  | -             |                                                                                                               |
| <b>15200-47.625R-15</b>       | 15                                                                                | 200            | 47.625 | 130  | 63  | 11   | x            | C           | 6.0                                                                                  | -             |                                                                                                               |
| <b>3P TF90-480-25.4R-19</b>   | 4                                                                                 | 80             | 25.4   | 70   | 50  | 15   | ●            | A           | 0.9                                                                                  | SH M12x35     |  3PK(H)T 1906...<br>E250-251 |
| <b>780-25.4R-19</b>           | 7                                                                                 | 80             | 25.4   | 70   | 50  | 15   | ●            | A           | 1.0                                                                                  | SH M12x35     |                                                                                                               |
| <b>6100-31.75R-19</b>         | 6                                                                                 | 100            | 31.75  | 80   | 50  | 15   | x            | B           | 1.8                                                                                  | -             |                                                                                                               |
| <b>8100-31.75R-19</b>         | 8                                                                                 | 100            | 31.75  | 80   | 50  | 15   | x            | B           | 2.6                                                                                  | -             |                                                                                                               |
| <b>6125-38.1R-19</b>          | 6                                                                                 | 125            | 38.1   | 80   | 63  | 15   | x            | B           | 4.4                                                                                  | -             |                                                                                                               |
| <b>8125-38.1R-19</b>          | 8                                                                                 | 125            | 38.1   | 80   | 63  | 15   | x            | B           | 3.0                                                                                  | -             |                                                                                                               |
| <b>10125-38.1R-19</b>         | 10                                                                                | 125            | 38.1   | 80   | 63  | 15   | x            | B           | 3.1                                                                                  | -             |                                                                                                               |
| <b>8160-50.8R-19</b>          | 8                                                                                 | 160            | 50.8   | 100  | 63  | 15   | x            | B           | 4.2                                                                                  | -             |                                                                                                               |
| <b>12160-50.8R-19</b>         | 12                                                                                | 160            | 50.8   | 100  | 63  | 15   | x            | B           | 4.3                                                                                  | -             |                                                                                                               |
| <b>10200-47.625R-19</b>       | 10                                                                                | 200            | 47.625 | 130  | 63  | 15   | x            | C           | 6.0                                                                                  | -             |                                                                                                               |
| <b>14200-47.625R-19</b>       | 14                                                                                | 200            | 47.625 | 130  | 63  | 15   | x            | C           | 6.0                                                                                  | -             |                                                                                                               |

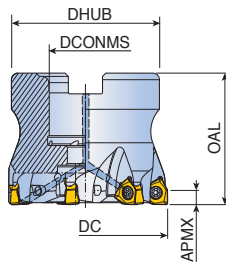
► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

| Designation       | Screw      | Wrench |       |  |  |
|-------------------|------------|--------|-------|--|--|
|                   |            |        |       |  |  |
| <b>3P TF90-15</b> | TS 40B100I | TD 15  | -     |  |  |
| <b>3P TF90-19</b> | TS 45I20I  | -      | T-T20 |  |  |
|                   |            |        |       |  |  |
|                   |            |        |       |  |  |



# MILL 2 RUSH

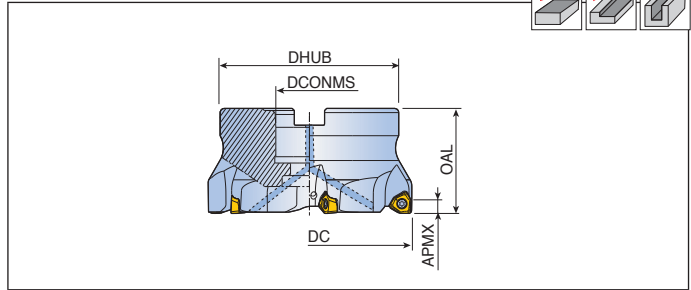


► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

| Designation       | Screw                                                                               | Wrench                                                                              |  |  |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                   |  |  |  |  |  |
| <b>6N TF90-04</b> | TS 25064I                                                                           | TD 8                                                                                |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |



## Face mills



| Designation               |    | Dimension (mm) |        |      |     |      | Coolant hole | Arbor style | Kg   | Mounting bolt | Insert               |
|---------------------------|----|----------------|--------|------|-----|------|--------------|-------------|------|---------------|----------------------|
|                           |    | DC             | DCONMS | DHUB | OAL | APMX |              |             |      |               |                      |
| <b>6N TF90-440-16R-06</b> | 4  | 40             | 16     | 38   | 40  | 6.2  | ●            | A           | 0.3  | SH M8x30      | 6NGU 0604...<br>E254 |
| <b>450-22R-06</b>         | 4  | 50             | 22     | 45   | 40  | 6.2  | ●            | A           | 0.4  | LH M10x25     |                      |
| <b>650-22R-06</b>         | 6  | 50             | 22     | 45   | 40  | 6.2  | ●            | A           | 0.4  | LH M10x25     |                      |
| <b>463-22R-06</b>         | 4  | 63             | 22     | 47   | 40  | 6.2  | ●            | A           | 0.5  | LH M10x25     |                      |
| <b>663-22R-06</b>         | 6  | 63             | 22     | 47   | 40  | 6.2  | ●            | A           | 0.5  | LH M10x25     |                      |
| <b>763-22R-06</b>         | 7  | 63             | 22     | 47   | 40  | 6.2  | ●            | A           | 0.5  | LH M10x25     |                      |
| <b>580-27R-06</b>         | 5  | 80             | 27     | 58   | 50  | 6.2  | ●            | A           | 1.0  | SH M12x35     |                      |
| <b>680-27R-06</b>         | 6  | 80             | 27     | 58   | 50  | 6.2  | ●            | A           | 1.0  | SH M12x35     |                      |
| <b>780-27R-06</b>         | 7  | 80             | 27     | 58   | 50  | 6.2  | ●            | A           | 1.0  | SH M12x35     |                      |
| <b>980-27R-06</b>         | 9  | 80             | 27     | 58   | 50  | 6.2  | ●            | A           | 1.0  | SH M12x35     |                      |
| <b>6100-32R-06</b>        | 6  | 100            | 32     | 85   | 50  | 6.2  | ●            | A           | 1.9  | SH M16x35     |                      |
| <b>8100-32R-06</b>        | 8  | 100            | 32     | 85   | 50  | 6.2  | ●            | A           | 1.9  | SH M16x35     |                      |
| <b>11100-32R-06</b>       | 11 | 100            | 32     | 85   | 50  | 6.2  | ●            | A           | 1.9  | SH M16x35     |                      |
| <b>7125-40R-06</b>        | 7  | 125            | 40     | 85   | 63  | 6.2  | ●            | A           | 3.2  | SH M20x40     |                      |
| <b>11125-40R-06</b>       | 11 | 125            | 40     | 85   | 63  | 6.2  | ●            | A           | 3.2  | SH M20x40     |                      |
| <b>6N TF90-450-22R-09</b> | 4  | 50             | 22     | 45   | 40  | 9.2  | ●            | A           | 0.3  | LH M10x25     | 6NGU 0905...<br>E254 |
| <b>550-22R-09</b>         | 5  | 50             | 22     | 45   | 40  | 9.2  | ●            | A           | 0.4  | LH M10x25     |                      |
| <b>463-22R-09</b>         | 4  | 63             | 22     | 47   | 40  | 9.2  | ●            | A           | 0.5  | LH M10x25     |                      |
| <b>663-22R-09</b>         | 6  | 63             | 22     | 47   | 40  | 9.2  | ●            | A           | 0.5  | LH M10x25     |                      |
| <b>763-22R-09</b>         | 7  | 63             | 22     | 47   | 40  | 9.2  | ●            | A           | 0.5  | LH M10x25     |                      |
| <b>580-27R-09</b>         | 5  | 80             | 27     | 58   | 50  | 9.2  | ●            | A           | 1.0  | SH M12x35     |                      |
| <b>780-27R-09</b>         | 7  | 80             | 27     | 58   | 50  | 9.2  | ●            | A           | 1.1  | SH M12x35     |                      |
| <b>880-27R-09</b>         | 8  | 80             | 27     | 58   | 50  | 9.2  | ●            | A           | 1.1  | SH M12x35     |                      |
| <b>980-27R-09</b>         | 9  | 80             | 27     | 58   | 50  | 9.2  | ●            | A           | 1.1  | SH M12x35     |                      |
| <b>6100-32R-09</b>        | 6  | 100            | 32     | 85   | 50  | 9.2  | ●            | A           | 1.9  | LH M16x35     |                      |
| <b>8100-32R-09</b>        | 8  | 100            | 32     | 85   | 50  | 9.2  | ●            | A           | 1.8  | LH M16x35     |                      |
| <b>11100-32R-09</b>       | 11 | 100            | 32     | 85   | 50  | 9.2  | ●            | A           | 1.9  | LH M16x35     |                      |
| <b>7125-40R-09</b>        | 7  | 125            | 40     | 85   | 63  | 9.2  | ●            | A           | 3.1  | SH M20x40     |                      |
| <b>8125-40R-09</b>        | 8  | 125            | 40     | 85   | 63  | 9.2  | ●            | A           | 3.1  | SH M20x40     |                      |
| <b>11125-40R-09</b>       | 11 | 125            | 40     | 85   | 63  | 9.2  | ●            | A           | 3.1  | SH M20x40     |                      |
| <b>14125-40R-09</b>       | 14 | 125            | 40     | 85   | 63  | 9.2  | ●            | A           | 3.2  | SH M20x40     |                      |
| <b>12160-40R-09</b>       | 12 | 160            | 40     | 110  | 63  | 9.2  | x            | C           | 4.3  | -             |                      |
| <b>16160-40R-09</b>       | 16 | 160            | 40     | 110  | 63  | 9.2  | x            | C           | 4.3  | -             |                      |
| <b>14200-60R-09</b>       | 14 | 200            | 60     | 130  | 63  | 9.2  | x            | C           | 5.9  | -             |                      |
| <b>18200-60R-09</b>       | 18 | 200            | 60     | 130  | 63  | 9.2  | x            | C           | 5.9  | -             |                      |
| <b>18250-60R-09</b>       | 18 | 250            | 60     | 160  | 63  | 9.2  | x            | C           | 10.7 | -             |                      |
| <b>22250-60R-09</b>       | 22 | 250            | 60     | 160  | 63  | 9.2  | x            | C           | 10.8 | -             |                      |

► Mounting bolt with coolant through hole is available on request  
(ordering example: SH M10x1.5x30-C)



E312-E315



E316-E317

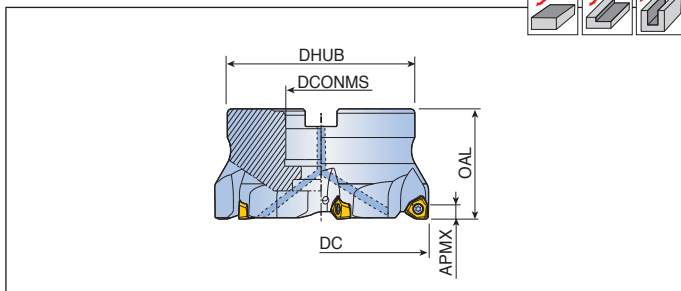


E318

# 6N TF90-06/09



Face mills (Inch bore)



| Designation                 |  | Dimension (mm) |        |      |     |      | Coolant<br>hole | Arbor<br>style |  Kg | Mounting<br>bolt | Insert                                                                                                 |
|-----------------------------|-----------------------------------------------------------------------------------|----------------|--------|------|-----|------|-----------------|----------------|--------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------|
|                             |                                                                                   | DC             | DCONMS | DHUB | OAL | APMX |                 |                |                                                                                      |                  |                                                                                                        |
| <b>6N TF90-580-25.4R-06</b> | 5                                                                                 | 80             | 25.4   | 70   | 50  | 6.2  | ●               | A              | 1.0                                                                                  | SH M12x35        | 6NGU 0604...<br> E254 |
| <b>780-25.4R-06</b>         | 7                                                                                 | 80             | 25.4   | 70   | 50  | 6.2  | ●               | A              | 1.0                                                                                  | SH M12x35        |                                                                                                        |
| <b>980-25.4R-06</b>         | 9                                                                                 | 80             | 25.4   | 70   | 50  | 6.2  | ●               | A              | 1.0                                                                                  | SH M12x35        |                                                                                                        |
| <b>6100-31.75R-06</b>       | 6                                                                                 | 100            | 31.75  | 80   | 50  | 6.2  | x               | B              | 1.9                                                                                  | -                |                                                                                                        |
| <b>8100-31.75R-06</b>       | 8                                                                                 | 100            | 31.75  | 80   | 50  | 6.2  | x               | B              | 1.9                                                                                  | -                |                                                                                                        |
| <b>11100-31.75R-06</b>      | 11                                                                                | 100            | 31.75  | 80   | 50  | 6.2  | x               | B              | 1.9                                                                                  | -                |                                                                                                        |
| <b>7125-38.1R-06</b>        | 7                                                                                 | 125            | 38.1   | 80   | 63  | 6.2  | x               | B              | 3.2                                                                                  | -                |                                                                                                        |
| <b>6N TF90-580-25.4R-09</b> | 5                                                                                 | 80             | 25.4   | 58   | 50  | 9.2  | ●               | A              | 1.0                                                                                  | SH M12x35        | 6NGU 0905...<br> E254 |
| <b>780-25.4R-09</b>         | 7                                                                                 | 80             | 25.4   | 58   | 50  | 9.2  | ●               | A              | 1.1                                                                                  | SH M12x35        |                                                                                                        |
| <b>980-25.4R-09</b>         | 9                                                                                 | 80             | 25.4   | 58   | 50  | 9.2  | ●               | A              | 1.1                                                                                  | SH M12x35        |                                                                                                        |
| <b>6100-31.75R-09</b>       | 6                                                                                 | 100            | 31.75  | 80   | 50  | 9.2  | x               | B              | 1.9                                                                                  | -                |                                                                                                        |
| <b>8100-31.75R-09</b>       | 8                                                                                 | 100            | 31.75  | 80   | 50  | 9.2  | x               | B              | 1.8                                                                                  | -                |                                                                                                        |
| <b>11100-31.75R-09</b>      | 11                                                                                | 100            | 31.75  | 80   | 50  | 9.2  | x               | B              | 1.9                                                                                  | -                |                                                                                                        |
| <b>7125-38.1R-09</b>        | 7                                                                                 | 125            | 38.1   | 80   | 63  | 9.2  | x               | B              | 3.1                                                                                  | -                |                                                                                                        |
| <b>11125-38.1R-09</b>       | 11                                                                                | 125            | 38.1   | 80   | 63  | 9.2  | x               | B              | 3.1                                                                                  | -                |                                                                                                        |
| <b>14125-38.1R-09</b>       | 14                                                                                | 125            | 38.1   | 80   | 63  | 9.2  | x               | B              | 3.2                                                                                  | -                |                                                                                                        |
| <b>12160-50.8R-09</b>       | 12                                                                                | 160            | 50.8   | 100  | 63  | 9.2  | x               | B              | 4.3                                                                                  | -                |                                                                                                        |
| <b>16160-50.8R-09</b>       | 16                                                                                | 160            | 50.8   | 100  | 63  | 9.2  | x               | B              | 4.3                                                                                  | -                |                                                                                                        |
|                             |                                                                                   |                |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                        |
|                             |                                                                                   |                |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                        |
|                             |                                                                                   |                |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                        |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

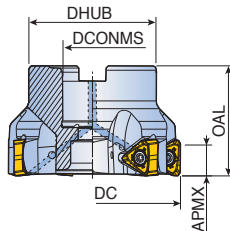
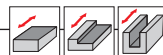
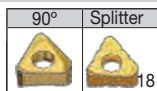
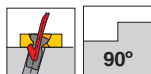
| Designation       | Screw        | Wrench |       |  |  |
|-------------------|--------------|--------|-------|--|--|
|                   |              |        |       |  |  |
| <b>6N TF90-06</b> | TS 30085I/HG | TD 9   | -     |  |  |
| <b>6N TF90-09</b> | TS 40B100I   | -      | T-T15 |  |  |
|                   |              |        |       |  |  |
|                   |              |        |       |  |  |



# SCRM90TN-18/22



## Face mills



| Designation                |  | Dimension (mm) |        |      |     |      | Coolant hole | Arbor style |  Kg | Mounting bolt | Insert                                                                                                    |           |
|----------------------------|-----------------------------------------------------------------------------------|----------------|--------|------|-----|------|--------------|-------------|--------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------|-----------|
|                            |                                                                                   | DC             | DCONMS | DHUB | OAL | APMX |              |             |                                                                                      |               |                                                                                                           |           |
| <b>SCRM90TN 450-16R-18</b> | 4                                                                                 | 50             | 16     | 38   | 40  | 13   | ●            | A           | 0.3                                                                                  | SH M8x30      | TNMX 1806...<br> E302    |           |
|                            | 563-22R-18                                                                        | 5              | 63     | 22   | 47  | 40   | 13           | ●           | A                                                                                    | 0.5           |                                                                                                           | SH M10x30 |
|                            | 580-27R-18                                                                        | 5              | 80     | 27   | 58  | 50   | 13           | ●           | A                                                                                    | 1.1           |                                                                                                           | SH M12x35 |
|                            | 780-27R-18                                                                        | 7              | 80     | 27   | 58  | 50   | 13           | ●           | A                                                                                    | 1.1           |                                                                                                           | SH M12x35 |
|                            | 6100-32R-18-B                                                                     | 6              | 100    | 32   | 85  | 50   | 13           | ●           | A                                                                                    | 2.0           |                                                                                                           | SH M16x35 |
|                            | 8100-32R-18                                                                       | 8              | 100    | 32   | 85  | 50   | 13           | ●           | A                                                                                    | 2.0           |                                                                                                           | SH M16x35 |
|                            | 7125-40R-18-B                                                                     | 7              | 125    | 40   | 85  | 63   | 13           | ●           | A                                                                                    | 3.4           |                                                                                                           | SH M20x40 |
|                            | 10125-40R-18                                                                      | 10             | 125    | 40   | 85  | 63   | 13           | ●           | A                                                                                    | 3.3           |                                                                                                           | SH M20x40 |
|                            | 10160-40R-18                                                                      | 10             | 160    | 40   | 110 | 63   | 13           | x           | C                                                                                    | 4.5           |                                                                                                           | -         |
|                            | 14160-40R-18                                                                      | 14             | 160    | 40   | 110 | 63   | 13           | x           | C                                                                                    | 4.5           |                                                                                                           | -         |
| 16200-60R-18               | 16                                                                                | 200            | 60     | 130  | 63  | 13   | x            | C           | 6.2                                                                                  | -             |                                                                                                           |           |
| <b>SCRM90TN 350-16R-22</b> | 3                                                                                 | 50             | 16     | 38   | 40  | 15   | ●            | A           | 0.3                                                                                  | SH M8x30      | TNM(G)X 2207...<br> E302 |           |
|                            | 463-22R-22                                                                        | 4              | 63     | 22   | 47  | 40   | 15           | ●           | A                                                                                    | 0.4           |                                                                                                           | SH M10x30 |
|                            | 580-27R-22                                                                        | 5              | 80     | 27   | 58  | 50   | 15           | ●           | A                                                                                    | 0.9           |                                                                                                           | SH M12x35 |
|                            | 6100-32R-22                                                                       | 6              | 100    | 32   | 85  | 50   | 15           | ●           | A                                                                                    | 1.8           |                                                                                                           | SH M16x35 |
|                            | 8125-40R-22                                                                       | 8              | 125    | 40   | 85  | 63   | 15           | ●           | A                                                                                    | 3.0           |                                                                                                           | SH M20x40 |
|                            | 10160-40R-22                                                                      | 10             | 160    | 40   | 110 | 63   | 15           | x           | C                                                                                    | 4.2           |                                                                                                           | -         |
|                            | 12200-60R-22                                                                      | 12             | 200    | 60   | 130 | 63   | 15           | x           | C                                                                                    | 6             |                                                                                                           | -         |
|                            | 14250-60R-22                                                                      | 14             | 250    | 60   | 160 | 63   | 15           | x           | C                                                                                    | 10.6          |                                                                                                           | -         |
|                            |                                                                                   |                |        |      |     |      |              |             |                                                                                      |               |                                                                                                           |           |
|                            |                                                                                   |                |        |      |     |      |              |             |                                                                                      |               |                                                                                                           |           |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

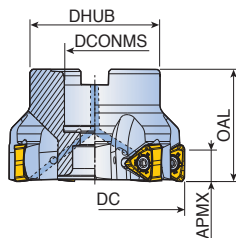
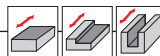
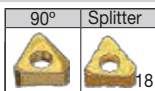
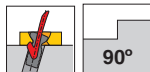
| Designation        | Screw      | Wrench |  |  |  |
|--------------------|------------|--------|--|--|--|
|                    |            |        |  |  |  |
| <b>SCRM90TN-18</b> | TS 40B100I | T-T15  |  |  |  |
| <b>SCRM90TN-22</b> | TS 45I20I  | T-T20  |  |  |  |
|                    |            |        |  |  |  |
|                    |            |        |  |  |  |
|                    |            |        |  |  |  |



# SCRM90TN



Face mills (Inch bore)



| Designation                  |    | Dimension (mm) |        |      |     |      | Coolant hole | Arbor style | Kg  | Mounting bolt | Insert                  |
|------------------------------|----|----------------|--------|------|-----|------|--------------|-------------|-----|---------------|-------------------------|
|                              |    | DC             | DCONMS | DHUB | OAL | APMX |              |             |     |               |                         |
| <b>SCRM90TN 580-25.4R-18</b> | 5  | 80             | 25.4   | 70   | 50  | 13   | ●            | A           | 1.1 | SH M12x35     | TNMX 1806...<br>E302    |
| <b>780-25.4R-18</b>          | 7  | 80             | 25.4   | 70   | 50  | 13   | ●            | A           | 1.1 | SH M12x35     |                         |
| <b>6100-31.75R-18-B</b>      | 6  | 100            | 31.75  | 80   | 50  | 13   | x            | B           | 2.0 | -             |                         |
| <b>8100-31.75R-18</b>        | 8  | 100            | 31.75  | 80   | 50  | 13   | x            | B           | 2.0 | -             |                         |
| <b>7125-38.1R-18-B</b>       | 7  | 125            | 38.1   | 80   | 63  | 13   | x            | B           | 3.4 | -             |                         |
| <b>10125-38.1R-18</b>        | 10 | 125            | 38.1   | 80   | 63  | 13   | x            | B           | 3.3 | -             |                         |
| <b>10160-50.8R-18</b>        | 10 | 160            | 50.8   | 100  | 63  | 13   | x            | B           | 4.5 | -             |                         |
| <b>14160-50.8R-18</b>        | 14 | 160            | 50.8   | 100  | 63  | 13   | x            | B           | 4.5 | -             |                         |
| <b>16200-47.625R-18</b>      | 16 | 200            | 47.625 | 130  | 63  | 13   | x            | C           | 6.2 | -             |                         |
| <b>SCRM90TN 580-25.4R-22</b> | 5  | 80             | 25.4   | 70   | 50  | 15   | ●            | A           | 0.9 | SH M12x35     | TNM(G)X 2207...<br>E302 |
| <b>6100-31.75R-22</b>        | 6  | 100            | 31.75  | 80   | 50  | 15   | x            | B           | 1.8 | -             |                         |
| <b>8125-38.1R-22</b>         | 8  | 125            | 38.1   | 80   | 63  | 15   | x            | B           | 3.0 | -             |                         |
| <b>10160-50.8R-22</b>        | 10 | 160            | 50.8   | 100  | 63  | 15   | x            | B           | 4.3 | -             |                         |
| <b>12200-47.625R-22</b>      | 12 | 200            | 47.625 | 130  | 63  | 15   | x            | C           | 6.0 | -             |                         |
|                              |    |                |        |      |     |      |              |             |     |               |                         |
|                              |    |                |        |      |     |      |              |             |     |               |                         |
|                              |    |                |        |      |     |      |              |             |     |               |                         |

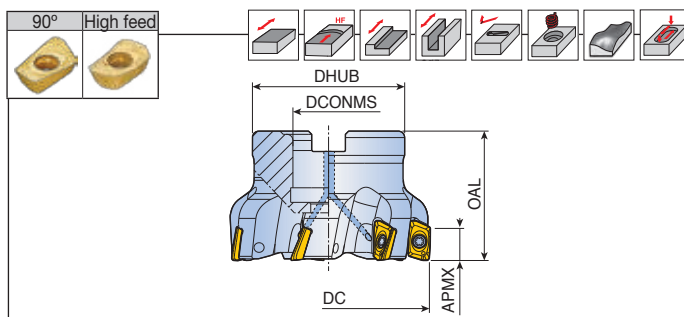
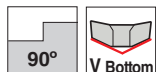
► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

| Designation        | Screw      | Wrench |  |  |  |
|--------------------|------------|--------|--|--|--|
|                    |            |        |  |  |  |
| <b>SCRM90TN-18</b> | TS 40B100I | T-T15  |  |  |  |
| <b>SCRM90TN-22</b> | TS 45I20I  | T-T20  |  |  |  |
|                    |            |        |  |  |  |
|                    |            |        |  |  |  |



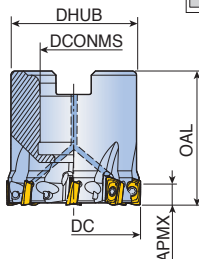
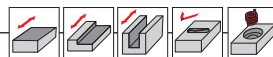


[illegible]

- ▶ When using the "AVKT 1004R-HF" insert, the cutter body needs to be modified to a corner radius of 3.0 mm
- ▶ When using "AVKT 10" insert with a corner radius of 2.0 mm or bigger, the cutter body corner radius should be adjusted to insert "R" + 0.2 mm
- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

| Designation       | Screw                                                                               | Wrench                                                                              |  |  |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                   |  |  |  |  |  |
| <b>TFM90AV-10</b> | TS 30B062/HG-P                                                                      | TD 8P                                                                               |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |





- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)
- ▶ Cutter body for 'AXMT 06' insert with corner radius more than 1.0mm should be modified accordingly body "RE"=Insert "RE"-0.1mm
- ▶ Cutter body for 'APKT09' insert with corner radius more than 2.4mm should be modified accordingly body "RE"=Insert "RE"-0.2mm

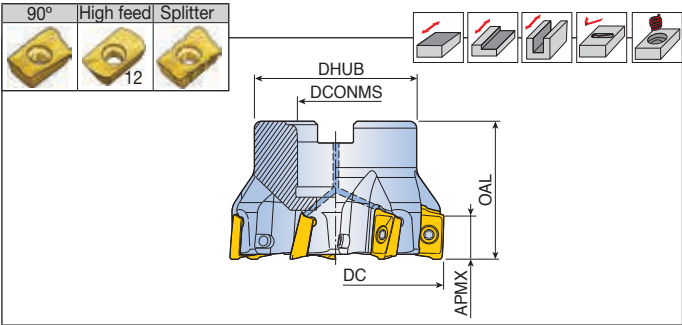
| Designation       | Screw                                                                               | Wrench                                                                              |  |  |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                   |  |  |  |  |  |
| <b>TFM90AX</b>    | TS 18041I/HG                                                                        | TD 6P                                                                               |  |  |  |
| <b>2S-TFM90AP</b> | TS 25075I/HG                                                                        | TD 8                                                                                |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |



# TFM90AP-12/17



Face mills



| Designation        |  | Dimension (mm) |        |      |     |      | Coolant hole | Arbor style |  Kg | Mounting bolt | Insert                                                                                                         |           |
|--------------------|-----------------------------------------------------------------------------------|----------------|--------|------|-----|------|--------------|-------------|--------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------|-----------|
|                    |                                                                                   | DC             | DCONMS | DHUB | OAL | APMX |              |             |                                                                                      |               |                                                                                                                |           |
| TFM90AP 440-16R-12 | 4                                                                                 | 40             | 16     | 38   | 40  | 12   | ●            | A           | 0.2                                                                                  | SH M8x25      | APK(C)T 1204...<br> E260,E264 |           |
|                    | 540-16R-12                                                                        | 5              | 40     | 16   | 38  | 40   | 12           | ●           | A                                                                                    | 0.2           |                                                                                                                | SH M8x25  |
|                    | 550-22R-12                                                                        | 5              | 50     | 22   | 45  | 40   | 12           | ●           | A                                                                                    | 0.3           |                                                                                                                | SH M10x30 |
|                    | 650-22R-12                                                                        | 6              | 50     | 22   | 45  | 40   | 12           | ●           | A                                                                                    | 0.3           |                                                                                                                | SH M10x30 |
|                    | 563-22R-12                                                                        | 5              | 63     | 22   | 47  | 40   | 12           | ●           | A                                                                                    | 0.5           |                                                                                                                | SH M10x30 |
|                    | 663-22R-12                                                                        | 6              | 63     | 22   | 47  | 40   | 12           | ●           | A                                                                                    | 0.5           |                                                                                                                | SH M10x30 |
|                    | 763-22R-12                                                                        | 7              | 63     | 22   | 47  | 40   | 12           | ●           | A                                                                                    | 0.5           |                                                                                                                | SH M10x30 |
|                    | 680-27R-12                                                                        | 6              | 80     | 27   | 58  | 50   | 12           | ●           | A                                                                                    | 1.0           |                                                                                                                | SH M10x25 |
| 880-27R-12         | 8                                                                                 | 80             | 27     | 58   | 50  | 12   | ●            | A           | 1.0                                                                                  | SH M10x25     | APK(C)T 1705...<br> E261-E262 |           |
| TFM90AP 440-16R-17 | 4                                                                                 | 40             | 16     | 38   | 40  | 16.1 | ●            | A           | 0.3                                                                                  | SH M8x30      |                                                                                                                |           |
| 350-22R-17-B       | 3                                                                                 | 50             | 22     | 45   | 40  | 16.1 | ●            | A           | 0.4                                                                                  | SH M10x30     |                                                                                                                |           |
| 450-22R-17-B       | 4                                                                                 | 50             | 22     | 45   | 40  | 16.1 | ●            | A           | 0.3                                                                                  | SH M10x30     |                                                                                                                |           |
| 550-22R-17         | 5                                                                                 | 50             | 22     | 45   | 40  | 16.1 | ●            | A           | 0.4                                                                                  | SH M10x30     |                                                                                                                |           |
| 463-22R-17-B       | 4                                                                                 | 63             | 22     | 47   | 40  | 16.1 | ●            | A           | 0.5                                                                                  | SH M10x30     |                                                                                                                |           |
| 663-22R-17         | 6                                                                                 | 63             | 22     | 47   | 50  | 16.1 | ●            | A           | 0.5                                                                                  | SH M10x30     |                                                                                                                |           |
| 480-27R-17-B       | 4                                                                                 | 80             | 27     | 58   | 50  | 16.1 | ●            | A           | 0.8                                                                                  | SH M12x35     |                                                                                                                |           |
| 680-27R-17         | 6                                                                                 | 80             | 27     | 58   | 50  | 16.1 | ●            | A           | 0.9                                                                                  | SH M12x35     |                                                                                                                |           |
| 780-27R-17         | 7                                                                                 | 80             | 27     | 58   | 50  | 16.1 | ●            | A           | 0.9                                                                                  | SH M12x35     |                                                                                                                |           |
| 6100-32R-17-B      | 6                                                                                 | 100            | 32     | 85   | 50  | 16.1 | ●            | A           | 1.3                                                                                  | LH M16x35     |                                                                                                                |           |
| 8100-32R-17        | 8                                                                                 | 100            | 32     | 85   | 50  | 16.1 | ●            | A           | 1.5                                                                                  | LH M16x35     |                                                                                                                |           |
| 7125-40R-17-B      | 7                                                                                 | 125            | 40     | 85   | 63  | 16.1 | ●            | A           | 2.9                                                                                  | SH M20x40     |                                                                                                                |           |
| 8125-40R-17        | 8                                                                                 | 125            | 40     | 85   | 63  | 16.1 | ●            | A           | 3.0                                                                                  | SH M20x40     |                                                                                                                |           |
| 9125-40R-17        | 9                                                                                 | 125            | 40     | 85   | 63  | 16.1 | ●            | A           | 3.1                                                                                  | SH M20x40     |                                                                                                                |           |
| 8160-40R-17-B      | 8                                                                                 | 160            | 40     | 110  | 63  | 16.1 | x            | C           | 4.1                                                                                  | -             |                                                                                                                |           |
| 10160-40R-17       | 10                                                                                | 160            | 40     | 110  | 63  | 16.1 | x            | C           | 4.2                                                                                  | -             |                                                                                                                |           |
| 12200-60R-17       | 12                                                                                | 200            | 60     | 130  | 63  | 16.1 | x            | C           | 6.1                                                                                  | -             |                                                                                                                |           |
|                    |                                                                                   |                |        |      |     |      |              |             |                                                                                      |               |                                                                                                                |           |
|                    |                                                                                   |                |        |      |     |      |              |             |                                                                                      |               |                                                                                                                |           |
|                    |                                                                                   |                |        |      |     |      |              |             |                                                                                      |               |                                                                                                                |           |
|                    |                                                                                   |                |        |      |     |      |              |             |                                                                                      |               |                                                                                                                |           |
|                    |                                                                                   |                |        |      |     |      |              |             |                                                                                      |               |                                                                                                                |           |
|                    |                                                                                   |                |        |      |     |      |              |             |                                                                                      |               |                                                                                                                |           |

- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)
- ▶ Cutter body for 'APKT 12' insert with corner radius more than 1.6mm should be modified accordingly body "RE"=Insert "RE"-0.5mm
- ▶ Cutter body for 'APKT 17' insert with corner radius more than 1.6mm should be modified accordingly body "RE"=Insert "RE"-0.8mm

Cutting Condition

E312-E315

Arbor Style

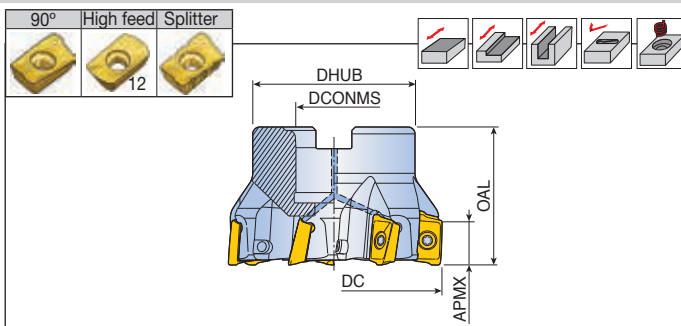
E316-E317

Torque

E318

Ramping Data

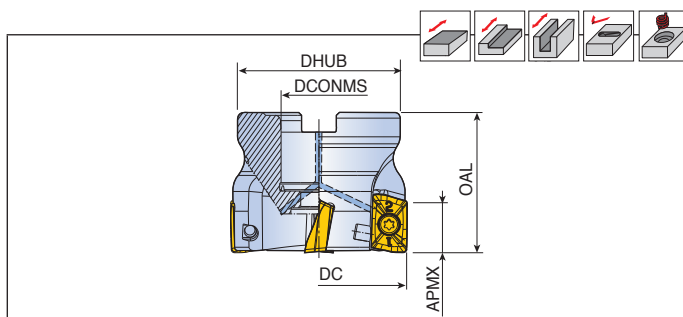
E360-E366

[illegible]

- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)
- ▶ Cutter body for 'APKT 12' insert with corner radius more than 1.6mm should be modified accordingly body "RE"=Insert "RE"-0.5mm
- ▶ Cutter body for 'APKT 17' insert with corner radius more than 1.6mm should be modified accordingly body "RE"=Insert "RE"-0.8mm

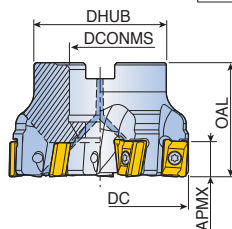
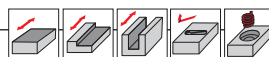
| Designation                 | Screw                                                                               | Wrench                                                                              |                                                                                     |  |  |
|-----------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                             |  |  |  |  |  |
| <b>TFM90AP-12</b>           | TS 35A088I/HG                                                                       | TD 10P                                                                              | -                                                                                   |  |  |
| <b>TFM90AP-17</b> (Ø40-Ø63) | TS 40093I/HG                                                                        | -                                                                                   | T-T15                                                                               |  |  |
| <b>TFM90AP-17</b> (Ø80-)    | TS 40120I/HG                                                                        | -                                                                                   | T-T15                                                                               |  |  |
|                             |                                                                                     |                                                                                     |                                                                                     |  |  |





|                                                                                                                              |                                                                                                                         |                                                                                                               |                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <p>Cutting Condition</p>  <p>E312-E315</p> | <p>Arbor Style</p>  <p>E316-E317</p> | <p>Torque</p>  <p>E318</p> | <p>Ramping Data</p>  <p>E360-E366</p> |
|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|

## Face mills



| Designation  |  | Dimension (mm) |        |      |     |      | Coolant hole | Arbor style |  | Mounting bolt | Insert    |                                                                                                           |
|--------------|-----------------------------------------------------------------------------------|----------------|--------|------|-----|------|--------------|-------------|-----------------------------------------------------------------------------------|---------------|-----------|-----------------------------------------------------------------------------------------------------------|
|              |                                                                                   | DC             | DCONMS | DHUB | OAL | APMX |              |             |                                                                                   |               |           |                                                                                                           |
| TFM90AN      | 440-16R-11                                                                        | 4              | 40     | 16   | 38  | 40   | 11           | ●           | A                                                                                 | 0.2           | SH M8x30  | ANM(H)X 1106...<br> E258 |
|              | 450-22R-11                                                                        | 4              | 50     | 22   | 45  | 40   | 11           | ●           | A                                                                                 | 0.3           | SH M10x30 |                                                                                                           |
|              | 650-22R-11                                                                        | 6              | 50     | 22   | 45  | 40   | 11           | ●           | A                                                                                 | 0.3           | SH M10x30 |                                                                                                           |
|              | 563-22R-11                                                                        | 5              | 63     | 22   | 47  | 40   | 11           | ●           | A                                                                                 | 0.6           | SH M10x30 |                                                                                                           |
|              | 763-22R-11                                                                        | 7              | 63     | 22   | 47  | 40   | 11           | ●           | A                                                                                 | 0.6           | SH M10x30 |                                                                                                           |
|              | 880-27R-11                                                                        | 8              | 80     | 27   | 58  | 50   | 11           | ●           | A                                                                                 | 1.1           | SH M12x35 |                                                                                                           |
|              | 1080-27R-11                                                                       | 10             | 80     | 27   | 58  | 50   | 11           | ●           | A                                                                                 | 1.1           | SH M12x35 |                                                                                                           |
|              | 9100-32R-11                                                                       | 9              | 100    | 32   | 85  | 50   | 11           | ●           | A                                                                                 | 2.0           | SH M16x35 |                                                                                                           |
|              | 12100-32R-11                                                                      | 12             | 100    | 32   | 85  | 50   | 11           | ●           | A                                                                                 | 2.0           | SH M16x35 |                                                                                                           |
|              | 10125-40R-11                                                                      | 10             | 125    | 40   | 85  | 63   | 11           | ●           | A                                                                                 | 3.3           | SH M20x40 |                                                                                                           |
| 14125-40R-11 | 14                                                                                | 125            | 40     | 85   | 63  | 11   | ●            | A           | 3.4                                                                               | SH M20x40     |           |                                                                                                           |
| TFM90AN      | 350-22R-16                                                                        | 3              | 50     | 22   | 45  | 40   | 15           | ●           | A                                                                                 | 0.4           | SH M10x30 | ANM(H)X 1607...<br> E258 |
|              | 450-22R-16                                                                        | 4              | 50     | 22   | 45  | 40   | 15           | ●           | A                                                                                 | 0.4           | SH M10x30 |                                                                                                           |
|              | 463-22R-16                                                                        | 4              | 63     | 22   | 47  | 40   | 15           | ●           | A                                                                                 | 0.5           | SH M10x30 |                                                                                                           |
|              | 663-22R-16                                                                        | 6              | 63     | 22   | 47  | 40   | 15           | ●           | A                                                                                 | 0.5           | SH M10x30 |                                                                                                           |
|              | 580-27R-16                                                                        | 5              | 80     | 27   | 58  | 50   | 15           | ●           | A                                                                                 | 0.8           | SH M12x35 |                                                                                                           |
|              | 680-27R-16                                                                        | 6              | 80     | 27   | 58  | 50   | 15           | ●           | A                                                                                 | 1.2           | SH M12x35 |                                                                                                           |
|              | 780-27R-16                                                                        | 7              | 80     | 27   | 58  | 50   | 15           | ●           | A                                                                                 | 0.9           | SH M12x35 |                                                                                                           |
|              | 5100-32R-16                                                                       | 5              | 100    | 32   | 85  | 50   | 15           | ●           | A                                                                                 | 1.3           | SH M16x35 |                                                                                                           |
|              | 8100-32R-16                                                                       | 8              | 100    | 32   | 85  | 50   | 15           | ●           | A                                                                                 | 1.5           | SH M16x35 |                                                                                                           |
|              | 7125-40R-16                                                                       | 7              | 125    | 40   | 85  | 63   | 15           | ●           | A                                                                                 | 3.9           | SH M20x40 |                                                                                                           |
|              | 10125-40R-16                                                                      | 10             | 125    | 40   | 85  | 63   | 15           | ●           | A                                                                                 | 3.7           | SH M20x40 |                                                                                                           |
|              | 8160-40R-16                                                                       | 8              | 160    | 40   | 110 | 63   | 15           | x           | C                                                                                 | 5.0           | -         |                                                                                                           |
|              | 12160-40R-16                                                                      | 12             | 160    | 40   | 110 | 63   | 15           | x           | C                                                                                 | 5.3           | -         |                                                                                                           |
|              | 14200-60R-16                                                                      | 14             | 200    | 60   | 130 | 63   | 15           | x           | C                                                                                 | 7.0           | -         |                                                                                                           |

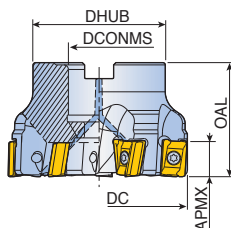
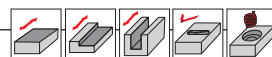
► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

| Designation       | Screw         | Wrench |       |  |  |
|-------------------|---------------|--------|-------|--|--|
|                   |               |        |       |  |  |
| <b>TFM90AN-11</b> | TS 35A088I/HG | TD 10P | -     |  |  |
| <b>TFM90AN-16</b> | TS 40120I     | -      | T-T15 |  |  |
|                   |               |        |       |  |  |
|                   |               |        |       |  |  |



**CHASE2MILL**

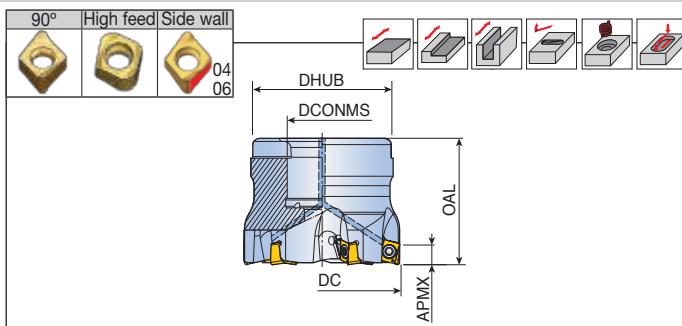


► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

| Designation       | Screw                                                                               | Wrench                                                                              |                                                                                     |  |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                   |  |  |  |  |  |
| <b>TFM90AN-11</b> | TS 35A088I/HG                                                                       | TD 10P                                                                              | -                                                                                   |  |  |
| <b>TFM90AN-16</b> | TS 40120I                                                                           | -                                                                                   | T-T15                                                                               |  |  |
|                   |                                                                                     |                                                                                     |                                                                                     |  |  |
|                   |                                                                                     |                                                                                     |                                                                                     |  |  |



## Face mills

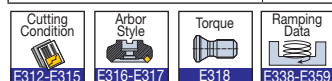


| Designation                |  | Dimension (mm) |        |      |     |      | Coolant hole | Arbor style |  | Mounting bolt | Insert                                                                                                          |
|----------------------------|-----------------------------------------------------------------------------------|----------------|--------|------|-----|------|--------------|-------------|-----------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------|
|                            |                                                                                   | DC             | DCONMS | DHUB | OAL | APMX |              |             |                                                                                   |               |                                                                                                                 |
| <b>4N TF90- 832-16R-04</b> | 8                                                                                 | 32             | 16     | 30   | 32  | 3.5  | ●            | A           | 0.1                                                                               | SH M8x25      | 4NK(H)T 0402....<br> E252-E253 |
| <b>1040-16R-04</b>         | 10                                                                                | 40             | 16     | 38   | 40  | 3.5  | ●            | A           | 0.2                                                                               | SH M8x25      |                                                                                                                 |
| <b>4N TF90- 432-16R-06</b> | 4                                                                                 | 32             | 16     | 30   | 32  | 6.0  | ●            | A           | 0.1                                                                               | SH M8x25      | 4NK(H)T 0603....<br> E252-E253 |
| <b>532-16R-06</b>          | 5                                                                                 | 32             | 16     | 30   | 32  | 6.0  | ●            | A           | 0.1                                                                               | SH M8x25      |                                                                                                                 |
| <b>540-16R-06</b>          | 5                                                                                 | 40             | 16     | 38   | 40  | 6.0  | ●            | A           | 0.3                                                                               | SH M8x25      |                                                                                                                 |
| <b>640-16R-06</b>          | 6                                                                                 | 40             | 16     | 38   | 40  | 6.0  | ●            | A           | 0.3                                                                               | SH M8x25      |                                                                                                                 |
| <b>650-22R-06</b>          | 6                                                                                 | 50             | 22     | 45   | 40  | 6.0  | ●            | A           | 0.4                                                                               | SH M10x30     |                                                                                                                 |
| <b>750-22R-06</b>          | 7                                                                                 | 50             | 22     | 47   | 40  | 6.0  | ●            | A           | 0.4                                                                               | SH M10x30     |                                                                                                                 |
| <b>752-22R-06</b>          | 7                                                                                 | 52             | 22     | 47   | 40  | 6.0  | ●            | A           | 0.4                                                                               | SH M10x30     |                                                                                                                 |
| <b>763-22R-06</b>          | 7                                                                                 | 63             | 22     | 47   | 40  | 6.0  | ●            | A           | 0.6                                                                               | SH M10x30     |                                                                                                                 |
| <b>863-22R-06</b>          | 8                                                                                 | 63             | 22     | 47   | 40  | 6.0  | ●            | A           | 0.6                                                                               | SH M10x30     |                                                                                                                 |
| <b>866-27R-06</b>          | 8                                                                                 | 66             | 27     | 58   | 50  | 6.0  | ●            | A           | 0.8                                                                               | SH M10x30     |                                                                                                                 |
| <b>4N TF90- 540-16R-09</b> | 5                                                                                 | 40             | 16     | 38   | 40  | 8.0  | ●            | A           | 0.3                                                                               | SH M8x25      | 4NK(H)T 0904...<br> E252-E253  |
| <b>650-22R-09</b>          | 6                                                                                 | 50             | 22     | 45   | 40  | 8.0  | ●            | A           | 0.3                                                                               | LH M10x25     |                                                                                                                 |
| <b>563-22R-09</b>          | 5                                                                                 | 63             | 22     | 47   | 40  | 8.0  | ●            | A           | 0.5                                                                               | LH M10x25     |                                                                                                                 |
| <b>763-22R-09</b>          | 7                                                                                 | 63             | 22     | 47   | 40  | 8.0  | ●            | A           | 0.5                                                                               | LH M10x25     |                                                                                                                 |
| <b>780-27R-09</b>          | 7                                                                                 | 80             | 27     | 58   | 50  | 8.0  | ●            | A           | 1.0                                                                               | SH M12x35     |                                                                                                                 |
| <b>980-27R-09</b>          | 9                                                                                 | 80             | 27     | 58   | 50  | 8.0  | ●            | A           | 1.1                                                                               | SH M12x35     |                                                                                                                 |
|                            |                                                                                   |                |        |      |     |      |              |             |                                                                                   |               |                                                                                                                 |
|                            |                                                                                   |                |        |      |     |      |              |             |                                                                                   |               |                                                                                                                 |

- ▶ Cutter body for '4NKT 040212R-HF' insert should be modified with body corner radius 1.2 mm
- ▶ Cutter body for '4NKT 060320R-HF' and '4NHT 060320R-F' inserts should be modified with body corner radius 2.0 mm
- ▶ Cutter body for '4NKT 090432R-HF' insert should be modified with body corner radius 3.2 mm
- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

| Designation       | Screw         | Wrench |              | Wrench handle |  |
|-------------------|---------------|--------|--------------|---------------|--|
|                   |               |        |              |               |  |
| <b>4N TF90-04</b> | TS 180411/HG  | TD 6P  | -            | -             |  |
| <b>4N TF90-06</b> | TS 30B0681/HG | TD 8   | -            | -             |  |
| <b>4N TF90-09</b> | TS 35A0881/HG | -      | TBLD T10P-W6 | THND 6W       |  |
|                   |               |        |              |               |  |
|                   |               |        |              |               |  |

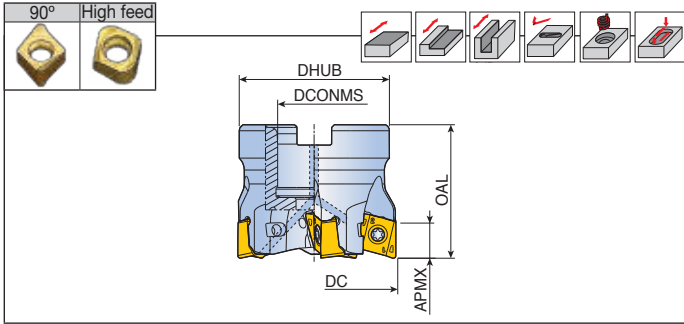




# 4N TF90-11/14



## Face mills



| Designation                |  | Dimension (mm) |        |      |     |      | Coolant hole | Arbor style |  | Mounting bolt | Insert                                                                                                                    |
|----------------------------|-----------------------------------------------------------------------------------|----------------|--------|------|-----|------|--------------|-------------|-----------------------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------|
|                            |                                                                                   | DC             | DCONMS | DHUB | OAL | APMX |              |             |                                                                                   |               |                                                                                                                           |
| <b>4N TF90- 440-16R-11</b> | 4                                                                                 | 40             | 16     | 38   | 40  | 10.5 | ●            | A           | 0.2                                                                               | SH M8x30      | <b>4NKT 1106...</b><br> <b>E252-E253</b> |
| <b>450-22R-11</b>          | 4                                                                                 | 50             | 22     | 45   | 40  | 10.5 | ●            | A           | 0.3                                                                               | LH M10x25     |                                                                                                                           |
| <b>550-22R-11</b>          | 5                                                                                 | 50             | 22     | 45   | 40  | 10.5 | ●            | A           | 0.3                                                                               | LH M10x25     |                                                                                                                           |
| <b>463-22R-11</b>          | 4                                                                                 | 63             | 22     | 47   | 40  | 10.5 | ●            | A           | 0.6                                                                               | LH M10x25     |                                                                                                                           |
| <b>663-22R-11</b>          | 6                                                                                 | 63             | 22     | 47   | 40  | 10.5 | ●            | A           | 0.5                                                                               | LH M10x25     |                                                                                                                           |
| <b>480-27R-11</b>          | 4                                                                                 | 80             | 27     | 58   | 50  | 10.5 | ●            | A           | 1.1                                                                               | SH M12x35     |                                                                                                                           |
| <b>480-25.4R-11</b>        | 4                                                                                 | 80             | 25.4   | 70   | 50  | 10.5 | ●            | A           | 1.3                                                                               | SH M12x35     |                                                                                                                           |
| <b>680-27R-11</b>          | 6                                                                                 | 80             | 27     | 58   | 50  | 10.5 | ●            | A           | 1.0                                                                               | SH M12x35     |                                                                                                                           |
| <b>880-27R-11</b>          | 8                                                                                 | 80             | 27     | 58   | 50  | 10.5 | ●            | A           | 1.0                                                                               | SH M12x35     |                                                                                                                           |
| <b>9100-32R-11</b>         | 9                                                                                 | 100            | 32     | 85   | 50  | 10.5 | ●            | A           | 1.9                                                                               | SH M16x35     |                                                                                                                           |
| <b>4N TF90- 450-22R-14</b> | 4                                                                                 | 50             | 22     | 45   | 45  | 13.8 | ●            | A           | 0.4                                                                               | SH M10x25     | <b>4NKT 1407...</b><br> <b>E252-E253</b> |
| <b>463-22R-14</b>          | 4                                                                                 | 63             | 22     | 47   | 45  | 13.8 | ●            | A           | 0.6                                                                               | SH M10x25     |                                                                                                                           |
| <b>663-22R-14</b>          | 6                                                                                 | 63             | 22     | 47   | 45  | 13.8 | ●            | A           | 0.6                                                                               | SH M10x25     |                                                                                                                           |
| <b>580-27R-14</b>          | 5                                                                                 | 80             | 27     | 58   | 50  | 13.8 | ●            | A           | 1.0                                                                               | SH M12x35     |                                                                                                                           |
| <b>580-25.4R-14</b>        | 5                                                                                 | 80             | 25.4   | 70   | 50  | 13.8 | ●            | A           | 1.2                                                                               | SH M12x35     |                                                                                                                           |
| <b>780-27R-14</b>          | 7                                                                                 | 80             | 27     | 58   | 50  | 13.8 | ●            | A           | 1.0                                                                               | SH M12x35     |                                                                                                                           |
| <b>8100-32R-14</b>         | 8                                                                                 | 100            | 32     | 85   | 50  | 13.8 | ●            | A           | 1.9                                                                               | SH M16x35     |                                                                                                                           |
| <b>8100-31.75R-14</b>      | 8                                                                                 | 100            | 31.75  | 80   | 50  | 13.8 | ●            | B           | 1.7                                                                               | -             |                                                                                                                           |
|                            |                                                                                   |                |        |      |     |      |              |             |                                                                                   |               |                                                                                                                           |
|                            |                                                                                   |                |        |      |     |      |              |             |                                                                                   |               |                                                                                                                           |

- ▶ Cutter body for '4NKT 110640R-HF' insert should be modified with body corner radius 4.0 mm
- ▶ Cutter body for '4NKT 140750R-HF' insert should be modified with body corner radius 5.0 mm
- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

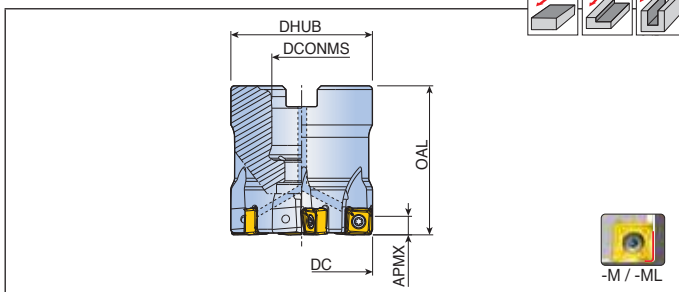
| Designation       | Screw         | Wrench      | Wrench handle |  |  |
|-------------------|---------------|-------------|---------------|--|--|
|                   |               |             |               |  |  |
| <b>4N TF90-11</b> | TS 400931/HG  | TBLD T15-W6 | SW6-T         |  |  |
| <b>4N TF90-14</b> | TS 50A1211/HG | TBLD T20-W6 | SW6-T         |  |  |
|                   |               |             |               |  |  |
|                   |               |             |               |  |  |
|                   |               |             |               |  |  |

E312-E315

E316-E317

E318

E338-E359

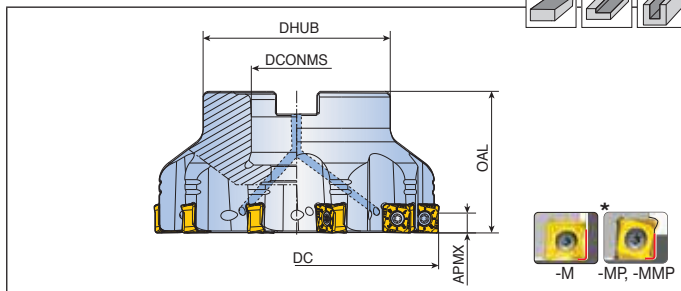


► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

| Designation       | Screw                                                                               | Wrench                                                                              |  |  |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                   |  |  |  |  |  |
| <b>8D-TF90-07</b> | TS 25D060/HG-P                                                                      | TD 7P                                                                               |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |



**CHASE & MILL**  
BY J. CHASE & S. MILL



► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)  
► \*:Multi-Step milling is not recommended over the APMX ► \*\*:When applying SQHU insert, APMX is 6.5 mm.

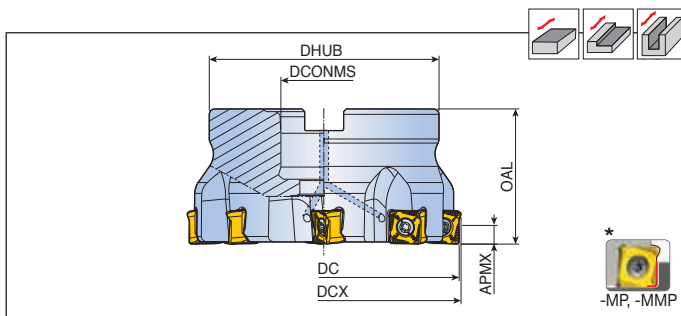
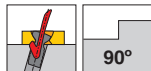
| Designation       | Screw                                                                               | Wrench                                                                              |  |  |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                   |  |  |  |  |  |
| <b>8D-TF90-10</b> | TS 35A088I/HG                                                                       | TD 10P                                                                              |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |



# 8D-TF90-12



## Face mills



| Designation        |  | Dimension (mm) |       |        |      |     |       | Coolant hole | Arbor style |  | Mounting bolt | Insert                                                                                                     |
|--------------------|-----------------------------------------------------------------------------------|----------------|-------|--------|------|-----|-------|--------------|-------------|-----------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------|
|                    |                                                                                   | DC             | DCX   | DCONMS | DHUB | OAL | APMX  |              |             |                                                                                   |               |                                                                                                            |
| 8D-TF90-340-16R-12 | 3                                                                                 | 40             | 41.3  | 16     | 38   | 40  | 8.5** | ●            | E           | 0.3                                                                               | KTB 32B       | SQK(H)U 1206...<br> E297 |
| 440-16R-12         | 4                                                                                 | 40             | 41.3  | 16     | 38   | 40  | 8.5** | ●            | E           | 0.3                                                                               | KTB 32B       |                                                                                                            |
| 450-22R-12         | 4                                                                                 | 50             | 51.3  | 22     | 45   | 40  | 8.5** | ●            | A           | 0.3                                                                               | SH M10x30     |                                                                                                            |
| 650-22R-12         | 6                                                                                 | 50             | 51.3  | 22     | 45   | 40  | 8.5** | ●            | A           | 0.4                                                                               | SH M10x30     |                                                                                                            |
| 563-22R-12         | 5                                                                                 | 63             | 64.3  | 22     | 47   | 40  | 8.5** | ●            | A           | 0.5                                                                               | SH M10x30     |                                                                                                            |
| 863-22R-12         | 8                                                                                 | 63             | 64.3  | 22     | 47   | 40  | 8.5** | ●            | A           | 0.6                                                                               | SH M10x30     |                                                                                                            |
| 680-27R-12         | 6                                                                                 | 80             | 81.3  | 27     | 58   | 50  | 8.5** | ●            | A           | 1.1                                                                               | SH M12x35     |                                                                                                            |
| 680-25.4R-12       | 6                                                                                 | 80             | 81.3  | 25.4   | 70   | 50  | 8.5** | ●            | A           | 1.3                                                                               | SH M12x35     |                                                                                                            |
| 980-27R-12         | 9                                                                                 | 80             | 81.3  | 27     | 58   | 50  | 8.5** | ●            | A           | 1.2                                                                               | SH M12x35     |                                                                                                            |
| 1180-27R-12        | 11                                                                                | 80             | 81.3  | 27     | 58   | 50  | 8.5** | ●            | A           | 1.2                                                                               | SH M12x35     |                                                                                                            |
| 8100-32R-12        | 8                                                                                 | 100            | 101.3 | 32     | 66   | 50  | 8.5** | ●            | A           | 1.6                                                                               | SH M16x35     |                                                                                                            |
| 8100-31.75R-12     | 8                                                                                 | 100            | 101.3 | 31.75  | 80   | 50  | 8.5** | x            | B           | 1.8                                                                               | -             |                                                                                                            |
| 11100-32R-12       | 11                                                                                | 100            | 101.3 | 32     | 66   | 50  | 8.5** | ●            | A           | 1.7                                                                               | SH M16x35     |                                                                                                            |
| 14100-32R-12       | 14                                                                                | 100            | 101.3 | 32     | 66   | 50  | 8.5** | ●            | A           | 1.7                                                                               | SH M16x35     |                                                                                                            |
| 10125-40R-12       | 10                                                                                | 125            | 126.3 | 40     | 85   | 63  | 8.5** | ●            | A           | 3.4                                                                               | SH M20x40     |                                                                                                            |
| 10125-38.1R-12     | 10                                                                                | 125            | 126.3 | 38.1   | 80   | 63  | 8.5** | x            | B           | 3.0                                                                               | -             |                                                                                                            |
| 18125-40R-12       | 18                                                                                | 125            | 126.3 | 40     | 85   | 63  | 8.5** | ●            | A           | 3.5                                                                               | SH M20x40     |                                                                                                            |
| 12160-40R-12       | 12                                                                                | 160            | 161.3 | 40     | 110  | 63  | 8.5** | x            | C           | 4.7                                                                               | -             |                                                                                                            |
| 12160-50.8R-12     | 12                                                                                | 160            | 161.3 | 50.8   | 100  | 63  | 8.5** | x            | B           | 4.9                                                                               | -             |                                                                                                            |
| 22160-40R-12       | 22                                                                                | 160            | 161.3 | 40     | 110  | 63  | 8.5** | x            | C           | 4.9                                                                               | -             |                                                                                                            |
|                    |                                                                                   |                |       |        |      |     |       |              |             |                                                                                   |               |                                                                                                            |

► DC: Cutting diameter      ► DCX: Cutting diameter maximum

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

► \*:Multi-Step milling is not recommended over the APMX      ► \*\*:When applying SQHU insert, APMX is 8.0mm.

## Spare parts

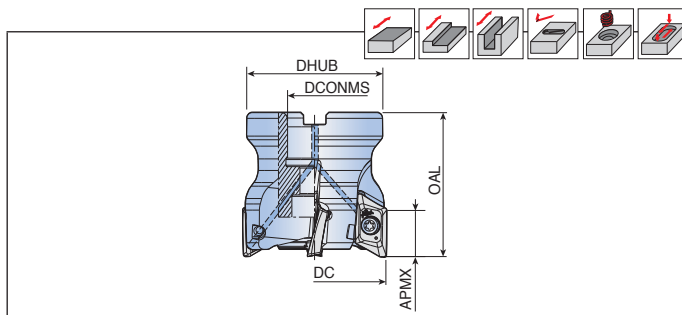
| Designation       | Screw        | Wrench      | Wrench handle |  |  |
|-------------------|--------------|-------------|---------------|--|--|
| <b>8D-TF90-12</b> | TS 40M100/HG | TBLD T15-W6 | SW6-T         |  |  |
|                   |              |             |               |  |  |
|                   |              |             |               |  |  |
|                   |              |             |               |  |  |



# TFM90XEV-16/22



## Face mills



| Designation                |  | Dimension (mm) |        |      |     |      | Coolant<br>hole | Arbor<br>style | Max<br>RPM |  | Mounting<br>bolt | Insert                                                                                                                    |
|----------------------------|-----------------------------------------------------------------------------------|----------------|--------|------|-----|------|-----------------|----------------|------------|-----------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------------------------------|
|                            |                                                                                   | DC             | DCONMS | DHUB | OAL | APMX |                 |                |            |                                                                                   |                  |                                                                                                                           |
| <b>TFM90XEV 340-16R-16</b> | 3                                                                                 | 40             | 16     | 38   | 50  | 16   | ●               | A              | 41,200     | 0.2                                                                               | SH M8x35-C       | <div>XEVT 1605...</div> <div> E305</div> |
| <b>350-22R-16</b>          | 3                                                                                 | 50             | 22     | 47   | 50  | 16   | ●               | A              | 41,200     | 0.3                                                                               | SH M8x35-C       |                                                                                                                           |
| <b>363-22R-16</b>          | 3                                                                                 | 63             | 22     | 47   | 50  | 16   | ●               | A              | 41,200     | 0.5                                                                               | SH M8x35-C       |                                                                                                                           |
| <b>450-22R-16</b>          | 4                                                                                 | 50             | 22     | 45   | 50  | 16   | ●               | A              | 36,800     | 0.3                                                                               | SH M10x30-C      |                                                                                                                           |
| <b>563-22R-16</b>          | 5                                                                                 | 63             | 22     | 47   | 50  | 16   | ●               | A              | 32,700     | 0.5                                                                               | SH M10x30-C      |                                                                                                                           |
| <b>480-27R-16</b>          | 4                                                                                 | 80             | 27     | 58   | 50  | 16   | ●               | A              | 29,000     | 0.9                                                                               | LH M12x30-C      |                                                                                                                           |
| <b>580-27R-16</b>          | 5                                                                                 | 80             | 27     | 58   | 50  | 16   | ●               | A              | 29,000     | 0.9                                                                               | LH M12x30-C      |                                                                                                                           |
| <b>680-27R-16</b>          | 6                                                                                 | 80             | 27     | 58   | 50  | 16   | ●               | A              | 29,000     | 0.8                                                                               | LH M12x30-C      |                                                                                                                           |
| <b>6100-32R-16</b>         | 6                                                                                 | 100            | 32     | 66   | 63  | 16   | ●               | A              | 26,000     | 1.6                                                                               | SH M16x35-C      |                                                                                                                           |
| <b>7125-40R-16</b>         | 7                                                                                 | 125            | 40     | 85   | 63  | 16   | ●               | A              | 23,200     | 2.5                                                                               | SH M20x40-C      |                                                                                                                           |
| <b>8160-40R-16</b>         | 8                                                                                 | 160            | 40     | 110  | 63  | 16   | x               | C              | 20,000     | 3.8                                                                               | -                |                                                                                                                           |
|                            |                                                                                   |                |        |      |     |      |                 |                |            |                                                                                   |                  |                                                                                                                           |
| <b>TFM90XEV 350-22R-22</b> | 3                                                                                 | 50             | 22     | 45   | 55  | 21   | ●               | A              | 31,400     | 0.4                                                                               | SH M10x30-C      | <div>XEVT 2206...</div> <div> E305</div> |
| <b>463-22R-22</b>          | 4                                                                                 | 63             | 22     | 47   | 55  | 21   | ●               | A              | 28,000     | 0.6                                                                               | SH M10x30-C      |                                                                                                                           |
| <b>580-27R-22</b>          | 5                                                                                 | 80             | 27     | 58   | 55  | 21   | ●               | A              | 24,800     | 1.0                                                                               | LH M12x30-C      |                                                                                                                           |
| <b>6100-32R-22</b>         | 6                                                                                 | 100            | 32     | 85   | 63  | 21   | ●               | A              | 22,200     | 2.1                                                                               | SH M16x35-C      |                                                                                                                           |
| <b>7125-40R-22</b>         | 7                                                                                 | 125            | 40     | 85   | 63  | 21   | ●               | A              | 19,900     | 2.8                                                                               | SH M20x40-C      |                                                                                                                           |
|                            |                                                                                   |                |        |      |     |      |                 |                |            |                                                                                   |                  |                                                                                                                           |
|                            |                                                                                   |                |        |      |     |      |                 |                |            |                                                                                   |                  |                                                                                                                           |
|                            |                                                                                   |                |        |      |     |      |                 |                |            |                                                                                   |                  |                                                                                                                           |
|                            |                                                                                   |                |        |      |     |      |                 |                |            |                                                                                   |                  |                                                                                                                           |

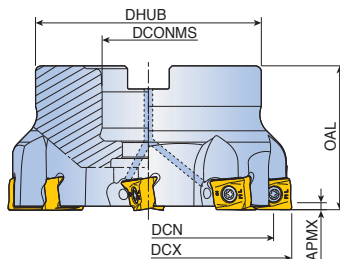
► Cutter body for inserts with corner radii more than 3.2mm (XEVT 16) and 3.0mm (XEVT 22) should be modified as follows: body "RE"-insert "RE"-0.3mm

## Spare parts

| Designation        | Screw        | Wrench |  |  |  |
|--------------------|--------------|--------|--|--|--|
|                    |              |        |  |  |  |
| <b>TFM90XEV-16</b> | TS 400931/HG | T-T15  |  |  |  |
| <b>TFM90XEV-22</b> | TS 501151    | T-T20  |  |  |  |
|                    |              |        |  |  |  |
|                    |              |        |  |  |  |
|                    |              |        |  |  |  |



**CHASE 4 FINISH**



- ▶ DCN: Cutting diameter minimum
- ▶ DCX: Cutting diameter maximum

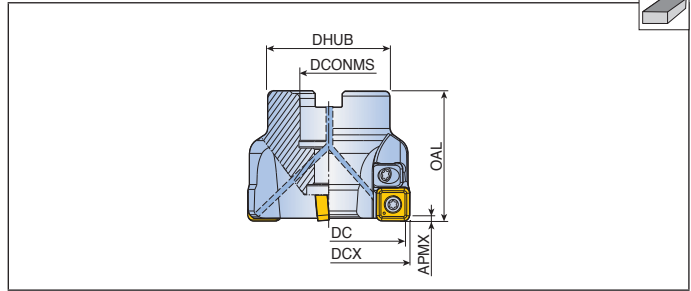
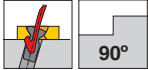
| Designation       | Screw                                                                               | Wrench                                                                              | Wrench handle                                                                       |  |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                   |  |  |  |  |  |
| <b>4W-TF90-12</b> | TS 40A115I                                                                          | TBLD T15-W6                                                                         | SW6-T                                                                               |  |  |
|                   |                                                                                     |                                                                                     |                                                                                     |  |  |
|                   |                                                                                     |                                                                                     |                                                                                     |  |  |
|                   |                                                                                     |                                                                                     |                                                                                     |  |  |



# TFM90SNS-12



Face mills for finishing



| Designation                |    | Dimension (mm) |        |        |      |     |      | Coolant hole | Arbor style | Kg   | Mounting bolt | Insert                                     |
|----------------------------|----|----------------|--------|--------|------|-----|------|--------------|-------------|------|---------------|--------------------------------------------|
|                            |    | DCX            | DC     | DCONMS | DHUB | OAL | APMX |              |             |      |               |                                            |
| <b>TFM90SNS 350-22R-12</b> | 3  | 50             | 43.35  | 22     | 45   | 50  | 1.0  | ●            | A           | 0.5  | SH M10x40     | SNEX<br>1204...<br>SNET<br>1205...<br>E291 |
| <b>463-22R-12</b>          | 4  | 63             | 56.35  | 22     | 47   | 50  | 1.0  | ●            | A           | 0.7  | SH M10x40     |                                            |
| <b>680-27R-12</b>          | 6  | 80             | 73.35  | 27     | 58   | 50  | 1.0  | ●            | A           | 1.0  | SH M12x35     |                                            |
| <b>8100-32R-12</b>         | 8  | 100            | 93.35  | 32     | 66   | 63  | 1.0  | ●            | A           | 2.0  | SH M16x30     |                                            |
| <b>12100-32R-12</b>        | 12 | 100            | 93.35  | 32     | 66   | 63  | 1.0  | ●            | A           | 2.0  | SH M16x30     |                                            |
| <b>10125-40R-12</b>        | 10 | 125            | 118.35 | 40     | 85   | 63  | 1.0  | x            | B           | 2.9  | -             |                                            |
| <b>16125-40R-12</b>        | 16 | 125            | 118.35 | 40     | 85   | 63  | 1.0  | x            | B           | 2.9  | -             |                                            |
| <b>12160-40R-12</b>        | 12 | 160            | 153.35 | 40     | 110  | 63  | 1.0  | x            | C           | 4.4  | -             |                                            |
| <b>20160-40R-12</b>        | 20 | 160            | 153.35 | 40     | 110  | 63  | 1.0  | x            | C           | 4.4  | -             |                                            |
| <b>16200-60R-12</b>        | 16 | 200            | 193.35 | 60     | 130  | 63  | 1.0  | x            | C           | 6.0  | -             |                                            |
| <b>24200-60R-12</b>        | 24 | 200            | 193.35 | 60     | 130  | 63  | 1.0  | x            | C           | 6.0  | -             |                                            |
| <b>30250-60R-12</b>        | 30 | 250            | 243.35 | 60     | 160  | 63  | 1.0  | x            | C           | 10.8 | -             |                                            |
|                            |    |                |        |        |      |     |      |              |             |      |               |                                            |
|                            |    |                |        |        |      |     |      |              |             |      |               |                                            |
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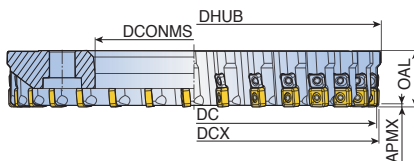
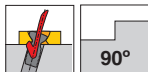
- Recommend to very stable machining condition at cast iron & steel
- Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

| Designation        | Screw      | Adj. wedge | Adj. screw | Wrench |  |
|--------------------|------------|------------|------------|--------|--|
| <b>TFM90SNS-12</b> | TS 35C110I | AJS 1010R  | AWS 0620   | T-T15  |  |
|                    |            |            |            |        |  |
|                    |            |            |            |        |  |
|                    |            |            |            |        |  |
|                    |            |            |            |        |  |



# CHASE2QUAD

[illegible]

## Spare parts

| Designation       | Screw                                                                               | Adj. wedge                                                                          | Adj. screw                                                                          | Wrench                                                                              |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                   |  |  |  |  |  |
| <b>TQ90SNS-12</b> | TS 35C110I                                                                          | AJS 1010R                                                                           | AWS 0620                                                                            | T-T15                                                                               |  |
|                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
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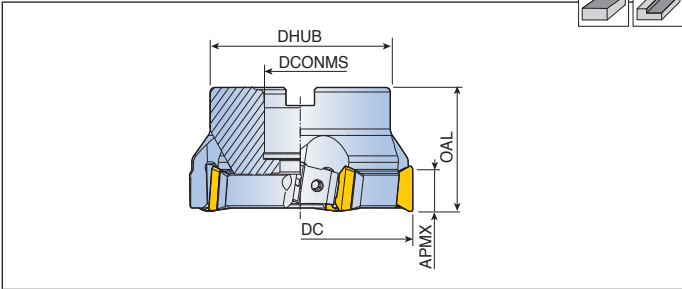




LM90TP-22



Face mills (Inch bore)



| Designation         |  | Dimension (mm) |        |      |     |      | Arbor style |  Kg | Mounting bolt | Insert                                                                                                 |
|---------------------|-----------------------------------------------------------------------------------|----------------|--------|------|-----|------|-------------|--------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------|
|                     |                                                                                   | DC             | DCONMS | DHUB | OAL | APMX |             |                                                                                      |               |                                                                                                        |
| LM90TP 480-25.4R-22 | 4                                                                                 | 80             | 25.4   | 70   | 50  | 17.6 | A           | 1.2                                                                                  | SH M12x35     | TPKN 2204...<br> E303 |
| 5100-31.75R-22      | 5                                                                                 | 100            | 31.75  | 80   | 55  | 17.6 | A           | 2.2                                                                                  | SH M16x35     |                                                                                                        |
| 6125-38.1R-22       | 6                                                                                 | 125            | 38.1   | 80   | 63  | 17.6 | B           | 3.0                                                                                  | -             |                                                                                                        |
| 8160-50.8R-22       | 8                                                                                 | 160            | 50.8   | 100  | 63  | 17.6 | B           | 4.7                                                                                  | -             |                                                                                                        |
| 10200-47.625R-22    | 10                                                                                | 200            | 47.625 | 130  | 63  | 17.6 | C           | 6.4                                                                                  | -             |                                                                                                        |
| 12250-47.625R-22    | 12                                                                                | 250            | 47.625 | 160  | 63  | 17.6 | C           | 10.7                                                                                 | -             |                                                                                                        |
| 14315-47.625R-22    | 14                                                                                | 315            | 47.625 | 220  | 63  | 17.6 | D           | 16.7                                                                                 | -             |                                                                                                        |
|                     |                                                                                   |                |        |      |     |      |             |                                                                                      |               |                                                                                                        |
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|                     |                                                                                   |                |        |      |     |      | </          |                                                                                      |               |                                                                                                        |

► Metric bore cutter is available upon request

Spare parts

| Designation       | Carbide shim | Wedge | Shim screw | Wedge screw | Wrench | Shim screw wrench |
|-------------------|--------------|-------|------------|-------------|--------|-------------------|
|                   |              |       |            |             |        |                   |
| LM90TP-22 (Ø80)   | TSTP 22N     | WPA 8 | TS 40B100I | TS 80160W   | T-W 4  | T-T15             |
| LM90TP-22 (Ø100-) | TSTP 22N     | WPA 8 | TS 40B100I | TS 80200W   | T-W 4  | T-T15             |
|                   |              |       |            |             |        |                   |
|                   |              |       |            |             |        |                   |

Cutting Condition  
E312-E315

Arbor Style  
E316-E317

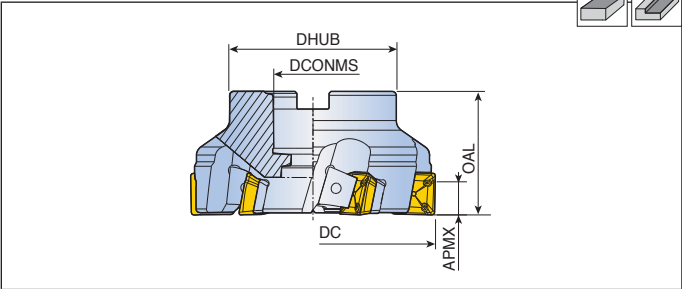
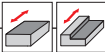
Torque  
E318

► The shim screw wrench T-T15<sup>(1)</sup> shall be ordered separately

# LM90SE-21



Face mills



| Designation                |    | Dimension (mm) |        |      |     |      | Arbor style | Kg   | Mounting bolt | Insert               |
|----------------------------|----|----------------|--------|------|-----|------|-------------|------|---------------|----------------------|
|                            |    | DC             | DCONMS | DHUB | OAL | APMX |             |      |               |                      |
| <b>LM90SE6125-40R-21</b>   | 6  | 125            | 40     | 85   | 63  | 17.0 | A           | 3.4  | SH M20x40     | SEKX 2107...<br>E289 |
| <b>8160-40R-21</b>         | 8  | 160            | 40     | 110  | 63  | 17.0 | C           | 5.3  | -             |                      |
| <b>10200-60R-21</b>        | 10 | 200            | 60     | 130  | 80  | 17.0 | C           | 9.6  | -             |                      |
| <b>12200-60R-21</b>        | 12 | 200            | 60     | 130  | 80  | 17.0 | C           | 9.5  | -             |                      |
| <b>12250-60R-21</b>        | 12 | 250            | 60     | 160  | 80  | 17.0 | C           | 16.4 | -             |                      |
| <b>14250-60R-21</b>        | 14 | 250            | 60     | 160  | 80  | 17.0 | C           | 16.4 | -             |                      |
| <b>12315-60R-21</b>        | 12 | 315            | 60     | 220  | 80  | 17.0 | D           | 21.0 | -             |                      |
| <b>LM90SE6125-38.1R-21</b> | 6  | 125            | 38.1   | 85   | 63  | 17.0 | B           | 3.4  | -             |                      |
| <b>8160-50.8R-21</b>       | 8  | 160            | 50.8   | 110  | 63  | 17.0 | B           | 5.3  | -             |                      |
| <b>10200-47.625R-21</b>    | 10 | 200            | 47.625 | 130  | 80  | 17.0 | C           | 9.6  | -             |                      |
|                            |    |                |        |      |     |      |             |      |               |                      |
|                            |    |                |        |      |     |      |             |      |               |                      |
|                            |    |                |        |      |     |      |             |      |               |                      |
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|                            |    |                |        |      |     |      |             |      |               |                      |
|                            |    |                |        |      |     |      |             |      |               |                      |
|                            |    |                |        |      |     |      |             |      |               |                      |
|                            |    |                |        |      |     |      |             |      |               |                      |

## Spare parts

| Designation              | Shim        | Shim screw    | Wedge      | Wedge screw | Wedge screw wrench | Shim screw wrench |
|--------------------------|-------------|---------------|------------|-------------|--------------------|-------------------|
|                          |             |               |            |             |                    |                   |
| <b>LM90SE-21</b> (-Ø200) | TSSE 21N-ST | TS 50C130I/HG | WPA 8-SE16 | TS 80160W   | T-W 4              | T-T20             |
| <b>LM90SE-21</b> (Ø250-) | TSSE 21N-ST | TS 50C130I/HG | WPA 8-SE16 | TS 80200W   | T-W 4              | T-T20             |
|                          |             |               |            |             |                    |                   |
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|                          |             |               |            |             |                    |                   |

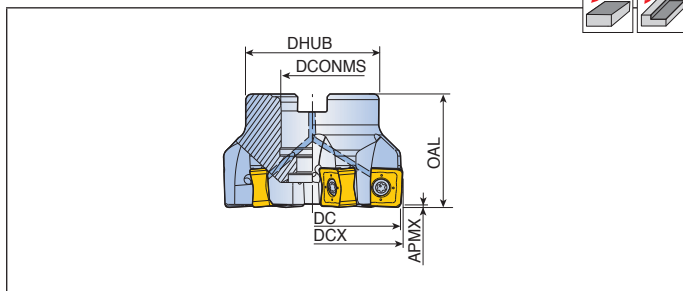
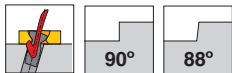
► The shim screw wrench<sup>(1)</sup> shall be ordered separately



# TFM90SN/TFM88SN-13



## Face mills



| Designation |               |  | Dimension (mm) |       |        |      |     |      | Coolant Arbor |       |  Kg | Mounting bolt | Insert                                                                                                       |
|-------------|---------------|-----------------------------------------------------------------------------------|----------------|-------|--------|------|-----|------|---------------|-------|--------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------|
|             |               |                                                                                   | DC             | DCX   | DCONMS | DHUB | OAL | APMX | hole          | style |                                                                                      |               |                                                                                                              |
| TFM90SN     | 550-22R-13    | 5                                                                                 | 50             | 50.7  | 22     | 45   | 40  | 12.0 | ●             | A     | 0.3                                                                                  | SH M10x30     | SNGX<br>1306 ...<br> E293   |
|             | 663-22R-13    | 6                                                                                 | 63             | 63.7  | 22     | 47   | 40  | 12.0 | ●             | A     | 0.5                                                                                  | SH M10x30     |                                                                                                              |
|             | 780-27R-13    | 7                                                                                 | 80             | 80.7  | 27     | 70   | 50  | 12.0 | ●             | A     | 1.2                                                                                  | SH M12x35     |                                                                                                              |
|             | 980-27R-13*   | 9                                                                                 | 80             | 80.7  | 27     | 70   | 50  | 12.0 | ●             | A     | 1.2                                                                                  | SH M12x35     |                                                                                                              |
|             | 8100-32R-13   | 8                                                                                 | 100            | 100.8 | 32     | 85   | 50  | 12.0 | ●             | A     | 1.9                                                                                  | SH M16x30     |                                                                                                              |
|             | 13100-32R-13* | 13                                                                                | 100            | 100.8 | 32     | 85   | 50  | 12.0 | ●             | A     | 1.9                                                                                  | SH M16x30     |                                                                                                              |
|             | 10125-40R-13  | 10                                                                                | 125            | 125.8 | 40     | 85   | 63  | 12.0 | x             | B     | 2.8                                                                                  | -             |                                                                                                              |
|             | 16125-40R-13* | 16                                                                                | 125            | 125.8 | 40     | 85   | 63  | 12.0 | x             | B     | 2.8                                                                                  | -             |                                                                                                              |
| TFM88SN     | 550-22R-13    | 5                                                                                 | 50             | 51.2  | 22     | 45   | 40  | 12.0 | ●             | A     | 0.3                                                                                  | SH M10x30     | SNGX<br>1306 ZN...<br> E293 |
|             | 663-22R-13    | 6                                                                                 | 63             | 64.2  | 22     | 47   | 40  | 12.0 | ●             | A     | 0.5                                                                                  | SH M10x30     |                                                                                                              |
|             | 780-27R-13    | 7                                                                                 | 80             | 81.2  | 27     | 70   | 50  | 12.0 | ●             | A     | 1.2                                                                                  | SH M12x35     |                                                                                                              |
|             | 980-27R-13*   | 9                                                                                 | 80             | 81.2  | 27     | 70   | 50  | 12.0 | ●             | A     | 1.2                                                                                  | SH M12x35     |                                                                                                              |
|             | 8100-32R-13   | 8                                                                                 | 100            | 101.2 | 32     | 85   | 50  | 12.0 | ●             | A     | 1.9                                                                                  | SH M16x30     |                                                                                                              |
|             | 11100-32R-13* | 11                                                                                | 100            | 101.2 | 32     | 85   | 50  | 12.0 | ●             | A     | 1.9                                                                                  | SH M16x30     |                                                                                                              |
|             | 10125-40R-13  | 10                                                                                | 125            | 126.1 | 40     | 85   | 63  | 12.0 | x             | B     | 2.8                                                                                  | -             |                                                                                                              |
|             | 14125-40R-13* | 14                                                                                | 125            | 126.1 | 40     | 85   | 63  | 12.0 | x             | B     | 2.8                                                                                  | -             |                                                                                                              |
|             | 12160-40R-13  | 12                                                                                | 160            | 161.1 | 40     | 110  | 63  | 12.0 | x             | C     | 4.2                                                                                  | -             |                                                                                                              |
|             | 18160-40R-13* | 18                                                                                | 160            | 161.1 | 40     | 110  | 63  | 12.0 | x             | C     | 4.2                                                                                  | -             |                                                                                                              |
|             | 14200-60R-13  | 14                                                                                | 200            | 201.1 | 60     | 130  | 63  | 12.0 | x             | C     | 6.0                                                                                  | -             |                                                                                                              |
|             | 22200-60R-13* | 22                                                                                | 200            | 201.1 | 60     | 130  | 63  | 12.0 | x             | C     | 6.0                                                                                  | -             |                                                                                                              |

► \*: Fine pitch cutter for cast iron

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

| Designation    | Screw      | Wrench |  |  |  |
|----------------|------------|--------|--|--|--|
|                |            |        |  |  |  |
| <b>TFM90SN</b> | TS 40B100I | T-T15  |  |  |  |
| <b>TFM88SN</b> | TS 40B100I | T-T15  |  |  |  |
|                |            |        |  |  |  |
|                |            |        |  |  |  |
|                |            |        |  |  |  |



E312-E315

E316-E317

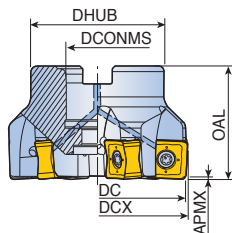
E318

# CHASE 2 QUAD



90°

88°



- ▶ \*: Fine pitch cutter for cast iron
- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

| Designation    | Screw                                                                               | Wrench                                                                              |  |  |  |
|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                |  |  |  |  |  |
| <b>TFM90SN</b> | TS 40B100I                                                                          | T-T15                                                                               |  |  |  |
| <b>TFM88SN</b> | TS 40B100I                                                                          | T-T15                                                                               |  |  |  |
|                |                                                                                     |                                                                                     |  |  |  |
|                |                                                                                     |                                                                                     |  |  |  |
|                |                                                                                     |                                                                                     |  |  |  |



E312-E315



E316-E317

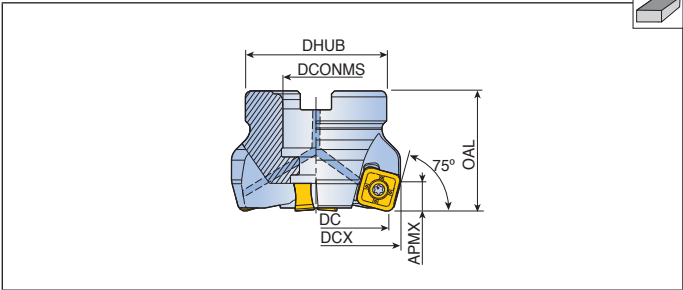
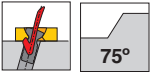


E318

# TFM75SN-13



## Face mills



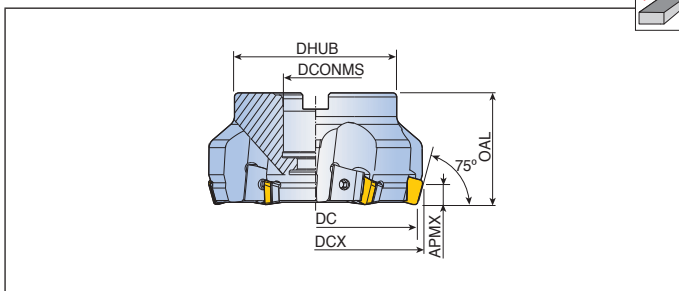
| Designation                  |  | Dimension (mm) |       |        |      |     |      | Coolant hole | Arbor style |  Kg | Mounting bolt | Insert                                                                                                                                                      |
|------------------------------|-----------------------------------------------------------------------------------|----------------|-------|--------|------|-----|------|--------------|-------------|--------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                              |                                                                                   | DC             | DCX   | DCONMS | DHUB | OAL | APMX |              |             |                                                                                      |               |                                                                                                                                                             |
| <b>TFM75SN 450-22R-13</b>    | 4                                                                                 | 50             | 55.4  | 22     | 45   | 40  | 9.5  | ●            | A           | 0.4                                                                                  | LH M10x25     | <div>SNM(G)X 1306 EN...</div> <div>SNMX 1306 XTN...</div> <div> E292</div> |
| <b>650-22R-13</b>            | 6                                                                                 | 50             | 55.4  | 22     | 45   | 40  | 9.5  | ●            | A           | 0.4                                                                                  | LH M10x25     |                                                                                                                                                             |
| <b>663-22R-13</b>            | 6                                                                                 | 63             | 68.4  | 22     | 47   | 40  | 9.5  | ●            | A           | 0.6                                                                                  | LH M10x25     |                                                                                                                                                             |
| <b>863-22R-13</b>            | 8                                                                                 | 63             | 68.4  | 22     | 47   | 40  | 9.5  | ●            | A           | 0.6                                                                                  | LH M10x25     |                                                                                                                                                             |
| <b>780-27R-13</b>            | 7                                                                                 | 80             | 85.4  | 27     | 70   | 50  | 9.5  | ●            | A           | 1.3                                                                                  | LH M12x30     |                                                                                                                                                             |
| <b>1080-27R-13</b>           | 10                                                                                | 80             | 85.4  | 27     | 70   | 50  | 9.5  | ●            | A           | 1.3                                                                                  | LH M12x30     |                                                                                                                                                             |
| <b>8100-32R-13</b>           | 8                                                                                 | 100            | 105.4 | 32     | 85   | 50  | 9.5  | ●            | A           | 1.9                                                                                  | LH M16x35     |                                                                                                                                                             |
| <b>12100-32R-13</b>          | 12                                                                                | 100            | 105.4 | 32     | 85   | 50  | 9.5  | ●            | A           | 2.0                                                                                  | LH M16x35     |                                                                                                                                                             |
| <b>10125-40R-13</b>          | 10                                                                                | 125            | 130.3 | 40     | 85   | 63  | 9.5  | ●            | A           | 3.2                                                                                  | SH M20x40     |                                                                                                                                                             |
| <b>16125-40R-13</b>          | 16                                                                                | 125            | 130.4 | 40     | 85   | 63  | 9.5  | ●            | A           | 3.3                                                                                  | SH M20x40     |                                                                                                                                                             |
| <b>12160-40R-13</b>          | 12                                                                                | 160            | 165.3 | 40     | 110  | 63  | 9.5  | x            | C           | 4.7                                                                                  | -             |                                                                                                                                                             |
| <b>20160-40R-13</b>          | 20                                                                                | 160            | 165.4 | 40     | 110  | 63  | 9.5  | x            | C           | 4.8                                                                                  | -             |                                                                                                                                                             |
| <b>16200-60R-13</b>          | 16                                                                                | 200            | 205.3 | 60     | 130  | 63  | 9.5  | x            | C           | 6.4                                                                                  | -             |                                                                                                                                                             |
| <b>22200-60R-13</b>          | 22                                                                                | 200            | 205.4 | 60     | 130  | 63  | 9.5  | x            | C           | 6.4                                                                                  | -             |                                                                                                                                                             |
| <b>20250-60R-13</b>          | 20                                                                                | 250            | 255.3 | 60     | 160  | 63  | 9.5  | x            | C           | 11.7                                                                                 | -             |                                                                                                                                                             |
| <b>TFM75SN 580-25.4R-13B</b> | 5                                                                                 | 80             | 85.4  | 25.4   | 70   | 50  | 9.5  | ●            | A           | 1.3                                                                                  | LH M12x30     |                                                                                                                                                             |
| <b>1080-25.4R-13</b>         | 10                                                                                | 80             | 85.4  | 25.4   | 70   | 50  | 9.5  | ●            | A           | 1.5                                                                                  | LH M12x30     |                                                                                                                                                             |
| <b>6100-31.75R-13B</b>       | 6                                                                                 | 100            | 105.4 | 31.75  | 80   | 50  | 9.5  | x            | B           | 1.9                                                                                  | -             |                                                                                                                                                             |
| <b>8125-38.1R-13B</b>        | 8                                                                                 | 125            | 130.3 | 38.1   | 80   | 63  | 9.5  | x            | B           | 3.2                                                                                  | -             |                                                                                                                                                             |
| <b>12160-50.8R-13B</b>       | 12                                                                                | 160            | 165.3 | 50.8   | 100  | 63  | 9.5  | x            | B           | 4.7                                                                                  | -             |                                                                                                                                                             |
|                              |                                                                                   |                |       |        |      |     |      |              |             |                                                                                      |               |                                                                                                                                                             |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

| Designation    | Screw      | Wrench |  |  |  |
|----------------|------------|--------|--|--|--|
|                |            |        |  |  |  |
| <b>TFM75SN</b> | TS 40B100I | T-T15  |  |  |  |
|                |            |        |  |  |  |
|                |            |        |  |  |  |
|                |            |        |  |  |  |
|                |            |        |  |  |  |



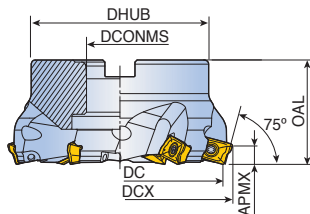


► Metric bore cutter is available upon request

| Designation              | Carbide shim                                                                        | Wedge                                                                               | Shim screw                                                                          | Wedge screw                                                                         | Wrench                                                                              |                                                                                                    |
|--------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
|                          |  |  |  |  |  |  <sup>(1)</sup> |
| <b>LM75SP-12</b> (Ø80)   | TSSP 12N                                                                            | WPA 8                                                                               | TS 40B100I                                                                          | TS 80160W                                                                           | T-W 4                                                                               | T-T15                                                                                              |
| <b>LM75SP-12</b> (Ø100-) | TSSP 12N                                                                            | WPA 8                                                                               | TS 40B100I                                                                          | TS 80200W                                                                           | T-W 4                                                                               | T-T15                                                                                              |
| <b>LM75SP-15</b>         | TSSP 15N                                                                            | WPA 8                                                                               | TS 40B100I                                                                          | TS 80200W                                                                           | T-W 4                                                                               | T-T15                                                                                              |
|                          |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                    |

|                                                                                                                              |                                                                                                                         |                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| <p>Cutting Condition</p>  <p>E312-E315</p> | <p>Arbor Style</p>  <p>E316-E317</p> | <p>Torque</p>  <p>E318</p> |
|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|

**CHASE MILL**



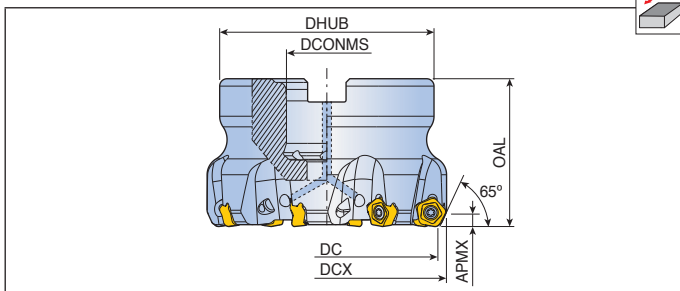
75°

► Cutter for the other corner of APKT inserts

| Designation       | Screw                                                                               | Wrench                                                                              |  |  |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                   |  |  |  |  |  |
| <b>TFM75AP-17</b> | TS 40120I/HG                                                                        | T-T15                                                                               |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |



**CHASE 10 MILL**  
FACE ROLLING



► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

| Designation       | Screw                                                                               | Wrench                                                                              |                                                                                     | Wrench handle                                                                       |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                   |  |  |  |  |  |
| <b>TFM65PT-05</b> | TS 25D060/HG-P                                                                      | TD 7P                                                                               | -                                                                                   |                                                                                     |  |
| <b>TFM65PT-10</b> | TS 50D130/HG-P                                                                      | -                                                                                   | TBLD T20P-W6                                                                        | SW6-T                                                                               |  |
|                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |

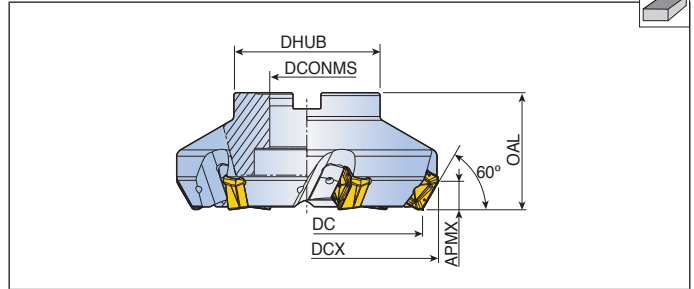




# LM60SC-21



## Face mills



| Designation   |                         | Dimension (mm) |     |        |        |     |      | Arbor style | Kg | Insert |
|---------------|-------------------------|----------------|-----|--------|--------|-----|------|-------------|----|--------|
|               |                         | DC             | DCX | DCONMS | DHUB   | OAL | APMX |             |    |        |
| <b>LM60SC</b> | <b>5125-40R-21</b>      | 5              | 125 | 141.2  | 40     | 85  | 63   | 13.0        | B  | 4.1    |
|               | <b>8160-40R-21</b>      | 8              | 160 | 176.1  | 40     | 110 | 63   | 13.0        | C  | 6.5    |
|               | <b>10160-40R-21</b>     | 10             | 160 | 176.1  | 40     | 110 | 63   | 13.0        | C  | 6.4    |
|               | <b>10200-60R-21</b>     | 10             | 200 | 216.1  | 60     | 130 | 80   | 13.0        | C  | 11.8   |
|               | <b>12200-60R-21</b>     | 12             | 200 | 216.1  | 60     | 130 | 80   | 13.0        | C  | 11.8   |
|               | <b>12250-60R-21</b>     | 12             | 250 | 266    | 60     | 160 | 80   | 13.0        | C  | 19.2   |
|               | <b>14250-60R-21</b>     | 14             | 250 | 266    | 60     | 160 | 80   | 13.0        | C  | 19.1   |
|               | <b>16250-60R-21</b>     | 16             | 250 | 266    | 60     | 160 | 80   | 13.0        | C  | 19.1   |
|               | <b>12315-60R-21</b>     | 12             | 315 | 331    | 60     | 220 | 80   | 13.0        | D  | 25.0   |
|               | <b>16315-60R-21</b>     | 16             | 315 | 331    | 60     | 220 | 80   | 13.0        | D  | 25.0   |
| <b>LM60SC</b> | <b>5125-38.1R-21</b>    | 5              | 125 | 141.2  | 38.1   | 80  | 63   | 13.0        | B  | 4.1    |
|               | <b>10160-50.8R-21</b>   | 10             | 160 | 176.1  | 50.8   | 100 | 63   | 13.0        | B  | 6.4    |
|               | <b>10200-47.625R-21</b> | 10             | 200 | 216.1  | 47.625 | 130 | 80   | 13.0        | C  | 11.8   |
|               | <b>12250-47.625R-21</b> | 12             | 250 | 266    | 47.625 | 160 | 80   | 13.0        | C  | 19.2   |
|               | <b>16250-47.625R-21</b> | 16             | 250 | 266    | 47.625 | 160 | 80   | 13.0        | C  | 19.1   |
|               |                         |                |     |        |        |     |      |             |    |        |
|               |                         |                |     |        |        |     |      |             |    |        |
|               |                         |                |     |        |        |     |      |             |    |        |
|               |                         |                |     |        |        |     |      |             |    |        |
|               |                         |                |     |        |        |     |      |             |    |        |
|               |                         |                |     |        |        |     |      |             |    |        |

SCKN 2107...  
E288

## Spare parts

| Designation      | Shim        | Shim screw    | Wedge     | Wedge screw | Wrench |       |
|------------------|-------------|---------------|-----------|-------------|--------|-------|
|                  |             |               |           |             |        |       |
| <b>LM60SC-21</b> | TSSC 21R-ST | TS 50C130I/HG | WSC 8R-21 | TS 80200W   | T-W 4  | T-T20 |
|                  |             |               |           |             |        |       |
|                  |             |               |           |             |        |       |
|                  |             |               |           |             |        |       |

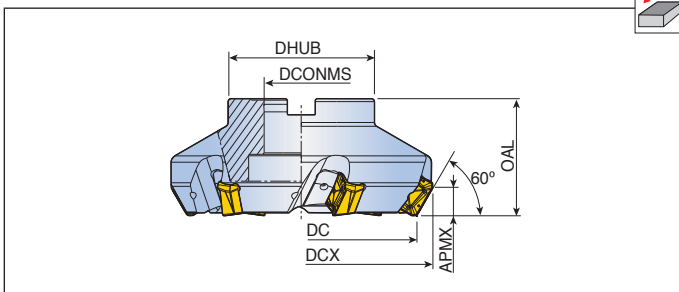


► The shim screw wrench<sup>(1)</sup> shall be ordered separately

# LM60SC-27



## Face mills



| Designation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | Dimension (mm) |       |        |      |      |      | Arbor style  | Insert |                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------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---------------------------------------------------------------|--------|------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                   | DC             | DCX   | DCONMS | DHUB | OAL  | APMX |                                                                                               |        |                                                                                    |
| <b>LM60SC 5125-40R-27</b><br><b>6160-40R-27</b><br><b>8160-40R-27</b><br><b>8200-60R-27</b><br><b>10200-60R-27</b><br><b>10250-60R-27</b><br><b>12250-60R-27</b><br><b>12315-60R-27</b><br><b>15315-60R-27</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| <b>LM60SC 12250-47.625R-27</b><br><b>12315-47.625R-27</b><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><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|                                                                                   |                |       |        |      |      |      |                                                                                               |        |                                                                                    |

## Spare parts

| Designation      | Shim        | Shim screw | Wedge  | Wedge screw | Wrench |         | Wrench handle |
|------------------|-------------|------------|--------|-------------|--------|---------|---------------|
|                  |             |            |        |             |        |         |               |
| <b>LM60SC-27</b> | TSSC 27R-TS | TS 60A130I | WSC 8R | TS 80200W   | T-W 4  | BLD T25 | SW6-T         |
|                  |             |            |        |             |        |         |               |
|                  |             |            |        |             |        |         |               |
|                  |             |            |        |             |        |         |               |
|                  |             |            |        |             |        |         |               |

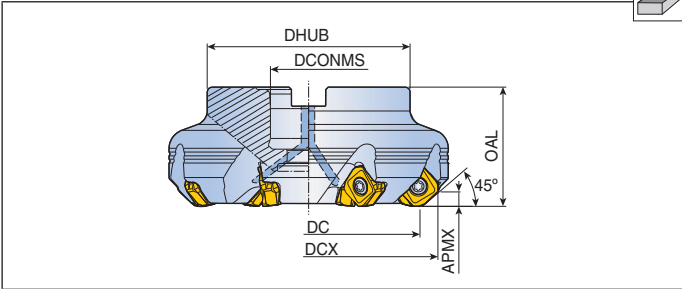
E312-E315
E316-E317
E318

► The wrench<sup>(1)</sup> & wrench handle<sup>(2)</sup> shall be ordered separately

8D-TF45-11



Face mills



| Designation         |    | Dimension (mm) |     |        |      |     |      | Coolant hole | Arbor type | Kg  | Mounting bolt | Insert          |
|---------------------|----|----------------|-----|--------|------|-----|------|--------------|------------|-----|---------------|-----------------|
|                     |    | DC             | DCX | DCONMS | DHUB | OAL | APMX |              |            |     |               |                 |
| 8D-TF45- 440-16R-11 | 4  | 40             | 51  | 16     | 38   | 40  | 4.2  | ●            | A          | 0.4 | SH M8x25      | SQU1105<br>E298 |
| 640-16R-11          | 6  | 40             | 51  | 16     | 38   | 40  | 4.2  | ●            | A          | 0.4 | SH M8x25      |                 |
| 650-22R-11          | 6  | 50             | 61  | 22     | 45   | 40  | 4.2  | ●            | A          | 0.5 | LH M10x25     |                 |
| 850-22R-11          | 8  | 50             | 61  | 22     | 45   | 40  | 4.2  | ●            | A          | 0.5 | LH M10x25     |                 |
| 763-22R-11          | 7  | 63             | 74  | 22     | 47   | 50  | 4.2  | ●            | A          | 1.0 | SH M10x30     |                 |
| 1063-22R-11         | 10 | 63             | 74  | 22     | 47   | 50  | 4.2  | ●            | A          | 1.0 | SH M10x30     |                 |
| 880-27R-11          | 8  | 80             | 91  | 27     | 70   | 50  | 4.2  | ●            | A          | 1.6 | LH M12x30     |                 |
| 1280-27R-11         | 12 | 80             | 91  | 27     | 70   | 50  | 4.2  | ●            | A          | 1.6 | LH M12x30     |                 |
| 9100-32R-11         | 9  | 100            | 111 | 32     | 85   | 50  | 4.2  | ●            | A          | 2.4 | LH M16x35     |                 |
| 14100-32R-11        | 14 | 100            | 111 | 32     | 85   | 50  | 4.2  | ●            | A          | 2.5 | LH M16x35     |                 |
| 8125-40R-11         | 8  | 125            | 136 | 40     | 85   | 63  | 4.2  | ●            | A          | 4.1 | SH M20x40     |                 |
| 12125-40R-11        | 12 | 125            | 136 | 40     | 85   | 63  | 4.2  | ●            | A          | 4.0 | SH M20x40     |                 |
| 18125-40R-11        | 18 | 125            | 136 | 40     | 85   | 63  | 4.2  | ●            | A          | 4.1 | SH M20x40     |                 |
| 10160-40R-11        | 10 | 160            | 171 | 40     | 110  | 63  | 4.2  | x            | C          | 5.7 | -             |                 |
| 16160-40R-11        | 16 | 160            | 171 | 40     | 110  | 63  | 4.2  | x            | C          | 5.6 | -             |                 |
| 24160-40R-11        | 24 | 160            | 171 | 40     | 110  | 63  | 4.2  | x            | C          | 5.6 | -             |                 |
|                     |    |                |     |        |      |     |      |              |            |     |               |                 |
|                     |    |                |     |        |      |     |      |              |            |     |               |                 |
|                     |    |                |     |        |      |     |      |              |            |     |               |                 |
|                     |    |                |     |        |      |     |      |              |            |     |               |                 |
|                     |    |                |     |        |      |     |      |              |            |     |               |                 |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

Spare parts

| Designation | Screw      | Wrench      | Wrench handle |  |  |
|-------------|------------|-------------|---------------|--|--|
|             |            |             |               |  |  |
| 8D-TF45-11  | TS 40A115I | TBLD T15-W6 | SW6-T         |  |  |
|             |            |             |               |  |  |
|             |            |             |               |  |  |
|             |            |             |               |  |  |

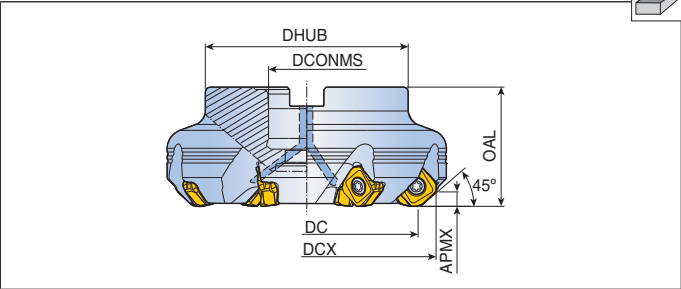
E312-E315

E316-E317

E318

# 8D-TF45-14

## Face mills



| Designation               |    | Dimension (mm) |       |        |      |     |      | Coolant hole | Arbor type | Kg  | Mounting bolt | Insert            |
|---------------------------|----|----------------|-------|--------|------|-----|------|--------------|------------|-----|---------------|-------------------|
|                           |    | DC             | DCX   | DCONMS | DHUB | OAL | APMX |              |            |     |               |                   |
| <b>8D-TF45-450-22R-14</b> | 4  | 50             | 65.5  | 22     | 45   | 40  | 6    | ●            | A          | 0.6 | LH M10x25     | SQKU 1406<br>E298 |
| <b>650-22R-14</b>         | 6  | 50             | 65.5  | 22     | 45   | 40  | 6    | ●            | A          | 0.6 | LH M10x25     |                   |
| <b>663-22R-14</b>         | 6  | 63             | 78.5  | 22     | 47   | 50  | 6    | ●            | A          | 1.1 | SH M10x30     |                   |
| <b>863-22R-14</b>         | 8  | 63             | 78.5  | 22     | 47   | 50  | 6    | ●            | A          | 1.0 | SH M10x30     |                   |
| <b>780-27R-14</b>         | 7  | 80             | 95.5  | 27     | 70   | 50  | 6    | ●            | A          | 1.7 | LH M12x30     |                   |
| <b>1080-27R-14</b>        | 10 | 80             | 95.5  | 27     | 70   | 50  | 6    | ●            | A          | 1.7 | LH M12x30     |                   |
| <b>8100-32R-14</b>        | 8  | 100            | 115.5 | 32     | 85   | 50  | 6    | ●            | A          | 2.6 | LH M16x35     |                   |
| <b>12100-32R-14</b>       | 12 | 100            | 115.5 | 32     | 85   | 50  | 6    | ●            | A          | 2.5 | LH M16x35     |                   |
| <b>6125-40R-14</b>        | 6  | 125            | 140.5 | 40     | 85   | 63  | 6    | ●            | A          | 4.1 | SH M20x40     |                   |
| <b>10125-40R-14</b>       | 10 | 125            | 140.5 | 40     | 85   | 63  | 6    | ●            | A          | 4.4 | SH M20x40     |                   |
| <b>16125-40R-14</b>       | 16 | 125            | 140.5 | 40     | 85   | 63  | 6    | ●            | A          | 4.3 | SH M20x40     |                   |
| <b>7160-40R-14</b>        | 7  | 160            | 175.5 | 40     | 110  | 63  | 6    | x            | C          | 5.6 | -             |                   |
| <b>12160-40R-14</b>       | 12 | 160            | 175.5 | 40     | 110  | 63  | 6    | x            | C          | 5.9 | -             |                   |
| <b>20160-40R-14</b>       | 20 | 160            | 175.5 | 40     | 110  | 63  | 6    | x            | C          | 5.9 | -             |                   |
| <b>8200-60R-14</b>        | 8  | 200            | 215.5 | 60     | 130  | 63  | 6    | x            | C          | 8.0 | -             |                   |
| <b>18200-60R-14</b>       | 18 | 200            | 215.5 | 60     | 130  | 63  | 6    | x            | C          | 8.4 | -             |                   |
| <b>26200-60R-14</b>       | 26 | 200            | 215.5 | 60     | 130  | 63  | 6    | x            | C          | 8.3 | -             |                   |
|                           |    |                |       |        |      |     |      |              |            |     |               |                   |
|                           |    |                |       |        |      |     |      |              |            |     |               |                   |
|                           |    |                |       |        |      |     |      |              |            |     |               |                   |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

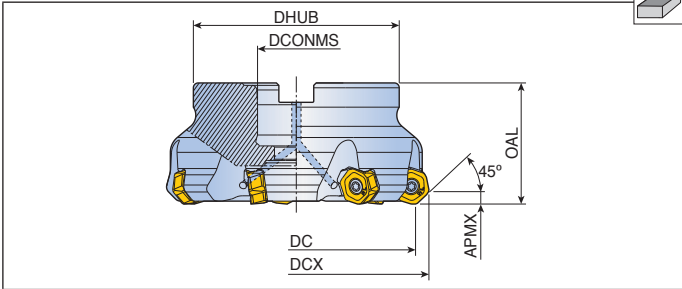
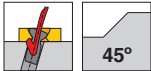
| Designation       | Screw         | Wrench      | Wrench handle |  |  |
|-------------------|---------------|-------------|---------------|--|--|
|                   |               |             |               |  |  |
| <b>8D-TF45-14</b> | TS 50C130I/HG | TBLD T20-W6 | SW6-T         |  |  |
|                   |               |             |               |  |  |
|                   |               |             |               |  |  |
|                   |               |             |               |  |  |
|                   |               |             |               |  |  |



# 12D-TF45-06



## Face mills



| Designation                |    | Dimension (mm) |       |        |      |     |      | Coolant hole | Arbor style | Kg  | Mounting bolt | Insert                     |
|----------------------------|----|----------------|-------|--------|------|-----|------|--------------|-------------|-----|---------------|----------------------------|
|                            |    | DC             | DCX   | DCONMS | DHUB | OAL | APMX |              |             |     |               |                            |
| <b>12D-TF45-450-22R-06</b> | 4  | 50             | 60.8  | 22     | 45   | 40  | 3.0  | ●            | A           | 0.5 | LH M10x25     | HXK(H)U<br>0605...<br>E275 |
| <b>650-22R-06</b>          | 6  | 50             | 60.8  | 22     | 45   | 40  | 3.0  | ●            | A           | 0.5 | LH M10x25     |                            |
| <b>563-22R-06</b>          | 5  | 63             | 73.8  | 22     | 47   | 40  | 3.0  | ●            | A           | 0.7 | LH M10x25     |                            |
| <b>763-22R-06</b>          | 7  | 63             | 73.8  | 22     | 47   | 40  | 3.0  | ●            | A           | 0.7 | LH M10x25     |                            |
| <b>680-27R-06</b>          | 6  | 80             | 90.8  | 27     | 70   | 50  | 3.0  | ●            | A           | 1.5 | SH M12x35     |                            |
| <b>1080-27R-06</b>         | 10 | 80             | 90.8  | 27     | 70   | 50  | 3.0  | ●            | A           | 1.5 | SH M12x35     |                            |
| <b>7100-32R-06</b>         | 7  | 100            | 110.8 | 32     | 85   | 50  | 3.0  | ●            | A           | 2.2 | LH M16x35     |                            |
| <b>12100-32R-06</b>        | 12 | 100            | 110.8 | 32     | 85   | 50  | 3.0  | ●            | A           | 2.2 | LH M16x35     |                            |
| <b>10125-40R-06</b>        | 10 | 125            | 135.8 | 40     | 85   | 63  | 3.0  | ●            | A           | 3.6 | SH M20x40     |                            |
| <b>16125-40R-06</b>        | 16 | 125            | 135.8 | 40     | 85   | 63  | 3.0  | ●            | A           | 3.6 | SH M20x40     |                            |
| <b>12160-40R-06</b>        | 12 | 160            | 170.8 | 40     | 110  | 63  | 3.0  | x            | C           | 4.9 | -             |                            |
| <b>20160-40R-06</b>        | 20 | 160            | 170.8 | 40     | 110  | 63  | 3.0  | x            | C           | 4.9 | -             |                            |
|                            |    |                |       |        |      |     |      |              |             |     |               |                            |
|                            |    |                |       |        |      |     |      |              |             |     |               |                            |
|                            |    |                |       |        |      |     |      |              |             |     |               |                            |
|                            |    |                |       |        |      |     |      |              |             |     |               |                            |
|                            |    |                |       |        |      |     |      |              |             |     |               |                            |
|                            |    |                |       |        |      |     |      |              |             |     |               |                            |
|                            |    |                |       |        |      |     |      |              |             |     |               |                            |
|                            |    |                |       |        |      |     |      |              |             |     |               |                            |
|                            |    |                |       |        |      |     |      |              |             |     |               |                            |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

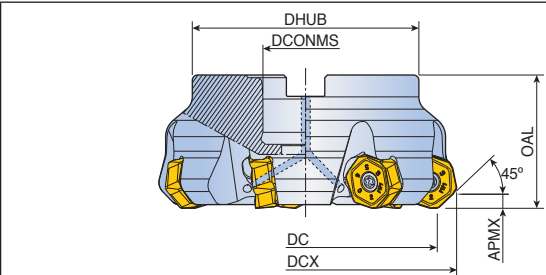
| Designation        | Screw      | Wrench      | Wrench handle |  |  |
|--------------------|------------|-------------|---------------|--|--|
|                    |            |             |               |  |  |
| <b>12D-TF45-06</b> | TS 40B100I | TBLD T15-W6 | SW6-T         |  |  |
|                    |            |             |               |  |  |
|                    |            |             |               |  |  |
|                    |            |             |               |  |  |
|                    |            |             |               |  |  |



# 12D-TF45-10



## Face mills



| Designation         |  | Dimension (mm) |       |        |      |     |      | Coolant hole | Arbor style |  Kg | Mounting bolt | Insert                                                                                                       |
|---------------------|-----------------------------------------------------------------------------------|----------------|-------|--------|------|-----|------|--------------|-------------|--------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------|
|                     |                                                                                   | DC             | DCX   | DCONMS | DHUB | OAL | APMX |              |             |                                                                                      |               |                                                                                                              |
| 12D-TF45-563-22R-10 | 5                                                                                 | 63             | 77.5  | 22     | 47   | 50  | 5.0  | ●            | A           | 0.9                                                                                  | SH M10x30     | HXK(H)U<br>1007...<br> E275 |
| 763-22R-10          | 7                                                                                 | 63             | 77.5  | 22     | 47   | 50  | 5.0  | ●            | A           | 0.9                                                                                  | SH M10x30     |                                                                                                              |
| 680-27R-10          | 6                                                                                 | 80             | 94.5  | 27     | 70   | 50  | 5.0  | ●            | A           | 1.6                                                                                  | SH M12x35     |                                                                                                              |
| 980-27R-10          | 9                                                                                 | 80             | 94.5  | 27     | 70   | 50  | 5.0  | ●            | A           | 1.6                                                                                  | SH M12x35     |                                                                                                              |
| 7100-32R-10         | 7                                                                                 | 100            | 114.5 | 32     | 85   | 50  | 5.0  | ●            | A           | 2.4                                                                                  | LH M16x35     |                                                                                                              |
| 11100-32R-10        | 11                                                                                | 100            | 114.5 | 32     | 85   | 50  | 5.0  | ●            | A           | 2.4                                                                                  | LH M16x35     |                                                                                                              |
| 8125-40R-10         | 8                                                                                 | 125            | 139.5 | 40     | 85   | 63  | 5.0  | ●            | A           | 4.1                                                                                  | SH M20x40     |                                                                                                              |
| 10125-40R-10        | 10                                                                                | 125            | 139.5 | 40     | 85   | 63  | 5.0  | ●            | A           | 4.0                                                                                  | SH M20x40     |                                                                                                              |
| 14125-40R-10        | 14                                                                                | 125            | 139.5 | 40     | 85   | 63  | 5.0  | ●            | A           | 4.0                                                                                  | SH M20x40     |                                                                                                              |
| 10160-40R-10        | 10                                                                                | 160            | 174.5 | 40     | 110  | 63  | 5.0  | x            | C           | 5.6                                                                                  | -             |                                                                                                              |
| 16160-40R-10        | 16                                                                                | 160            | 174.5 | 40     | 110  | 63  | 5.0  | x            | C           | 5.6                                                                                  | -             |                                                                                                              |
| 14200-60R-10        | 14                                                                                | 200            | 214.5 | 60     | 130  | 63  | 5.0  | x            | C           | 7.9                                                                                  | -             |                                                                                                              |
| 21200-60R-10        | 21                                                                                | 200            | 214.5 | 60     | 130  | 63  | 5.0  | x            | C           | 7.9                                                                                  | -             |                                                                                                              |
| 16250-60R-10        | 16                                                                                | 250            | 264.5 | 60     | 160  | 63  | 5.0  | x            | C           | 12.4                                                                                 | -             |                                                                                                              |
| 26250-60R-10        | 26                                                                                | 250            | 264.5 | 60     | 160  | 63  | 5.0  | x            | C           | 12.4                                                                                 | -             |                                                                                                              |
|                     |                                                                                   |                |       |        |      |     |      |              |             |                                                                                      |               |                                                                                                              |
|                     |                                                                                   |                |       |        |      |     |      |              |             |                                                                                      |               |                                                                                                              |
|                     |                                                                                   |                |       |        |      |     |      |              |             |                                                                                      |               |                                                                                                              |
|                     |                                                                                   |                |       |        |      |     |      |              |             |                                                                                      |               |                                                                                                              |
|                     |                                                                                   |                |       |        |      |     |      |              |             |                                                                                      |               |                                                                                                              |
|                     |                                                                                   |                |       |        |      |     |      |              |             |                                                                                      |               |                                                                                                              |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

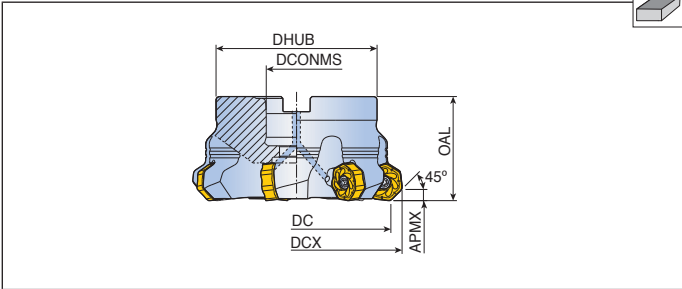
| Designation        | Screw         | Wrench      | Wrench handle |  |  |
|--------------------|---------------|-------------|---------------|--|--|
|                    |               |             |               |  |  |
| <b>12D-TF45-10</b> | TS 50C130I/HG | TBLD T20-W6 | SW6-T         |  |  |
|                    |               |             |               |  |  |
|                    |               |             |               |  |  |
|                    |               |             |               |  |  |



# 14D-F45XN-06



## Face mills



| Designation                   |  | Dimension (mm) |       |        |      |     |      | Coolant hole | Arbor style |  Kg | Mounting bolt | Insert                                                                                                          |
|-------------------------------|-----------------------------------------------------------------------------------|----------------|-------|--------|------|-----|------|--------------|-------------|--------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------|
|                               |                                                                                   | DC             | DCX   | DCONMS | DHUB | OAL | APMX |              |             |                                                                                      |               |                                                                                                                 |
| <b>14D-F45XN 550-22R-06</b>   | 5                                                                                 | 50             | 59.1  | 22     | 45   | 40  | 3.5  | ●            | A           | 0.4                                                                                  | LH M10x25     | XNM(H)U<br>0605...<br><br>E306 |
| <b>563-22R-06</b>             | 5                                                                                 | 63             | 72.1  | 22     | 47   | 50  | 3.5  | ●            | A           | 0.8                                                                                  | SH M10x35     |                                                                                                                 |
| <b>763-22R-06</b>             | 7                                                                                 | 63             | 72.1  | 22     | 47   | 50  | 3.5  | ●            | A           | 0.8                                                                                  | SH M10x35     |                                                                                                                 |
| <b>680-27R-06</b>             | 6                                                                                 | 80             | 89.1  | 27     | 70   | 50  | 3.5  | ●            | A           | 1.4                                                                                  | SH M12x35     |                                                                                                                 |
| <b>980-27R-06</b>             | 9                                                                                 | 80             | 89.1  | 27     | 70   | 50  | 3.5  | ●            | A           | 1.4                                                                                  | SH M12x35     |                                                                                                                 |
| <b>7100-32R-06</b>            | 7                                                                                 | 100            | 109.1 | 32     | 85   | 50  | 3.5  | ●            | A           | 2.1                                                                                  | SH M16x35     |                                                                                                                 |
| <b>11100-32R-06</b>           | 11                                                                                | 100            | 109.1 | 32     | 85   | 50  | 3.5  | ●            | A           | 2.1                                                                                  | SH M16x35     |                                                                                                                 |
| <b>10125-40R-06</b>           | 10                                                                                | 125            | 134.1 | 40     | 85   | 63  | 3.5  | ●            | A           | 3.6                                                                                  | SH M20x40     |                                                                                                                 |
| <b>14125-40R-06</b>           | 14                                                                                | 125            | 134.1 | 40     | 85   | 63  | 3.5  | ●            | A           | 3.6                                                                                  | SH M20x40     |                                                                                                                 |
| <b>12160-40R-06</b>           | 12                                                                                | 160            | 169.1 | 40     | 110  | 63  | 3.5  | x            | C           | 4.7                                                                                  | -             |                                                                                                                 |
| <b>16160-40R-06</b>           | 16                                                                                | 160            | 169.1 | 40     | 110  | 63  | 3.5  | x            | C           | 4.9                                                                                  | -             |                                                                                                                 |
| <b>18160-40R-06</b>           | 18                                                                                | 160            | 169.1 | 40     | 110  | 63  | 3.5  | x            | C           | 5.0                                                                                  | -             |                                                                                                                 |
| <b>14D-F45XN 763-25.4R-06</b> | 7                                                                                 | 63             | 72.1  | 25.4   | 47   | 50  | 3.5  | ●            | A           | 0.8                                                                                  | SH M12x30     |                                                                                                                 |
| <b>980-25.4R-06</b>           | 9                                                                                 | 80             | 89.1  | 25.4   | 70   | 50  | 3.5  | ●            | A           | 1.4                                                                                  | SH M12x35     |                                                                                                                 |
| <b>11100-31.75R-06</b>        | 11                                                                                | 100            | 109.1 | 31.75  | 80   | 50  | 3.5  | ●            | A           | 1.9                                                                                  | LH M16x35     |                                                                                                                 |
| <b>14125-38.1R-06</b>         | 14                                                                                | 125            | 134.1 | 38.1   | 80   | 63  | 3.5  | x            | B           | 3.9                                                                                  | -             |                                                                                                                 |
|                               |                                                                                   |                |       |        |      |     |      |              |             |                                                                                      | -             |                                                                                                                 |
|                               |                                                                                   |                |       |        |      |     |      |              |             |                                                                                      |               |                                                                                                                 |
|                               |                                                                                   |                |       |        |      |     |      |              |             |                                                                                      |               |                                                                                                                 |
|                               |                                                                                   |                |       |        |      |     |      |              |             |                                                                                      |               |                                                                                                                 |
|                               |                                                                                   |                |       |        |      |     |      |              |             |                                                                                      |               |                                                                                                                 |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

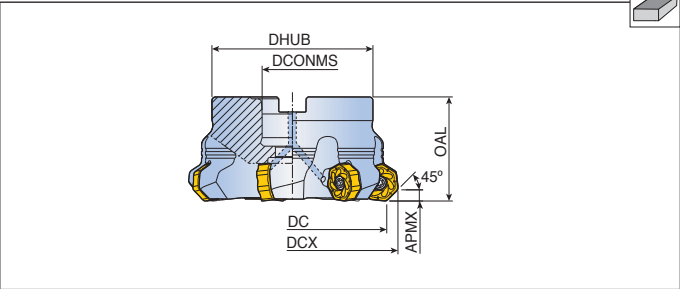
| Designation         | Screw      | Wrench |  |  |  |
|---------------------|------------|--------|--|--|--|
|                     |            |        |  |  |  |
| <b>14D-F45XN-06</b> | TS 40B100I | T-T15  |  |  |  |
|                     |            |        |  |  |  |
|                     |            |        |  |  |  |
|                     |            |        |  |  |  |
|                     |            |        |  |  |  |



# 14D-F45XN-09



## Face mills



| Designation                   |  | Dimension (mm) |      |        |      |     |      | Coolant hole | Arbor style |  kg | Mounting bolt | Insert                                                                                                           |
|-------------------------------|-----------------------------------------------------------------------------------|----------------|------|--------|------|-----|------|--------------|-------------|--------------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------|
|                               |                                                                                   | DC             | DCX  | DCONMS | DHUB | OAL | APMX |              |             |                                                                                      |               |                                                                                                                  |
| <b>14D-F45XN 563-22R-09</b>   | 5                                                                                 | 63             | 74.9 | 22     | 47   | 50  | 5.0  | ●            | A           | 0.9                                                                                  | SH M10x35     | XNM(H)U<br>0906...<br><br>E307 |
| <b>663-22R-09</b>             | 6                                                                                 | 63             | 74.9 | 22     | 47   | 50  | 5.0  | ●            | A           | 0.9                                                                                  | SH M10x35     |                                                                                                                  |
| <b>680-27R-09</b>             | 6                                                                                 | 80             | 91.9 | 27     | 70   | 50  | 5.0  | ●            | A           | 1.4                                                                                  | SH M12x35     |                                                                                                                  |
| <b>780-27R-09</b>             | 7                                                                                 | 80             | 91.9 | 27     | 70   | 50  | 5.0  | ●            | A           | 1.5                                                                                  | SH M12x35     |                                                                                                                  |
| <b>7100-32R-09</b>            | 7                                                                                 | 100            | 112  | 32     | 85   | 55  | 5.0  | ●            | A           | 2.4                                                                                  | SH M16x35     |                                                                                                                  |
| <b>9100-32R-09</b>            | 9                                                                                 | 100            | 112  | 32     | 85   | 55  | 5.0  | ●            | A           | 2.5                                                                                  | SH M16x35     |                                                                                                                  |
| <b>8125-40R-09</b>            | 8                                                                                 | 125            | 137  | 40     | 85   | 63  | 5.0  | ●            | A           | 3.5                                                                                  | SH M20x40     |                                                                                                                  |
| <b>10125-40R-09</b>           | 10                                                                                | 125            | 137  | 40     | 85   | 63  | 5.0  | ●            | A           | 3.6                                                                                  | SH M20x40     |                                                                                                                  |
| <b>12125-40R-09</b>           | 12                                                                                | 125            | 137  | 40     | 85   | 63  | 5.0  | ●            | A           | 3.4                                                                                  | SH M20x40     |                                                                                                                  |
| <b>10160-40R-09</b>           | 10                                                                                | 160            | 172  | 40     | 110  | 63  | 5.0  | x            | C           | 4.8                                                                                  | -             |                                                                                                                  |
| <b>12160-40R-09</b>           | 12                                                                                | 160            | 172  | 40     | 110  | 63  | 5.0  | x            | C           | 4.8                                                                                  | -             |                                                                                                                  |
| <b>14160-40R-09</b>           | 14                                                                                | 160            | 172  | 40     | 110  | 63  | 5.0  | x            | C           | 4.8                                                                                  | -             |                                                                                                                  |
| <b>12200-60R-09</b>           | 12                                                                                | 200            | 212  | 60     | 130  | 63  | 5.0  | x            | C           | 6.8                                                                                  | -             |                                                                                                                  |
| <b>16200-60R-09</b>           | 16                                                                                | 200            | 212  | 60     | 130  | 63  | 5.0  | x            | C           | 6.9                                                                                  | -             |                                                                                                                  |
| <b>16250-60R-09</b>           | 16                                                                                | 250            | 262  | 60     | 160  | 63  | 5.0  | x            | C           | 11.5                                                                                 | -             |                                                                                                                  |
| <b>20250-60R-09</b>           | 20                                                                                | 250            | 262  | 60     | 160  | 63  | 5.0  | x            | C           | 11.5                                                                                 | -             |                                                                                                                  |
| <b>14D-F45XN 680-25.4R-09</b> | 6                                                                                 | 80             | 91.9 | 25.4   | 70   | 50  | 5.0  | ●            | A           | 1.4                                                                                  | SH M12x35     |                                                                                                                  |
| <b>7100-31.75R-09</b>         | 7                                                                                 | 100            | 112  | 31.75  | 80   | 55  | 5.0  | ●            | A           | 2.4                                                                                  | SH M16x35     |                                                                                                                  |
| <b>8125-38.1R-09</b>          | 8                                                                                 | 125            | 137  | 38.1   | 80   | 63  | 5.0  | x            | B           | 3.5                                                                                  | -             |                                                                                                                  |
| <b>10160-50.8R-09</b>         | 10                                                                                | 160            | 172  | 50.8   | 100  | 63  | 5.0  | x            | B           | 4.8                                                                                  | -             |                                                                                                                  |
| <b>12200-47.625R-09</b>       | 12                                                                                | 200            | 212  | 47.625 | 130  | 63  | 5.0  | x            | C           | 6.8                                                                                  | -             |                                                                                                                  |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

| Designation         | Screw         | Wrench |  |  |  |
|---------------------|---------------|--------|--|--|--|
|                     |               |        |  |  |  |
| <b>14D-F45XN-09</b> | TS 50C130I/HG | T-T20  |  |  |  |
|                     |               |        |  |  |  |
|                     |               |        |  |  |  |
|                     |               |        |  |  |  |
|                     |               |        |  |  |  |

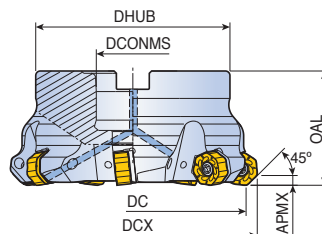
E312-E315

E316-E317

E318



# CHASE<sup>2</sup>HEPTA



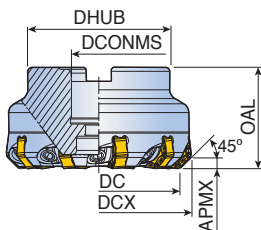
45°

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

| Designation          | Screw                                                                               | Shim                                                                                | Shim screw                                                                          | Wrench                                                                              | Wrench handle                                                                       |
|----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                      |  |  |  |  |  |
| <b>14D-F45XNH-06</b> | TS 35C110I                                                                          | TSXN 06N                                                                            | TS 5035062S-B                                                                       | TBLD T15-W6                                                                         | SW6-T                                                                               |
| <b>14D-F45XNH-09</b> | TS 50C130I/HG                                                                       | TSXN 09N                                                                            | TS 8050110S                                                                         | TBLD T20-W6                                                                         | SW6-T                                                                               |
|                      |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                      |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# CHASE<sup>2</sup>HEPTA

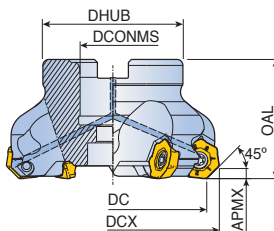


► Recommend to very stable machining condition at cast iron & steel

| Designation          | Wedge                                                                               | Wedge screw                                                                         | Wrench                                                                              |  |  |
|----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                      |  |  |  |  |  |
| <b>14D-F45XNW-09</b> | WFZ 8H                                                                              | WS 8                                                                                | T-W 4                                                                               |  |  |
|                      |                                                                                     |                                                                                     |                                                                                     |  |  |
|                      |                                                                                     |                                                                                     |                                                                                     |  |  |
|                      |                                                                                     |                                                                                     |                                                                                     |  |  |



# CHASE HEPTA

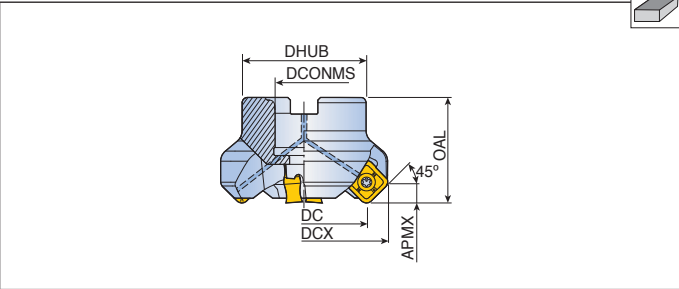


► Mounting bolt with coolant through hole is available on request (ordering example: SH M8x1.25x30-C)

| Designation      | Screw                                                                               | Wrench                                                                              |  |  |  |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                  |  |  |  |  |  |
| <b>TS-F45-06</b> | TS 40093I/HG                                                                        | T-T15                                                                               |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |



## Face mills



| Designation                  |  | Dimension (mm) |       |        |      |     |      | Coolant<br>hole | Arbor<br>style |  Kg | Mounting<br>bolt | Insert                                                                                                                                                            |
|------------------------------|-----------------------------------------------------------------------------------|----------------|-------|--------|------|-----|------|-----------------|----------------|--------------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                              |                                                                                   | DC             | DCX   | DCONMS | DHUB | OAL | APMX |                 |                |                                                                                      |                  |                                                                                                                                                                   |
| <b>TFM45SN 440-16R-13</b>    | 4                                                                                 | 40             | 54.7  | 16     | 38   | 40  | 7.0  | ●               | A              | 0.3                                                                                  | LH M10x25        | <div>SNM(G)X<br/>1306 AN...</div> <div>SNMX<br/>1306 XTN</div> <div> E292</div> |
| <b>450-22R-13</b>            | 4                                                                                 | 50             | 64.7  | 22     | 45   | 40  | 7.0  | ●               | A              | 0.5                                                                                  | LH M10x25        |                                                                                                                                                                   |
| <b>650-22R-13</b>            | 6                                                                                 | 50             | 64.7  | 22     | 45   | 40  | 7.0  | ●               | A              | 0.5                                                                                  | LH M10x25        |                                                                                                                                                                   |
| <b>663-22R-13</b>            | 6                                                                                 | 63             | 77.7  | 22     | 47   | 40  | 7.0  | ●               | A              | 0.7                                                                                  | LH M10x25        |                                                                                                                                                                   |
| <b>863-22R-13</b>            | 8                                                                                 | 63             | 77.7  | 22     | 47   | 40  | 7.0  | ●               | A              | 0.7                                                                                  | LH M10x25        |                                                                                                                                                                   |
| <b>480-27R-13B</b>           | 4                                                                                 | 80             | 94.8  | 27     | 70   | 50  | 7.0  | ●               | A              | 1.4                                                                                  | LH M12x30        |                                                                                                                                                                   |
| <b>780-27R-13</b>            | 7                                                                                 | 80             | 94.8  | 27     | 70   | 50  | 7.0  | ●               | A              | 1.5                                                                                  | LH M12x30        |                                                                                                                                                                   |
| <b>1080-27R-13</b>           | 10                                                                                | 80             | 94.8  | 27     | 70   | 50  | 7.0  | ●               | A              | 1.5                                                                                  | LH M12x30        |                                                                                                                                                                   |
| <b>5100-32R-13B</b>          | 5                                                                                 | 100            | 114.8 | 32     | 85   | 50  | 7.0  | ●               | A              | 2.1                                                                                  | LH M16x35        |                                                                                                                                                                   |
| <b>8100-32R-13</b>           | 8                                                                                 | 100            | 114.8 | 32     | 85   | 50  | 7.0  | ●               | A              | 2.2                                                                                  | LH M16x35        |                                                                                                                                                                   |
| <b>12100-32R-13</b>          | 12                                                                                | 100            | 114.8 | 32     | 85   | 50  | 7.0  | ●               | A              | 2.2                                                                                  | LH M16x35        |                                                                                                                                                                   |
| <b>6125-40R-13B</b>          | 6                                                                                 | 125            | 139.8 | 40     | 85   | 63  | 7.0  | ●               | A              | 3.8                                                                                  | SH M20x40        |                                                                                                                                                                   |
| <b>10125-40R-13</b>          | 10                                                                                | 125            | 139.8 | 40     | 85   | 63  | 7.0  | ●               | A              | 3.8                                                                                  | SH M20x40        |                                                                                                                                                                   |
| <b>16125-40R-13</b>          | 16                                                                                | 125            | 139.6 | 40     | 85   | 63  | 7.0  | ●               | A              | 3.8                                                                                  | SH M20x40        |                                                                                                                                                                   |
| <b>8160-40R-13B</b>          | 8                                                                                 | 160            | 174.8 | 40     | 110  | 63  | 7.0  | x               | C              | 4.9                                                                                  | -                |                                                                                                                                                                   |
| <b>12160-40R-13</b>          | 12                                                                                | 160            | 174.8 | 40     | 110  | 63  | 7.0  | x               | C              | 4.9                                                                                  | -                |                                                                                                                                                                   |
| <b>20160-40R-13</b>          | 20                                                                                | 160            | 174.5 | 40     | 110  | 63  | 7.0  | x               | C              | 5.0                                                                                  | -                |                                                                                                                                                                   |
| <b>10200-60R-13B</b>         | 10                                                                                | 200            | 214.8 | 60     | 130  | 63  | 7.0  | x               | C              | 6.5                                                                                  | -                |                                                                                                                                                                   |
| <b>18200-60R-13</b>          | 18                                                                                | 200            | 214.8 | 60     | 130  | 63  | 7.0  | x               | C              | 6.6                                                                                  | -                |                                                                                                                                                                   |
| <b>26200-60R-13</b>          | 26                                                                                | 200            | 214.3 | 60     | 130  | 63  | 7.0  | x               | C              | 7.0                                                                                  | -                |                                                                                                                                                                   |
| <b>20250-60R-13</b>          | 20                                                                                | 250            | 264.8 | 60     | 160  | 63  | 7.0  | x               | C              | 12.9                                                                                 | -                |                                                                                                                                                                   |
| <b>TFM45SN 480-25.4R-13B</b> | 4                                                                                 | 80             | 94.8  | 25.4   | 70   | 50  | 7.0  | ●               | A              | 1.4                                                                                  | LH M12x30        |                                                                                                                                                                   |
| <b>5100-31.75R-13B</b>       | 5                                                                                 | 100            | 114.8 | 31.75  | 80   | 50  | 7.0  | x               | B              | 2.1                                                                                  | -                |                                                                                                                                                                   |
| <b>6125-38.1R-13B</b>        | 6                                                                                 | 125            | 139.8 | 38.1   | 80   | 63  | 7.0  | x               | B              | 3.8                                                                                  | -                |                                                                                                                                                                   |
| <b>10125-38.1R-13</b>        | 10                                                                                | 125            | 139.8 | 38.1   | 80   | 63  | 7.0  | x               | B              | 3.4                                                                                  | -                |                                                                                                                                                                   |
| <b>8160-50.8R-13B</b>        | 8                                                                                 | 160            | 174.8 | 50.8   | 100  | 63  | 7.0  | x               | B              | 4.9                                                                                  | -                |                                                                                                                                                                   |
| <b>12160-50.8R-13</b>        | 12                                                                                | 160            | 174.8 | 50.8   | 100  | 63  | 7.0  | x               | B              | 5.0                                                                                  | -                |                                                                                                                                                                   |
| <b>10200-47.625R-13B</b>     | 10                                                                                | 200            | 214.8 | 47.625 | 130  | 63  | 7.0  | x               | C              | 6.5                                                                                  | -                |                                                                                                                                                                   |
| <b>12250-47.625R-13B</b>     | 12                                                                                | 250            | 264.8 | 47.625 | 160  | 63  | 7.0  | x               | C              | 12.9                                                                                 | -                |                                                                                                                                                                   |
|                              |                                                                                   |                |       |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                                                                                   |
|                              |                                                                                   |                |       |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                                                                                   |
|                              |                                                                                   |                |       |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                                                                                   |
|                              |                                                                                   |                |       |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                                                                                   |
|                              |                                                                                   |                |       |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                                                                                   |
|                              |                                                                                   |                |       |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                                                                                   |
|                              |                                                                                   |                |       |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                                                                                   |
|                              |                                                                                   |                |       |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                                                                                   |

► Mounting bolt with coolant through hole is available on request  
(ordering example: SH M10x1.5x30-C)



E312-E315

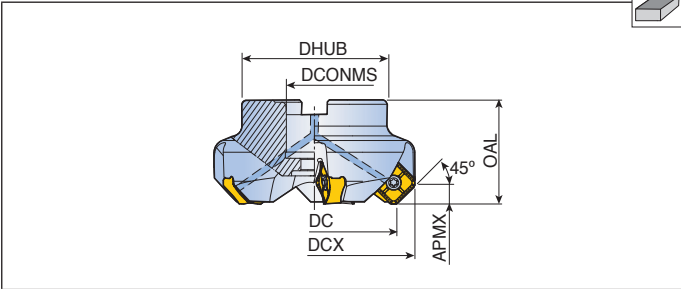
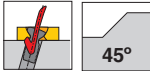
E316-E317

E318

TFM45SNS-16



Face mills



| Designation                  |  | Dimension (mm) |       |        |       |     |      | Coolant hole | Arbor style |  Kg | Mounting bolt | Insert                                                                                                                       |
|------------------------------|-----------------------------------------------------------------------------------|----------------|-------|--------|-------|-----|------|--------------|-------------|--------------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------|
|                              |                                                                                   | DC             | DCX   | DCONMS | SDHUB | OAL | APMX |              |             |                                                                                      |               |                                                                                                                              |
| <b>TFM45SNS 463-22R-16</b>   | 4                                                                                 | 63             | 81.1  | 22     | 47    | 50  | 8.8  | ●            | A           | 1.0                                                                                  | LH M10x25     | SNMX<br>1607...<br>SNHX<br>1606...<br> E294 |
| <b>580-27R-16</b>            | 5                                                                                 | 80             | 98.2  | 27     | 70    | 50  | 8.8  | ●            | A           | 1.5                                                                                  | LH M12x30     |                                                                                                                              |
| <b>7100-32R-16</b>           | 7                                                                                 | 100            | 118.2 | 32     | 85    | 50  | 8.8  | ●            | A           | 2.3                                                                                  | LH M16x35     |                                                                                                                              |
| <b>8125-40R-16</b>           | 8                                                                                 | 125            | 143.2 | 40     | 85    | 63  | 8.8  | ●            | A           | 4.0                                                                                  | SH M20x40     |                                                                                                                              |
| <b>10125-40R-16</b>          | 10                                                                                | 125            | 143.2 | 40     | 85    | 63  | 8.8  | ●            | A           | 4.0                                                                                  | SH M20x40     |                                                                                                                              |
| <b>10160-40R-16</b>          | 10                                                                                | 160            | 178.2 | 40     | 110   | 63  | 8.8  | x            | C           | 5.4                                                                                  | -             |                                                                                                                              |
| <b>12160-40R-16</b>          | 12                                                                                | 160            | 178.2 | 40     | 110   | 63  | 8.8  | x            | C           | 5.4                                                                                  | -             |                                                                                                                              |
| <b>12200-60R-16</b>          | 12                                                                                | 200            | 218.2 | 60     | 130   | 63  | 8.8  | x            | C           | 7.5                                                                                  | -             |                                                                                                                              |
| <b>14250-60R-16</b>          | 14                                                                                | 250            | 268.2 | 60     | 160   | 63  | 8.8  | x            | C           | 13                                                                                   | -             |                                                                                                                              |
| <b>TFM45SNS 580-25.4R-16</b> | 5                                                                                 | 80             | 98.2  | 25.4   | 70    | 50  | 8.8  | ●            | A           | 1.5                                                                                  | LH M12x30     |                                                                                                                              |
| <b>7100-31.75R-16</b>        | 7                                                                                 | 100            | 118.2 | 31.75  | 80    | 50  | 8.8  | x            | B           | 2.3                                                                                  | -             |                                                                                                                              |
| <b>8125-38.1R-16</b>         | 8                                                                                 | 125            | 143.2 | 38.1   | 80    | 63  | 8.8  | x            | B           | 4.0                                                                                  | -             |                                                                                                                              |
| <b>10160-50.8R-16</b>        | 10                                                                                | 160            | 178.2 | 50.8   | 100   | 63  | 8.8  | x            | B           | 5.4                                                                                  | -             |                                                                                                                              |
| <b>12200-47.625R-16</b>      | 12                                                                                | 200            | 218.2 | 47.625 | 130   | 63  | 8.8  | x            | C           | 7.5                                                                                  | -             |                                                                                                                              |
|                              |                                                                                   |                |       |        |       |     |      |              |             |                                                                                      |               |                                                                                                                              |
|                              |                                                                                   |                |       |        |       |     |      |              |             |                                                                                      |               |                                                                                                                              |
|                              |                                                                                   |                |       |        |       |     |      |              |             |                                                                                      |               |                                                                                                                              |
|                              |                                                                                   |                |       |        |       |     |      |              |             |                                                                                      |               |                                                                                                                              |
|                              |                                                                                   |                |       |        |       |     |      |              |             |                                                                                      |               |                                                                                                                              |
|                              |                                                                                   |                |       |        |       |     |      |              |             |                                                                                      |               |                                                                                                                              |
|                              |                                                                                   |                |       |        |       |     |      |              |             |                                                                                      |               |                                                                                                                              |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

Spare parts

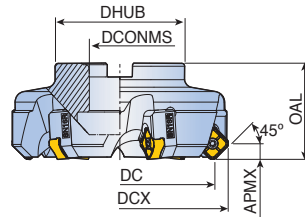
| Designation        | Screw      | Wrench |  |  |  |
|--------------------|------------|--------|--|--|--|
|                    |            |        |  |  |  |
| <b>TFM45SN-13</b>  | TS 40B100I | T-T15  |  |  |  |
| <b>TFM45SNS-16</b> | TS 45I20I  | T-T20  |  |  |  |
|                    |            |        |  |  |  |
|                    |            |        |  |  |  |
|                    |            |        |  |  |  |

E312-E315

E316-E317

E318

# CHASE 2 QUAD



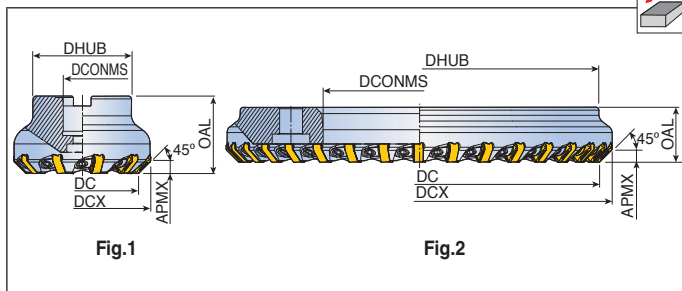
## Spare parts



# TFM45SNW-16/TQ45SNW-16



## Face mills



| Designation                 |    | Dimension (mm) |       |        |      |     |      | Fig. | Arbor style | Kg   | Mounting bolt | Insert       |
|-----------------------------|----|----------------|-------|--------|------|-----|------|------|-------------|------|---------------|--------------|
|                             |    | DC             | DCX   | DCONMS | DHUB | OAL | APMX |      |             |      |               |              |
| <b>TFM45SNW 1080-27R-16</b> | 10 | 80             | 98.2  | 27     | 70   | 55  | 8.8  | 1    | A           | 1.9  | LH M12x30     | SNHX 1606... |
| <b>14100-32R-16</b>         | 14 | 100            | 118.2 | 32     | 85   | 63  | 8.8  | 1    | A           | 3.2  | SH M16x35     | E294         |
| <b>18125-40R-16</b>         | 18 | 125            | 143.2 | 40     | 85   | 63  | 8.8  | 1    | B           | 3.9  | -             |              |
| <b>22160-40R-16</b>         | 22 | 160            | 178.2 | 40     | 110  | 63  | 8.8  | 1    | C           | 5.7  | -             |              |
| <b>26200-60R-16</b>         | 26 | 200            | 218.2 | 60     | 130  | 63  | 8.8  | 1    | C           | 7.8  | -             |              |
| <b>32250-60R-16</b>         | 32 | 250            | 268.2 | 60     | 160  | 63  | 8.8  | 1    | C           | 13.5 | -             |              |

| Designation              |    | Dimension (mm) |       |        |      |     |      | Fig. | Kg   | Adapter   | Insert       |
|--------------------------|----|----------------|-------|--------|------|-----|------|------|------|-----------|--------------|
|                          |    | DC             | DCX   | DCONMS | DHUB | OAL | APMX |      |      |           |              |
| <b>TQ45SNW 26200R-16</b> | 26 | 200            | 218.2 | 63.5   | 200  | 38  | 8.8  | 2    | 6.3  | QA 08 K/M | SNHX 1606... |
| <b>34250R-16</b>         | 34 | 250            | 268.2 | 133.35 | 248  | 38  | 8.8  | 2    | 7.9  | QA 10 K/M | E294         |
| <b>44315R-16</b>         | 44 | 315            | 333.2 | 146.05 | 313  | 38  | 8.8  | 2    | 13.2 | QA 12 K/M |              |
| <b>50355R-16</b>         | 50 | 355            | 373.2 | 215.90 | 353  | 38  | 8.8  | 2    | 13.0 | QA 14 K/M |              |
|                          |    |                |       |        |      |     |      |      |      |           |              |
|                          |    |                |       |        |      |     |      |      |      |           |              |
|                          |    |                |       |        |      |     |      |      |      |           |              |
|                          |    |                |       |        |      |     |      |      |      |           |              |
|                          |    |                |       |        |      |     |      |      |      |           |              |
|                          |    |                |       |        |      |     |      |      |      |           |              |

► Recommend to very stable machining condition at cast iron & steel

## Spare parts

| Designation     | Wedge     | Wedge screw | Wrench |  |  |
|-----------------|-----------|-------------|--------|--|--|
|                 |           |             |        |  |  |
| <b>TFM45SNW</b> | WFZ 8H-SN | WS 8        | T-W 4  |  |  |
| <b>TQ45SNW</b>  | WFZ 8H-SN | WS 8        | T-W 4  |  |  |
|                 |           |             |        |  |  |
|                 |           |             |        |  |  |
|                 |           |             |        |  |  |



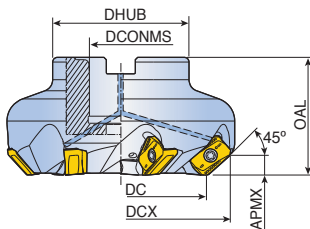
E312-E315

E316-E317

E318

E319

# CHASE2MILL

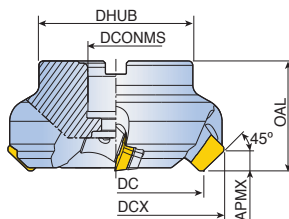


- ▶ 90° Inserts can not be mounted
- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

| Designation    | Screw                                                                               | Wrench                                                                              |  |  |  |
|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                |  |  |  |  |  |
| <b>TFM45AN</b> | TS 40120I                                                                           | T-T15                                                                               |  |  |  |
|                |                                                                                     |                                                                                     |  |  |  |
|                |                                                                                     |                                                                                     |  |  |  |
|                |                                                                                     |                                                                                     |  |  |  |
|                |                                                                                     |                                                                                     |  |  |  |





[illegible]

## Spare parts

| Designation              | Carbide shim                                                                        | Wedge                                                                               | Shim screw                                                                          | Wedge screw                                                                         | Wrench                                                                              |                                                                                                    |
|--------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
|                          |  |  |  |  |  |  <sup>(1)</sup> |
| <b>LM45SD-12</b> (Ø80)   | TSSDSE 12N                                                                          | WPA 8                                                                               | TS 40B100I                                                                          | TS 80160W                                                                           | T-W 4                                                                               | T-T15                                                                                              |
| <b>LM45SD-15</b> (Ø100-) | TSSDSE 15N                                                                          | WPA 8                                                                               | TS 40B100I                                                                          | TS 80200W                                                                           | T-W 4                                                                               | T-T15                                                                                              |
|                          |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                    |
|                          |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                                    |

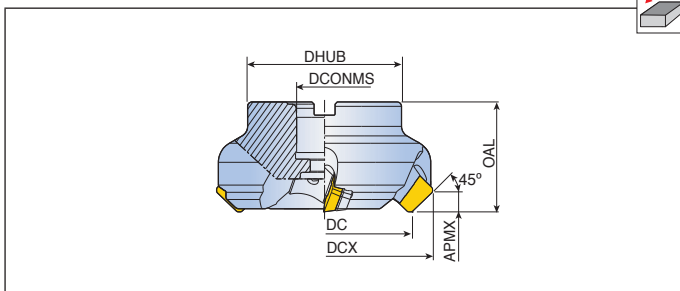


► The shim screw wrench T-T15<sup>(1)</sup> shall be ordered separately

# LM45SE-12/15



Face mills (Inch bore)



| Designation                |    | Dimension (mm) |       |        |      |     |      | Arbor style | Mounting bolt | Insert    |                      |
|----------------------------|----|----------------|-------|--------|------|-----|------|-------------|---------------|-----------|----------------------|
|                            |    | DC             | DCX   | DCONMS | DHUB | OAL | APMX |             |               |           |                      |
| <b>LM45SE 480-25.4R-12</b> | 4  | 80             | 93.7  | 25.4   | 70   | 55  | 6.5  | A           | 1.8           | LH M12x30 | SEKN 1203...<br>E289 |
| <b>5100-31.75R-12</b>      | 5  | 100            | 113.6 | 31.75  | 80   | 60  | 6.5  | A           | 2.8           | LH M16x35 |                      |
| <b>6125-38.1R-12</b>       | 6  | 125            | 138.6 | 38.1   | 80   | 63  | 6.5  | B           | 3.4           | -         |                      |
| <b>8160-50.8R-12</b>       | 8  | 160            | 173.6 | 50.8   | 100  | 63  | 6.5  | B           | 5.0           | -         |                      |
| <b>10200-47.625R-12</b>    | 10 | 200            | 213.6 | 47.625 | 130  | 63  | 6.5  | C           | 7.5           | -         |                      |
| <b>12250-47.625R-12</b>    | 12 | 250            | 263.6 | 47.625 | 160  | 63  | 6.5  | C           | 12.2          | -         |                      |
| <b>LM45SE 480-25.4R-15</b> | 4  | 80             | 97.8  | 25.4   | 70   | 55  | 8.7  | A           | 1.8           | LH M12x30 | SEKN 1504...<br>E289 |
| <b>5100-31.75R-15</b>      | 5  | 100            | 118   | 31.75  | 80   | 60  | 8.7  | A           | 2.8           | LH M16x35 |                      |
| <b>6125-38.1R-15</b>       | 6  | 125            | 143   | 38.1   | 80   | 63  | 8.7  | B           | 3.5           | -         |                      |
| <b>8160-50.8R-15</b>       | 8  | 160            | 178   | 50.8   | 100  | 63  | 8.7  | B           | 5.7           | -         |                      |
| <b>10200-47.625R-15</b>    | 10 | 200            | 218   | 47.625 | 130  | 63  | 8.7  | C           | 7.8           | -         |                      |
| <b>12250-47.625R-15</b>    | 12 | 250            | 268   | 47.625 | 160  | 63  | 8.7  | C           | 12.8          | -         |                      |
|                            |    |                |       |        |      |     |      |             |               |           |                      |
|                            |    |                |       |        |      |     |      |             |               |           |                      |
|                            |    |                |       |        |      |     |      |             |               |           |                      |
|                            |    |                |       |        |      |     |      |             |               |           |                      |
|                            |    |                |       |        |      |     |      |             |               |           |                      |
|                            |    |                |       |        |      |     |      |             |               |           |                      |
|                            |    |                |       |        |      |     |      |             |               |           |                      |
|                            |    |                |       |        |      |     |      |             |               |           |                      |
|                            |    |                |       |        |      |     |      |             |               |           |                      |
|                            |    |                |       |        |      |     |      |             |               |           |                      |

► Metric bore cutter is available upon request

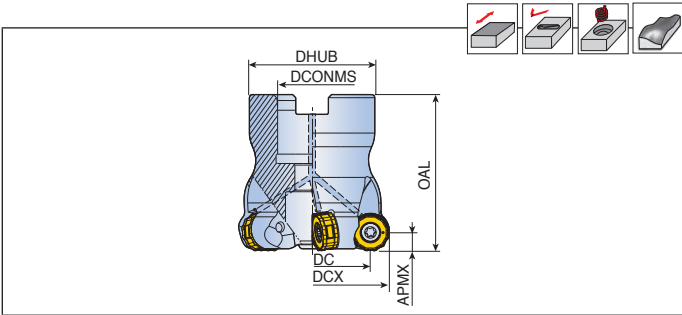
## Spare parts

| Designation      | Carbide shim | Wedge | Shim screw | Wedge screw              | Wrench |                |
|------------------|--------------|-------|------------|--------------------------|--------|----------------|
|                  |              |       |            | <sup>(1)</sup>           |        | <sup>(2)</sup> |
| <b>LM45SE-12</b> | TSSDSE 12N   | WPA 8 | TS 40B100I | TS 80200W                | T-W 4  | T-T15          |
| <b>LM45SE-15</b> | TSSDSE 15N   | WPA 8 | TS 40B100I | TS 80160W <sup>(1)</sup> | T-W 4  | T-T15          |
|                  |              |       |            |                          |        |                |
|                  |              |       |            |                          |        |                |
|                  |              |       |            |                          |        |                |



- <sup>(1)</sup> TS 80160W is for D80 cutter
- The shim screw wrench T-T15<sup>(2)</sup> shall be ordered separately

Face mills



| Designation              |   | Dimension (mm) |    |        |      |     |      | Coolant hole | Arbor style | Kg  | Mounting bolt | Insert               |
|--------------------------|---|----------------|----|--------|------|-----|------|--------------|-------------|-----|---------------|----------------------|
|                          |   | DCX            | DC | DCONMS | DHUB | OAL | APMX |              |             |     |               |                      |
| <b>TFMRNS 432-16R-10</b> | 4 | 32             | 22 | 16     | 30   | 40  | 5.0  | ●            | E           | 0.1 | KTB 32B       | RNMU 1004...<br>E284 |
| <b>433-16R-10</b>        | 4 | 33             | 23 | 16     | 30   | 40  | 5.0  | ●            | E           | 0.1 | KTB 32B       |                      |
| <b>540-16R-10</b>        | 5 | 40             | 30 | 16     | 38   | 40  | 5.0  | ●            | A           | 0.2 | SH M8x30      |                      |
| <b>650-22R-10</b>        | 6 | 50             | 40 | 22     | 45   | 50  | 5.0  | ●            | A           | 0.4 | SH M10x30     |                      |
| <b>652-22R-10</b>        | 6 | 52             | 42 | 22     | 45   | 50  | 5.0  | ●            | A           | 0.4 | SH M10x30     |                      |
| <b>TFMRNS 440-16R-12</b> | 4 | 40             | 28 | 16     | 38   | 40  | 6.0  | ●            | A           | 0.2 | SH M8x30      | RNMU 1205...<br>E284 |
| <b>450-22R-12</b>        | 4 | 50             | 38 | 22     | 45   | 50  | 6.0  | ●            | A           | 0.3 | SH M10x30     |                      |
| <b>550-22R-12</b>        | 5 | 50             | 40 | 22     | 45   | 50  | 6.0  | ●            | A           | 0.3 | SH M10x30     |                      |
| <b>552-22R-12</b>        | 5 | 52             | 40 | 22     | 45   | 50  | 6.0  | ●            | A           | 0.4 | SH M10x30     |                      |
| <b>563-22R-12</b>        | 5 | 63             | 51 | 22     | 47   | 50  | 6.0  | ●            | A           | 0.6 | SH M10x30     |                      |
| <b>663-22R-12</b>        | 6 | 63             | 51 | 22     | 47   | 50  | 6.0  | ●            | A           | 0.6 | SH M10x30     |                      |
| <b>666-27R-12</b>        | 6 | 66             | 54 | 27     | 58   | 50  | 6.0  | ●            | A           | 0.6 | SH M12x35     |                      |
| <b>680-27R-12</b>        | 6 | 80             | 68 | 27     | 58   | 50  | 6.0  | ●            | A           | 1.1 | SH M12x35     |                      |
| <b>780-27R-12</b>        | 7 | 80             | 68 | 27     | 58   | 50  | 6.0  | ●            | A           | 1.0 | SH M12x35     |                      |
| <b>7100-32R-12</b>       | 7 | 100            | 88 | 32     | 66   | 50  | 6.0  | ●            | A           | 1.5 | LH M16x35     |                      |
| <b>8100-32R-12</b>       | 8 | 100            | 88 | 32     | 66   | 50  | 6.0  | ●            | A           | 1.5 | LH M16x35     |                      |
|                          |   |                |    |        |      |     |      |              |             |     |               |                      |
|                          |   |                |    |        |      |     |      |              |             |     |               |                      |
|                          |   |                |    |        |      |     |      |              |             |     |               |                      |
|                          |   |                |    |        |      |     |      |              |             |     |               |                      |
|                          |   |                |    |        |      |     |      |              |             |     |               |                      |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

Spare parts

| Designation      | Screw        | Wrench |  |  |  |
|------------------|--------------|--------|--|--|--|
|                  |              |        |  |  |  |
| <b>TFMRNS-10</b> | TS 35085I/HG | T-T15  |  |  |  |
| <b>TFMRNS-12</b> | TS 40G110I   | T-T15  |  |  |  |
|                  |              |        |  |  |  |
|                  |              |        |  |  |  |
|                  |              |        |  |  |  |

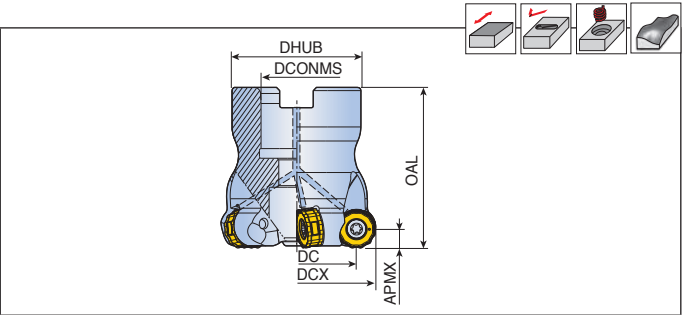
E312-E315

E316-E317

E318

E386-E387

## Face mills



| Designation              |    | Dimension (mm) |     |        |      |     |      | Coolant hole | Arbor style | Kg  | Mounting bolt | Insert                  |
|--------------------------|----|----------------|-----|--------|------|-----|------|--------------|-------------|-----|---------------|-------------------------|
|                          |    | DCX            | DC  | DCONMS | DHUB | OAL | APMX |              |             |     |               |                         |
| <b>TFMRNS 350-16R-16</b> | 3  | 50             | 34  | 16     | 38   | 50  | 8.0  | ●            | A           | 0.2 | SH M8x30      | RNMU<br>1606...<br>E284 |
| <b>450-16R-16</b>        | 4  | 50             | 34  | 16     | 38   | 50  | 8.0  | ●            | A           | 0.2 | SH M8x30      |                         |
| <b>452-22R-16</b>        | 4  | 52             | 36  | 22     | 45   | 50  | 8.0  | ●            | A           | 0.3 | SH M10x30     |                         |
| <b>463-22R-16</b>        | 4  | 63             | 47  | 22     | 47   | 50  | 8.0  | ●            | A           | 0.5 | SH M10x30     |                         |
| <b>566-27R-16</b>        | 5  | 66             | 50  | 27     | 58   | 50  | 8.0  | ●            | A           | 0.6 | LH M12x30     |                         |
| <b>580-27R-16</b>        | 5  | 80             | 64  | 27     | 58   | 50  | 8.0  | ●            | A           | 0.9 | LH M12x30     |                         |
| <b>680-27R-16</b>        | 6  | 80             | 64  | 27     | 58   | 50  | 8.0  | ●            | A           | 0.8 | LH M12x30     |                         |
| <b>6100-32R-16</b>       | 6  | 100            | 84  | 32     | 66   | 50  | 8.0  | ●            | A           | 1.7 | LH M16x35     |                         |
| <b>7125-40R-16</b>       | 7  | 125            | 109 | 40     | 85   | 63  | 8.0  | ●            | A           | 3.0 | SH M20x40     |                         |
| <b>8125-40R-16</b>       | 8  | 125            | 109 | 40     | 85   | 63  | 8.0  | ●            | A           | 2.9 | SH M20x40     |                         |
| <b>9160-40R-16</b>       | 9  | 160            | 144 | 40     | 110  | 63  | 8.0  | x            | C           | 3.8 | -             |                         |
| <b>10200-60R-16</b>      | 10 | 200            | 184 | 60     | 130  | 63  | 8.0  | x            | C           | 5.6 | -             |                         |
|                          |    |                |     |        |      |     |      |              |             |     |               |                         |
|                          |    |                |     |        |      |     |      |              |             |     |               |                         |
|                          |    |                |     |        |      |     |      |              |             |     |               |                         |
|                          |    |                |     |        |      |     |      |              |             |     |               |                         |
|                          |    |                |     |        |      |     |      |              |             |     |               |                         |
|                          |    |                |     |        |      |     |      |              |             |     |               |                         |
|                          |    |                |     |        |      |     |      |              |             |     |               |                         |
|                          |    |                |     |        |      |     |      |              |             |     |               |                         |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

| Designation      | Screw         | Wrench |  |  |  |
|------------------|---------------|--------|--|--|--|
|                  |               |        |  |  |  |
| <b>TFMRNS-16</b> | TS 50A1211/HG | T-T20  |  |  |  |
|                  |               |        |  |  |  |
|                  |               |        |  |  |  |
|                  |               |        |  |  |  |
|                  |               |        |  |  |  |

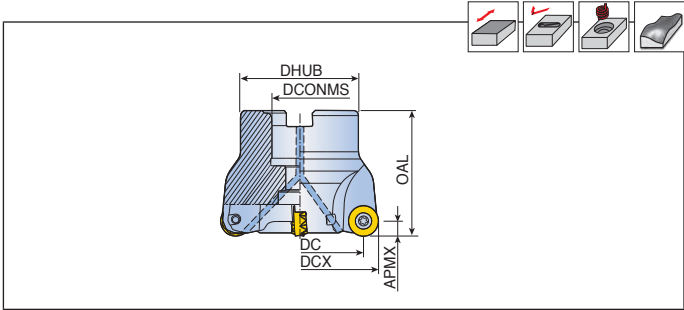
E312-E315

E316-E317

E318

E386-E387

Face mills



| Designation      |   | Dimension (mm) |     |        |      |     |      | Coolant hole | Arbor style | Kg   | Mounting bolt | Insert                       |
|------------------|---|----------------|-----|--------|------|-----|------|--------------|-------------|------|---------------|------------------------------|
|                  |   | DCX            | DC  | DCONMS | DHUB | OAL | APMX |              |             |      |               |                              |
| TFMRY 532-16R-08 | 5 | 32             | 24  | 16     | 30   | 40  | 4.0  | ●            | A           | 0.12 | SH M8x30      | RYM(H)X 0803...<br>E285-E286 |
| 640-16R-08       | 6 | 40             | 32  | 16     | 38   | 40  | 4.0  | ●            | A           | 0.22 | SH M8x30      |                              |
| TFMRY 432-16R-10 | 4 | 32             | 22  | 16     | 30   | 40  | 5.0  | ●            | A           | 0.12 | SH M8x30      | RYM(H)X 1004...<br>E285-E286 |
| 540-16R-10       | 5 | 40             | 30  | 16     | 38   | 40  | 5.0  | ●            | A           | 0.22 | SH M8x30      |                              |
| 640-16R-10       | 6 | 40             | 30  | 16     | 38   | 40  | 5.0  | ●            | A           | 0.23 | SH M8x30      |                              |
| 650-22R-10       | 6 | 50             | 40  | 22     | 45   | 50  | 5.0  | ●            | A           | 0.33 | SH M10x30     |                              |
| 652-22R-10       | 6 | 52             | 42  | 22     | 45   | 50  | 5.0  | ●            | A           | 0.36 | SH M10x30     |                              |
| 763-22R-10       | 7 | 63             | 53  | 22     | 47   | 50  | 5.0  | ●            | A           | 0.57 | SH M10x30     |                              |
| 766-27R-10       | 7 | 66             | 56  | 27     | 58   | 50  | 5.0  | ●            | A           | 0.68 | LH M12x30     |                              |
| TFMRY 332-16R-12 | 3 | 32             | 20  | 16     | 30   | 50  | 6.0  | ●            | E           | 0.12 | KTB 32B       | RYM(H)X 1205...<br>E285-E286 |
| 440-16R-12       | 4 | 40             | 28  | 16     | 38   | 40  | 6.0  | ●            | A           | 0.15 | SH M8x30      |                              |
| 442-16R-12       | 4 | 42             | 30  | 16     | 38   | 40  | 6.0  | ●            | A           | 0.21 | SH M8x30      |                              |
| 450-22R-12       | 4 | 50             | 38  | 22     | 45   | 50  | 6.0  | ●            | A           | 0.33 | SH M10x30     |                              |
| 550-22R-12       | 5 | 50             | 38  | 22     | 45   | 50  | 6.0  | ●            | A           | 0.33 | SH M10x30     |                              |
| 552-22R-12       | 5 | 52             | 40  | 22     | 45   | 50  | 6.0  | ●            | A           | 0.34 | SH M10x30     |                              |
| 463-22R-12       | 4 | 63             | 51  | 22     | 47   | 50  | 6.0  | ●            | A           | 0.57 | SH M10x30     |                              |
| 563-22R-12       | 5 | 63             | 51  | 22     | 47   | 50  | 6.0  | ●            | A           | 0.58 | SH M10x30     |                              |
| 663-22R-12       | 6 | 63             | 51  | 22     | 47   | 50  | 6.0  | ●            | A           | 0.58 | SH M10x30     |                              |
| 763-22R-12       | 7 | 63             | 51  | 22     | 47   | 50  | 6.0  | ●            | A           | 0.71 | SH M10x30     |                              |
| 666-27R-12       | 6 | 66             | 54  | 27     | 58   | 50  | 6.0  | ●            | A           | 0.62 | LH M12x30     |                              |
| 766-27R-12       | 7 | 66             | 54  | 27     | 58   | 50  | 6.0  | ●            | A           | 0.62 | LH M12x30     |                              |
| 680-27R-12       | 6 | 80             | 68  | 27     | 58   | 50  | 6.0  | ●            | A           | 0.90 | LH M12x30     |                              |
| 780-27R-12       | 7 | 80             | 68  | 27     | 58   | 50  | 6.0  | ●            | A           | 0.92 | LH M12x30     |                              |
| 880-27R-12       | 8 | 80             | 68  | 27     | 58   | 50  | 6.0  | ●            | A           | 0.98 | LH M12x30     |                              |
| 7100-32R-12      | 7 | 100            | 88  | 32     | 66   | 50  | 6.0  | ●            | A           | 1.29 | LH M16x35     |                              |
| 8100-32R-12      | 8 | 100            | 88  | 32     | 66   | 50  | 6.0  | ●            | A           | 1.37 | LH M16x35     |                              |
| 8125-40R-12      | 8 | 125            | 113 | 40     | 85   | 63  | 6.0  | ●            | A           | 3.00 | SH M20x40     |                              |
| 9125-40R-12      | 9 | 125            | 113 | 40     | 85   | 63  | 6.0  | ●            | A           | 2.99 | SH M20x40     |                              |
|                  |   |                |     |        |      |     |      |              |             |      |               |                              |
|                  |   |                |     |        |      |     |      |              |             |      |               |                              |
|                  |   |                |     |        |      |     |      |              |             |      |               |                              |
|                  |   |                |     |        |      |     |      |              |             |      |               |                              |
|                  |   |                |     |        |      |     |      |              |             |      |               |                              |
|                  |   |                |     |        |      |     |      |              |             |      |               |                              |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

E312-E315

E316-E317

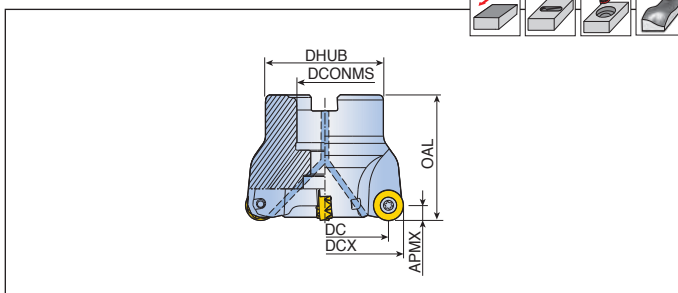
E318

E388-E390

# TFMRY-16

CHASEMOLD

## Face mills



| Designation               |   | Dimension (mm) |     |        |      |     |      | Coolant hole | Arbor style | Kg  | Mounting bolt | Insert                                                                                                               |
|---------------------------|---|----------------|-----|--------|------|-----|------|--------------|-------------|-----|---------------|----------------------------------------------------------------------------------------------------------------------|
|                           |   | DCX            | DC  | DCONMS | DHUB | OAL | APMX |              |             |     |               |                                                                                                                      |
| <b>TFMRY 350-16R-16</b>   | 3 | 50             | 34  | 16     | 38   | 50  | 8.0  | ●            | A           | 0.3 | SH M8x35      | RYM(H)X<br>1606...<br><br>E285-E286 |
| <b>450-16R-16</b>         | 4 | 50             | 34  | 16     | 38   | 50  | 8.0  | ●            | A           | 0.3 | SH M8x35      |                                                                                                                      |
| <b>450-22R-16</b>         | 4 | 50             | 34  | 22     | 45   | 50  | 8.0  | ●            | A           | 0.3 | SH M10x30     |                                                                                                                      |
| <b>452-22R-16</b>         | 4 | 52             | 36  | 22     | 45   | 50  | 8.0  | ●            | A           | 0.3 | SH M10x30     |                                                                                                                      |
| <b>463-22R-16</b>         | 4 | 63             | 47  | 22     | 47   | 50  | 8.0  | ●            | A           | 0.5 | SH M10x30     |                                                                                                                      |
| <b>463H-22R-16*</b>       | 4 | 63             | 47  | 22     | 47   | 50  | 8.0  | ●            | A           | 0.5 | SH M10x30     |                                                                                                                      |
| <b>566-27R-16</b>         | 5 | 66             | 50  | 27     | 58   | 50  | 8.0  | ●            | A           | 0.6 | LH M12x30     |                                                                                                                      |
| <b>580-27R-16</b>         | 5 | 80             | 64  | 27     | 58   | 50  | 8.0  | ●            | A           | 0.8 | LH M12x30     |                                                                                                                      |
| <b>580H-27R-16*</b>       | 5 | 80             | 64  | 27     | 58   | 50  | 8.0  | ●            | A           | 0.8 | LH M12x30     |                                                                                                                      |
| <b>680-27R-16</b>         | 6 | 80             | 64  | 27     | 58   | 50  | 8.0  | ●            | A           | 0.8 | LH M12x30     |                                                                                                                      |
| <b>6100-32R-16</b>        | 6 | 100            | 84  | 32     | 66   | 50  | 8.0  | ●            | A           | 1.2 | LH M16x35     |                                                                                                                      |
| <b>6100H-32R-16*</b>      | 6 | 100            | 84  | 32     | 66   | 50  | 8.0  | ●            | A           | 1.2 | LH M16x35     |                                                                                                                      |
| <b>7125-40R-16</b>        | 7 | 125            | 109 | 40     | 85   | 63  | 8.0  | ●            | A           | 2.7 | SH M20x40     |                                                                                                                      |
| <b>7125H-40R-16*</b>      | 7 | 125            | 109 | 40     | 85   | 63  | 8.0  | ●            | A           | 2.6 | SH M20x40     |                                                                                                                      |
| <b>8125-40R-16</b>        | 8 | 125            | 109 | 40     | 85   | 63  | 8.0  | ●            | A           | 2.7 | SH M20x40     |                                                                                                                      |
| <b>8160H-40R-16*</b>      | 8 | 160            | 144 | 40     | 110  | 63  | 8.0  | x            | C           | 3.3 | -             |                                                                                                                      |
| <b>TFMRY 580-25.4R-16</b> | 5 | 80             | 64  | 25.4   | 70   | 50  | 8.0  | ●            | A           | 1.0 | SH M12x35     |                                                                                                                      |
|                           |   |                |     |        |      |     |      |              |             |     |               |                                                                                                                      |
|                           |   |                |     |        |      |     |      |              |             |     |               |                                                                                                                      |
|                           |   |                |     |        |      |     |      |              |             |     |               |                                                                                                                      |

► \*: Carbide shim type

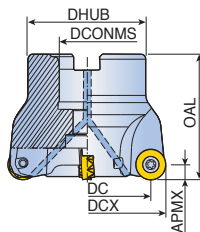
► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

| Designation         | Shim                                                                                | Shim screw                                                                          | Screw                                                                               | Wrench                                                                              |                                                                                      |
|---------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                     |  |  |  |  |  |
| <b>TFMRY-08</b>     | -                                                                                   | -                                                                                   | TS 30A60I/HG                                                                        | TD 9                                                                                | -                                                                                    |
| <b>TFMRY-10</b>     | -                                                                                   | -                                                                                   | TS 35085/HG                                                                         | -                                                                                   | T-T15                                                                                |
| <b>TFMRY-12</b>     | -                                                                                   | -                                                                                   | TS 40093I                                                                           | -                                                                                   | T-T15                                                                                |
| <b>TFMRY-16</b>     | -                                                                                   | -                                                                                   | TS 50115I                                                                           | -                                                                                   | T-T20                                                                                |
| <b>TFMRY...H-16</b> | TSRY 16NS                                                                           | TS 8050088S                                                                         | TS 50A140I                                                                          | -                                                                                   | T-T20                                                                                |

|                                                                                                 |                                                                                                  |                                                                                             |                                                                                                  |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| <br>E312-E315 | <br>E316-E317 | <br>E318 | <br>E388-E390 |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|

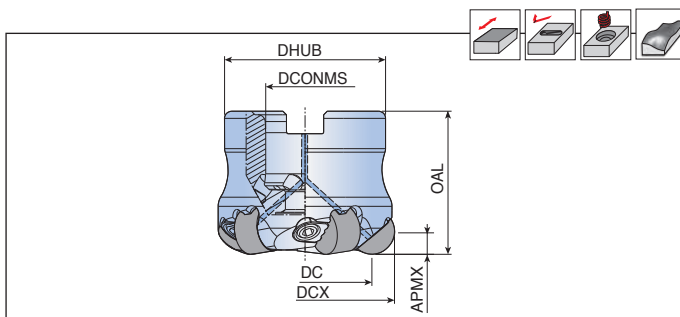
**CHASEMOLD**

[illegible]

- ▶ \*: Carbide shim type
- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

| Designation         | Shim                                                                                | Shim screw                                                                          | Screw                                                                               | Wrench                                                                              | Wrench handle                                                                       |
|---------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                     |  |  |  |  |  |
| <b>TFMRY-20</b>     | -                                                                                   | -                                                                                   | TS 60A130I                                                                          | BLD T25/M7                                                                          | SW6-T                                                                               |
| <b>TFMRY...H-20</b> | TSRY 20NS                                                                           | TS 9060011S                                                                         | TS 60A165I                                                                          | BLD T25/M7                                                                          | SW6-T                                                                               |
|                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



[illegible]

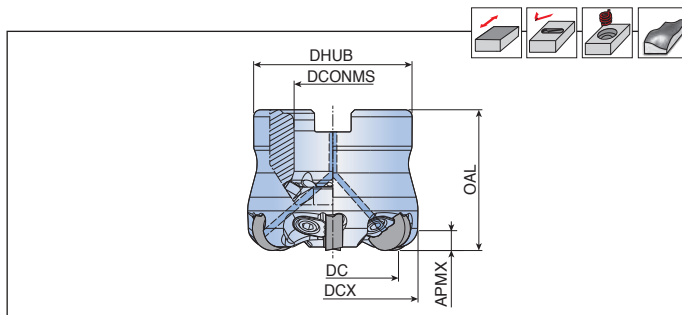
- ▶ Mounting bolt with air through hole is available on request (ordering example: SH M10x1.5x30-C)
- ▶ <sup>(1)</sup> Use only air (Coolant is prohibited)

| Designation     | Wedge                                                                               | Screw                                                                               | Wrench                                                                              |  |  |
|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                 |  |  |  |  |  |
| <b>TFMRN-12</b> | WFZ 6-C                                                                             | WS 6                                                                                | T-W 3                                                                               |  |  |
|                 |                                                                                     |                                                                                     |                                                                                     |  |  |
|                 |                                                                                     |                                                                                     |                                                                                     |  |  |
|                 |                                                                                     |                                                                                     |                                                                                     |  |  |





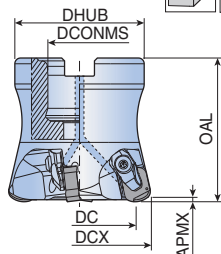
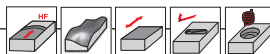
**CHASE SPEED**

[illegible]

- ▶ Mounting bolt with air through hole is available on request (ordering example: SH M10x1.5x30-C)
- ▶ <sup>(1)</sup> Use only air (Coolant is prohibited)

| Designation     | Wedge                                                                               | Screw                                                                               | Wrench                                                                              |  |  |
|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                 |  |  |  |  |  |
| <b>TFMRP-12</b> | WFZ 6-C                                                                             | WS 6                                                                                | T-W 3                                                                               |  |  |
|                 |                                                                                     |                                                                                     |                                                                                     |  |  |
|                 |                                                                                     |                                                                                     |                                                                                     |  |  |
|                 |                                                                                     |                                                                                     |                                                                                     |  |  |





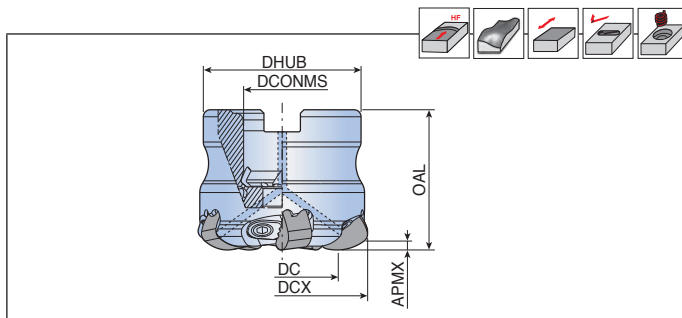
- ▶ Mounting bolt with air through hole is available on request (ordering example: SH M10x1.5x30-C)
- ▶ <sup>(1)</sup> Use only air (Coolant is prohibited)

| Designation       | Clamp                                                                               | Screw                                                                               | Snap ring                                                                           | Wrench                                                                              |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                   |  |  |  |  |  |
| <b>TFMBN-09CH</b> | CCL-3S                                                                              | CLS-35A120/HG                                                                       | CSR 1.25                                                                            | L-W 2                                                                               |  |
|                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |



# TFMBN-12

## High feed face mills

[illegible]

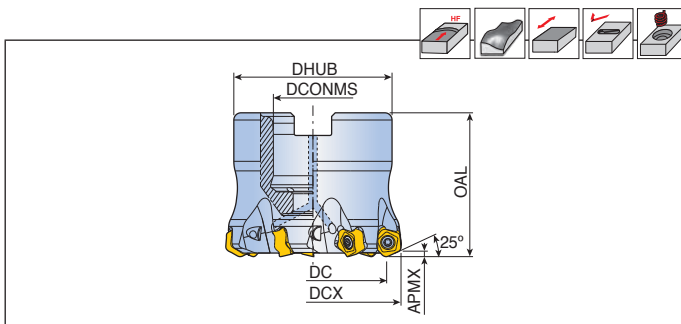
- ▶ Mounting bolt with air through hole is available on request (ordering example: SH M10x1.5x30-C)
- ▶ <sup>(1)</sup> Use only air (Coolant is prohibited)

## Spare parts

| Designation     | Wedge                                                                               | Screw                                                                               | Wrench                                                                              |  |  |
|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                 |  |  |  |  |  |
| <b>TFMBN-12</b> | WFZ 6-C                                                                             | WS 6                                                                                | T-W 3                                                                               |  |  |
|                 |                                                                                     |                                                                                     |                                                                                     |  |  |
|                 |                                                                                     |                                                                                     |                                                                                     |  |  |
|                 |                                                                                     |                                                                                     |                                                                                     |  |  |
|                 |                                                                                     |                                                                                     |                                                                                     |  |  |



## High feed face mills



| Designation      |  | Dimension (mm) |       |        |      |     |      | Coolant<br>hole | Arbor<br>style |  Kg | Mounting<br>bolt | Insert                                                                                                  |           |
|------------------|-----------------------------------------------------------------------------------|----------------|-------|--------|------|-----|------|-----------------|----------------|--------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------------|-----------|
|                  |                                                                                   | DCX            | DC    | DCONMS | DHUB | OAL | APMX |                 |                |                                                                                      |                  |                                                                                                         |           |
| TFMPT 640-16R-05 | 6                                                                                 | 40             | 31.8  | 16     | 38   | 40  | 1.5  | ●               | A              | 0.3                                                                                  | SH M8x25         | PTKU 0503...<br> E282 |           |
|                  | 750-22R-05                                                                        | 7              | 50    | 41.8   | 22   | 45  | 40   | 1.5             | ●              | A                                                                                    | 0.4              |                                                                                                         | LH M10x25 |
|                  | 752-22R-05                                                                        | 7              | 52    | 43.8   | 22   | 45  | 40   | 1.5             | ●              | A                                                                                    | 0.3              |                                                                                                         | LH M10x25 |
|                  | 863-22R-05                                                                        | 8              | 63    | 54.8   | 22   | 58  | 50   | 1.5             | ●              | A                                                                                    | 0.8              |                                                                                                         | SH M10x30 |
|                  | 866-27R-05                                                                        | 8              | 66    | 57.8   | 27   | 58  | 50   | 1.5             | ●              | A                                                                                    | 0.7              |                                                                                                         | SH M12x35 |
| TFMPT 450-22R-10 | 4                                                                                 | 50             | 33.4  | 22     | 45   | 40  | 3.0  | ●               | E              | 0.3                                                                                  | TCS10-40         | PTKU 1006...<br> E282 |           |
|                  | 563-22R-10                                                                        | 5              | 63    | 46.4   | 22   | 58  | 50   | 3.0             | ●              | A                                                                                    | 0.8              |                                                                                                         | SH M10x30 |
|                  | 566-22R-10                                                                        | 5              | 66    | 49.4   | 22   | 58  | 50   | 3.0             | ●              | A                                                                                    | 0.8              |                                                                                                         | SH M10x30 |
|                  | 680-27R-10                                                                        | 6              | 80    | 63.4   | 27   | 70  | 60   | 3.0             | ●              | A                                                                                    | 1.4              |                                                                                                         | SH M12x30 |
|                  | 8100-32R-10                                                                       | 8              | 100   | 83.4   | 32   | 85  | 60   | 3.0             | ●              | A                                                                                    | 2.3              |                                                                                                         | SH M16x35 |
|                  | 9125-32R-10                                                                       | 9              | 125   | 108.4  | 32   | 85  | 60   | 3.0             | ●              | A                                                                                    | 3.1              |                                                                                                         | SH M16x35 |
|                  | 10160-40R-10                                                                      | 10             | 160   | 143.4  | 40   | 110 | 60   | 3.0             | x              | C                                                                                    | 4.1              |                                                                                                         | -         |
|                  | 12200-60R-10                                                                      | 12             | 200   | 183.4  | 60   | 130 | 60   | 3.0             | x              | C                                                                                    | 5.7              |                                                                                                         | -         |
|                  | TFMPT 680-25.4R-10                                                                | 6              | 80    | 63.4   | 25.4 | 70  | 60   | 3.0             | ●              | A                                                                                    | 1.5              |                                                                                                         | SH M12x35 |
| 8100-31.75R-10   | 8                                                                                 | 100            | 83.4  | 31.75  | 80   | 60  | 3.0  | x               | B              | 2.0                                                                                  | -                |                                                                                                         |           |
| 9125-38.1R-10    | 9                                                                                 | 125            | 108.4 | 38.1   | 80   | 60  | 3.0  | x               | B              | 2.6                                                                                  | -                |                                                                                                         |           |
| 10160-50.8R-10   | 10                                                                                | 160            | 143.4 | 50.8   | 100  | 60  | 3.0  | x               | B              | 4.2                                                                                  | -                |                                                                                                         |           |
|                  |                                                                                   |                |       |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                         |           |
|                  |                                                                                   |                |       |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                         |           |
|                  |                                                                                   |                |       |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                         |           |
|                  |                                                                                   |                |       |        |      |     |      |                 |                |                                                                                      |                  |                                                                                                         |           |

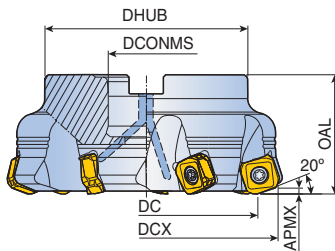
► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

| Designation     | Screw          | Wrench |              | Wrench handle |  |
|-----------------|----------------|--------|--------------|---------------|--|
|                 |                |        |              |               |  |
| <b>TFMPT-05</b> | TS 25D060/HG-P | TD7P   | -            | -             |  |
| <b>TFMPT-10</b> | TS 50D130/HG-P | -      | TBLD T20P-W6 | SW6-T         |  |
|                 |                |        |              |               |  |
|                 |                |        |              |               |  |
|                 |                |        |              |               |  |

|           |           |      |           |
|-----------|-----------|------|-----------|
|           |           |      |           |
| E312-E315 | E316-E317 | E318 | E374-E375 |

**CHASE & FEED**  
RACING & HORN FEED



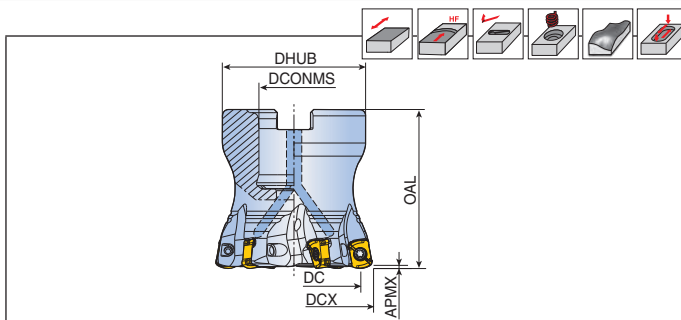
► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

| Designation       | Screw                                                                               | Wrench                                                                              | Wrench handle                                                                       |  |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                   |  |  |  |  |  |
| <b>8D-TF20-11</b> | TS 40A115I                                                                          | TBLD T15-W6                                                                         | SW6-T                                                                               |  |  |
| <b>8D-TF20-14</b> | TS 50C130I/HG                                                                       | TBLD T20-W6                                                                         | SW6-T                                                                               |  |  |
|                   |                                                                                     |                                                                                     |                                                                                     |  |  |
|                   |                                                                                     |                                                                                     |                                                                                     |  |  |



# TFMBLV-06

High feed face mills



| Designation              |   | Dimension (mm) |    |        |      |     |      | Coolant hole | Arbor type | Kg  | Mounting bolt | Insert               |
|--------------------------|---|----------------|----|--------|------|-----|------|--------------|------------|-----|---------------|----------------------|
|                          |   | DCX            | DC | DCONMS | DHUB | OAL | APMX |              |            |     |               |                      |
| <b>TFMBLV 432-16R-06</b> | 4 | 32             | 24 | 16     | 30   | 40  | 1.0  | ●            | A          | 0.1 | SH M8x25      | BLMV 0603...<br>E270 |
| <b>532-16R-06</b>        | 5 | 32             | 24 | 16     | 30   | 40  | 1.0  | ●            | A          | 0.1 | SH M8x26      |                      |
| <b>640-16R-06</b>        | 6 | 40             | 32 | 16     | 38   | 40  | 1.0  | ●            | A          | 0.2 | SH M8x25      |                      |
| <b>640-22R-06</b>        | 6 | 40             | 32 | 22     | 38   | 40  | 1.0  | ●            | A          | 0.2 | SH M10x30     |                      |
| <b>650-22R-06</b>        | 6 | 50             | 42 | 22     | 45   | 50  | 1.0  | ●            | A          | 0.4 | SH M10x30     |                      |
| <b>750-22R-06</b>        | 7 | 50             | 42 | 22     | 45   | 50  | 1.0  | ●            | A          | 0.4 | SH M10x30     |                      |
| <b>850-22R-06</b>        | 8 | 50             | 42 | 22     | 45   | 50  | 1.0  | ●            | A          | 0.4 | SH M10x30     |                      |
| <b>752-22R-06</b>        | 7 | 52             | 44 | 22     | 45   | 40  | 1.0  | ●            | A          | 0.4 | SH M10x30     |                      |
| <b>852-22R-06</b>        | 8 | 52             | 44 | 22     | 45   | 40  | 1.0  | ●            | A          | 0.4 | SH M10x30     |                      |
| <b>763-22R-06</b>        | 7 | 63             | 55 | 22     | 48   | 50  | 1.0  | ●            | A          | 0.6 | SH M10x30     |                      |
| <b>863-22R-06</b>        | 8 | 63             | 55 | 22     | 48   | 50  | 1.0  | ●            | A          | 0.6 | SH M10x30     |                      |
| <b>963-22R-06</b>        | 9 | 63             | 55 | 22     | 48   | 50  | 1.0  | ●            | A          | 0.6 | SH M10x30     |                      |
| <b>966-27R-06</b>        | 9 | 66             | 58 | 27     | 58   | 50  | 1.0  | ●            | A          | 0.7 | SH M12x30     |                      |
|                          |   |                |    |        |      |     |      |              |            |     |               |                      |
|                          |   |                |    |        |      |     |      |              |            |     |               |                      |
|                          |   |                |    |        |      |     |      |              |            |     |               |                      |
|                          |   |                |    |        |      |     |      |              |            |     |               |                      |
|                          |   |                |    |        |      |     |      |              |            |     |               |                      |
|                          |   |                |    |        |      |     |      |              |            |     |               |                      |
|                          |   |                |    |        |      |     |      |              |            |     |               |                      |
|                          |   |                |    |        |      |     |      |              |            |     |               |                      |

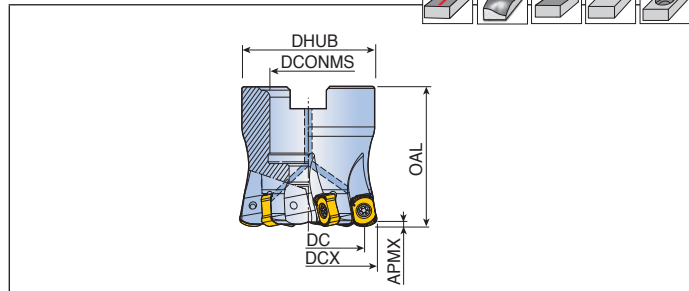
► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

| Designation            | Screw          | Wrench |  |  |  |
|------------------------|----------------|--------|--|--|--|
|                        |                |        |  |  |  |
| <b>TEBLV/TFMBLV-06</b> | TS 25064I/HG-P | TD 8P  |  |  |  |
|                        |                |        |  |  |  |
|                        |                |        |  |  |  |
|                        |                |        |  |  |  |
|                        |                |        |  |  |  |

|           |           |      |      |
|-----------|-----------|------|------|
|           |           |      |      |
| E312-E315 | E316-E317 | E318 | E377 |

## High feed face mills



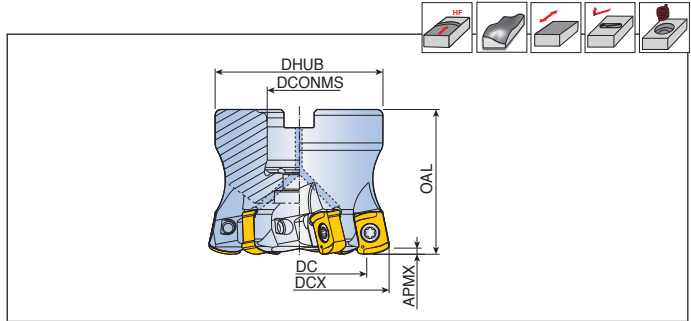
| Designation             |  | Dimension (mm) |       |        |      |     |      | Coolant hole | Arbor style |  Kg | Mounting bolt | Insert                                                                                                 |
|-------------------------|-----------------------------------------------------------------------------------|----------------|-------|--------|------|-----|------|--------------|-------------|--------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------|
|                         |                                                                                   | DCX            | DC    | DCONMS | DHUB | OAL | APMX |              |             |                                                                                      |               |                                                                                                        |
| <b>TFMBL 432-16R-06</b> | 4                                                                                 | 32             | 24.3  | 16     | 30   | 40  | 1.0  | ●            | A           | 0.1                                                                                  | SH M8x25      | BLMP 0603...<br> E268 |
| <b>532-16R-06</b>       | 5                                                                                 | 32             | 24.3  | 16     | 30   | 40  | 1.0  | ●            | A           | 0.1                                                                                  | SH M8x25      |                                                                                                        |
| <b>640-16R-06</b>       | 6                                                                                 | 40             | 32.2  | 16     | 38   | 40  | 1.0  | ●            | A           | 0.2                                                                                  | SH M8x25      |                                                                                                        |
| <b>640-22R-06</b>       | 6                                                                                 | 40             | 32.2  | 22     | 38   | 40  | 1.0  | ●            | A           | 0.2                                                                                  | SH M10x30     |                                                                                                        |
| <b>650-22R-06</b>       | 6                                                                                 | 50             | 42.2  | 22     | 45   | 50  | 1.0  | ●            | A           | 0.4                                                                                  | SH M10x30     |                                                                                                        |
| <b>750-22R-06</b>       | 7                                                                                 | 50             | 42.2  | 22     | 45   | 50  | 1.0  | ●            | A           | 0.4                                                                                  | SH M10x30     |                                                                                                        |
| <b>850-22R-06</b>       | 8                                                                                 | 50             | 42.2  | 22     | 45   | 50  | 1.0  | ●            | A           | 0.4                                                                                  | SH M10x30     |                                                                                                        |
| <b>752-22R-06</b>       | 7                                                                                 | 52             | 44.2  | 22     | 45   | 40  | 1.0  | ●            | A           | 0.4                                                                                  | SH M10x30     |                                                                                                        |
| <b>852-22R-06</b>       | 8                                                                                 | 52             | 44.2  | 22     | 45   | 40  | 1.0  | ●            | A           | 0.4                                                                                  | SH M10x30     |                                                                                                        |
| <b>763-22R-06</b>       | 7                                                                                 | 63             | 55.5  | 22     | 47   | 50  | 1.0  | ●            | A           | 0.6                                                                                  | SH M10x30     |                                                                                                        |
| <b>863-22R-06</b>       | 8                                                                                 | 63             | 55.5  | 22     | 47   | 50  | 1.0  | ●            | A           | 0.6                                                                                  | SH M10x30     | BLMP 0904...<br> E268 |
| <b>963-22R-06</b>       | 9                                                                                 | 63             | 55.5  | 22     | 47   | 50  | 1.0  | ●            | A           | 0.6                                                                                  | SH M10x30     |                                                                                                        |
| <b>966-27R-06</b>       | 9                                                                                 | 66             | 58.5  | 27     | 58   | 50  | 1.0  | ●            | A           | 0.7                                                                                  | SH M12x35     |                                                                                                        |
| <b>TFMBL 432-16R-09</b> | 4                                                                                 | 32             | 21.6  | 16     | 30   | 40  | 1.5  | ●            | E           | 0.1                                                                                  | KTB 32B       |                                                                                                        |
| <b>440-16R-09</b>       | 4                                                                                 | 40             | 29.6  | 16     | 38   | 40  | 1.5  | ●            | A           | 0.2                                                                                  | SH M8x25      |                                                                                                        |
| <b>540-16R-09</b>       | 5                                                                                 | 40             | 29.6  | 16     | 38   | 40  | 1.5  | ●            | A           | 0.2                                                                                  | SH M8x25      |                                                                                                        |
| <b>550-22R-09</b>       | 5                                                                                 | 50             | 39.6  | 22     | 45   | 50  | 1.5  | ●            | A           | 0.4                                                                                  | SH M10x30     |                                                                                                        |
| <b>650-22R-09</b>       | 6                                                                                 | 50             | 39.6  | 22     | 45   | 50  | 1.5  | ●            | A           | 0.4                                                                                  | SH M10x30     |                                                                                                        |
| <b>750-22R-09</b>       | 7                                                                                 | 50             | 39.6  | 22     | 45   | 50  | 1.5  | ●            | A           | 0.4                                                                                  | SH M10x30     |                                                                                                        |
| <b>652-22R-09</b>       | 6                                                                                 | 52             | 41.6  | 22     | 45   | 40  | 1.5  | ●            | A           | 0.4                                                                                  | SH M10x30     |                                                                                                        |
| <b>752-22R-09</b>       | 7                                                                                 | 52             | 41.6  | 22     | 45   | 40  | 1.5  | ●            | A           | 0.4                                                                                  | SH M10x30     |                                                                                                        |
| <b>663-22R-09</b>       | 6                                                                                 | 63             | 52.6  | 22     | 47   | 50  | 1.5  | ●            | A           | 0.6                                                                                  | SH M10x30     |                                                                                                        |
| <b>763-22R-09</b>       | 7                                                                                 | 63             | 52.6  | 22     | 47   | 50  | 1.5  | ●            | A           | 0.6                                                                                  | SH M10x30     |                                                                                                        |
| <b>863-22R-09</b>       | 8                                                                                 | 63             | 52.6  | 22     | 47   | 50  | 1.5  | ●            | A           | 0.6                                                                                  | SH M10x30     |                                                                                                        |
| <b>766-27R-09</b>       | 7                                                                                 | 66             | 55.6  | 27     | 58   | 50  | 1.5  | ●            | A           | 0.7                                                                                  | SH M12x35     |                                                                                                        |
| <b>866-27R-09</b>       | 8                                                                                 | 66             | 55.6  | 27     | 58   | 50  | 1.5  | ●            | A           | 0.8                                                                                  | SH M12x35     |                                                                                                        |
| <b>780-27R-09</b>       | 7                                                                                 | 80             | 69.6  | 27     | 70   | 50  | 1.5  | ●            | A           | 1.2                                                                                  | SH M12x35     |                                                                                                        |
| <b>880-27R-09</b>       | 8                                                                                 | 80             | 69.6  | 27     | 70   | 50  | 1.5  | ●            | A           | 1.2                                                                                  | SH M12x35     |                                                                                                        |
| <b>980-27R-09</b>       | 9                                                                                 | 80             | 69.6  | 27     | 70   | 50  | 1.5  | ●            | A           | 1.2                                                                                  | SH M12x35     |                                                                                                        |
| <b>1080-27R-09</b>      | 10                                                                                | 80             | 69.6  | 27     | 70   | 50  | 1.5  | ●            | A           | 1.2                                                                                  | SH M12x35     |                                                                                                        |
| <b>8100-32R-09</b>      | 8                                                                                 | 100            | 89.6  | 32     | 85   | 60  | 1.5  | ●            | A           | 2.3                                                                                  | SH M16x35     |                                                                                                        |
| <b>9100-32R-09</b>      | 9                                                                                 | 100            | 89.6  | 32     | 85   | 60  | 1.5  | ●            | A           | 2.3                                                                                  | SH M16x35     |                                                                                                        |
| <b>10100-32R-09</b>     | 10                                                                                | 100            | 89.6  | 32     | 85   | 60  | 1.5  | ●            | A           | 2.3                                                                                  | SH M16x35     |                                                                                                        |
| <b>11100-32R-09</b>     | 11                                                                                | 100            | 89.6  | 32     | 85   | 60  | 1.5  | ●            | A           | 2.3                                                                                  | SH M16x35     |                                                                                                        |
| <b>12100-32R-09</b>     | 12                                                                                | 100            | 89.6  | 32     | 85   | 60  | 1.5  | ●            | A           | 2.3                                                                                  | SH M16x35     |                                                                                                        |
| <b>12125-40R-09</b>     | 12                                                                                | 125            | 114.6 | 40     | 85   | 60  | 1.5  | ●            | A           | 2.7                                                                                  | SH M20x40     |                                                                                                        |
| <b>14125-40R-09</b>     | 14                                                                                | 125            | 114.6 | 40     | 85   | 60  | 1.5  | ●            | A           | 2.7                                                                                  | SH M20x40     |                                                                                                        |



# TFMBL-11



## High feed face mills



| Designation               |    | Dimension (mm) |       |        |      |     |      | Coolant hole | Arbor style | kg  | Mounting bolt | Insert                  |
|---------------------------|----|----------------|-------|--------|------|-----|------|--------------|-------------|-----|---------------|-------------------------|
|                           |    | DCX            | DC    | DCONMS | DHUB | OAL | APMX |              |             |     |               |                         |
| <b>TFMBL 440-16R-11</b>   | 4  | 40             | 24.4  | 16     | 30   | 40  | 2.0  | ●            | E           | 0.2 | KTB 32B       | BLMP<br>1105...<br>E268 |
| <b>450-22R-11</b>         | 4  | 50             | 34.4  | 22     | 45   | 40  | 2.0  | ●            | A           | 0.3 | LH M10x25     |                         |
| <b>550-22R-11</b>         | 5  | 50             | 34.4  | 22     | 45   | 40  | 2.0  | ●            | A           | 0.3 | LH M10x25     |                         |
| <b>552-22R-11</b>         | 5  | 52             | 36.4  | 22     | 45   | 40  | 2.0  | ●            | A           | 0.3 | LH M10x25     |                         |
| <b>563-22R-11</b>         | 5  | 63             | 48.4  | 22     | 58   | 50  | 2.0  | ●            | A           | 0.7 | SH M10x30     |                         |
| <b>663-22R-11</b>         | 6  | 63             | 48.4  | 22     | 58   | 50  | 2.0  | ●            | A           | 0.7 | SH M10x30     |                         |
| <b>666-22R-11</b>         | 6  | 66             | 50.3  | 22     | 58   | 50  | 2.0  | ●            | A           | 0.8 | SH M10x30     |                         |
| <b>666-27R-11</b>         | 6  | 66             | 50.3  | 27     | 58   | 50  | 2.0  | ●            | A           | 0.7 | SH M12x35     |                         |
| <b>680-27R-11</b>         | 6  | 80             | 64.3  | 27     | 70   | 60  | 2.0  | ●            | A           | 1.4 | SH M12x30     |                         |
| <b>780-27R-11</b>         | 7  | 80             | 64.3  | 27     | 70   | 60  | 2.0  | ●            | A           | 1.4 | SH M12x30     |                         |
| <b>6100-32R-11</b>        | 6  | 100            | 84.3  | 32     | 85   | 60  | 2.0  | ●            | A           | 2.2 | SH M16x35     |                         |
| <b>7100-32R-11</b>        | 7  | 100            | 84.3  | 32     | 85   | 60  | 2.0  | ●            | A           | 2.2 | SH M16x35     |                         |
| <b>8125-32R-11</b>        | 8  | 125            | 109.3 | 32     | 85   | 60  | 2.0  | ●            | A           | 2.5 | SH M20x40     |                         |
| <b>10125-40R-11</b>       | 10 | 125            | 109.3 | 40     | 85   | 60  | 2.0  | ●            | A           | 2.7 | SH M20x40     |                         |
| <b>10160-40R-11</b>       | 10 | 160            | 144.3 | 40     | 110  | 60  | 2.0  | x            | C           | 3.9 | -             |                         |
| <b>12200-60R-11</b>       | 12 | 200            | 184.3 | 60     | 130  | 60  | 2.0  | x            | C           | 5.8 | -             |                         |
| <b>TFMBL 680-25.4R-11</b> | 6  | 80             | 64.3  | 25.4   | 70   | 60  | 2.0  | ●            | A           | 1.4 | SH M12x35     |                         |
| <b>6100-31.75R-11</b>     | 6  | 100            | 84.3  | 31.75  | 80   | 60  | 2.0  | x            | B           | 1.8 | -             |                         |
|                           |    |                |       |        |      |     |      |              |             |     |               |                         |
|                           |    |                |       |        |      |     |      |              |             |     |               |                         |
|                           |    |                |       |        |      |     |      |              |             |     |               |                         |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

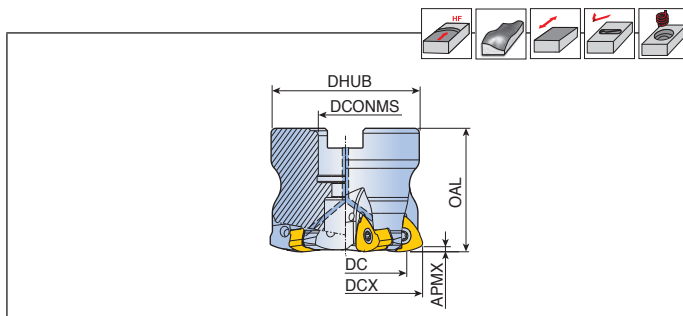
## Spare parts

| Designation     | Screw          | Wrench |             | Wrench handle |  |
|-----------------|----------------|--------|-------------|---------------|--|
|                 |                |        |             |               |  |
| <b>TFMBL-06</b> | TS 250641/HG-P | TD 8P  | -           | -             |  |
| <b>TFMBL-09</b> | TS 35A0881/HG  | TD 10P | -           | -             |  |
| <b>TFMBL-11</b> | TS 50A1211/HG  | -      | TBLD T20-W6 | SW6-T         |  |
|                 |                |        |             |               |  |
|                 |                |        |             |               |  |



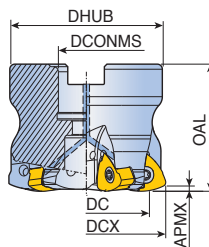


## High feed face mills

[illegible]

► Mounting bolt with coolant through hole is available on request  
(ordering example: SH M10x1.5x30-C)

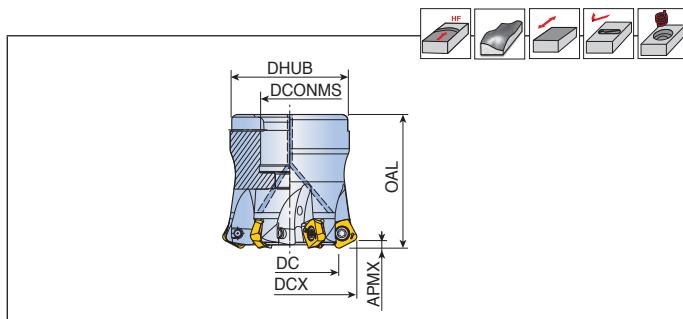
**CHASE2FEED**

[illegible]

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

| Designation     | Screw                                                                               | Wrench                                                                              |  |  |  |
|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                 |  |  |  |  |  |
| <b>TFMBL-13</b> | TS 50B106I/HG                                                                       | T-T20                                                                               |  |  |  |
|                 |                                                                                     |                                                                                     |  |  |  |
|                 |                                                                                     |                                                                                     |  |  |  |
|                 |                                                                                     |                                                                                     |  |  |  |



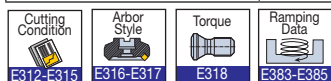


| Designation             |   | Dimension (mm) |      |        |      |     |      | Coolant hole | Arbor style | Kg  | Mounting bolt | Insert               |
|-------------------------|---|----------------|------|--------|------|-----|------|--------------|-------------|-----|---------------|----------------------|
|                         |   | DCX            | DC   | DCONMS | DHUB | OAL | APMX |              |             |     |               |                      |
| <b>TFMSB 532-16R-06</b> | 5 | 32             | 21.7 | 16     | 30   | 40  | 1.0  | ●            | A           | 0.1 | SH M8x25      | SBMT 0603...<br>E287 |
| <b>640-16R-06</b>       | 6 | 40             | 29.7 | 16     | 38   | 40  | 1.0  | ●            | A           | 0.2 | SH M8x25      |                      |
| <b>750-22R-06</b>       | 7 | 50             | 39.7 | 22     | 45   | 50  | 1.0  | ●            | A           | 0.4 | SH M10x35     |                      |
| <b>863-22R-06</b>       | 8 | 63             | 52.7 | 22     | 47   | 50  | 1.0  | ●            | A           | 0.6 | SH M10x35     |                      |
| <b>TFMSB 432-16R-09</b> | 4 | 32             | 17.4 | 16     | 30   | 40  | 1.2  | ●            | E           | 0.1 | KTB 32B       | SBMT 0904...<br>E287 |
| <b>440-16R-09</b>       | 4 | 40             | 25.5 | 16     | 38   | 40  | 1.2  | ●            | A           | 0.2 | SH M8x25      |                      |
| <b>540-16R-09</b>       | 5 | 40             | 25.5 | 16     | 38   | 40  | 1.2  | ●            | A           | 0.2 | SH M8x25      |                      |
| <b>450-22R-09</b>       | 4 | 50             | 35.5 | 22     | 45   | 50  | 1.2  | ●            | A           | 0.4 | SH M10x30     |                      |
| <b>550-22R-09</b>       | 5 | 50             | 35.5 | 22     | 45   | 50  | 1.2  | ●            | A           | 0.4 | SH M10x30     |                      |
| <b>650-22R-09</b>       | 6 | 50             | 35.5 | 22     | 45   | 50  | 1.2  | ●            | A           | 0.4 | SH M10x30     |                      |
| <b>750-22R-09</b>       | 7 | 50             | 35.5 | 22     | 45   | 50  | 1.2  | ●            | A           | 0.4 | SH M10x30     |                      |
| <b>652-22R-09</b>       | 6 | 52             | 37.5 | 22     | 45   | 50  | 1.2  | ●            | A           | 0.4 | SH M10x30     |                      |
| <b>752-22R-09</b>       | 7 | 52             | 37.5 | 22     | 45   | 50  | 1.2  | ●            | A           | 0.4 | SH M10x30     |                      |
| <b>663-22R-09</b>       | 6 | 63             | 48.4 | 22     | 58   | 50  | 1.2  | ●            | A           | 0.8 | SH M10x30     |                      |
| <b>763-22R-09</b>       | 7 | 63             | 48.4 | 22     | 58   | 50  | 1.2  | ●            | A           | 0.8 | SH M10x30     |                      |
| <b>763-27R-09</b>       | 7 | 63             | 48.4 | 27     | 58   | 50  | 1.2  | ●            | A           | 0.7 | SH M12x35     |                      |
| <b>863-22R-09</b>       | 8 | 63             | 48.4 | 22     | 58   | 50  | 1.2  | ●            | A           | 0.8 | SH M10x30     |                      |
| <b>866-22R-09</b>       | 8 | 66             | 51.5 | 22     | 58   | 50  | 1.2  | ●            | A           | 0.8 | SH M10x30     |                      |
| <b>780-27R-09</b>       | 7 | 80             | 65.8 | 27     | 70   | 60  | 1.2  | ●            | A           | 1.4 | SH M12x35     |                      |
| <b>880-27R-09</b>       | 8 | 80             | 65.8 | 27     | 70   | 60  | 1.2  | ●            | A           | 1.4 | SH M12x35     |                      |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M8x1.25x25-C)

## Spare parts

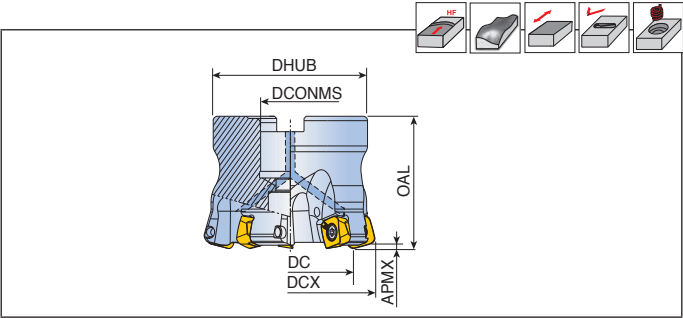
| Designation             | Screw          | Wrench |  |  |  |
|-------------------------|----------------|--------|--|--|--|
|                         |                |        |  |  |  |
| <b>TFMSB-06</b>         | TS 25064I/HG-P | TD 8P  |  |  |  |
| <b>TFMSB-09</b>         | TS 35A088I/HG  | TD 10P |  |  |  |
| <b>TFMSB 750-22R-09</b> | TS 35A070I/HG  | TD 10P |  |  |  |
| <b>TFMSB 752-22R-09</b> | TS 35A070I/HG  | TD 10P |  |  |  |



# TFMSB-13



High feed face mills



| Designation               |    | Dimension (mm) |       |        |      |     |      | Coolant hole | Arbor style | Kg  | Mounting bolt | Insert               |
|---------------------------|----|----------------|-------|--------|------|-----|------|--------------|-------------|-----|---------------|----------------------|
|                           |    | DCX            | DC    | DCONMS | DHUB | OAL | APMX |              |             |     |               |                      |
| <b>TFMSB 350-22R-13</b>   | 3  | 50             | 29.3  | 22     | 45   | 40  | 2.0  | ●            | A           | 0.3 | LH M10x25     | SBMT 1306...<br>E287 |
| <b>450-22R-13</b>         | 4  | 50             | 29.3  | 22     | 45   | 40  | 2.0  | ●            | A           | 0.2 | LH M10x25     |                      |
| <b>452-22R-13</b>         | 4  | 52             | 31.3  | 22     | 45   | 40  | 2.0  | ●            | A           | 0.3 | LH M10x25     |                      |
| <b>552-22R-13</b>         | 5  | 52             | 31.3  | 22     | 45   | 40  | 2.0  | ●            | A           | 0.2 | LH M10x25     |                      |
| <b>463-22R-13</b>         | 4  | 63             | 42.4  | 22     | 58   | 50  | 2.0  | ●            | A           | 0.6 | SH M10x30     |                      |
| <b>563-22R-13</b>         | 5  | 63             | 42.4  | 22     | 58   | 50  | 2.0  | ●            | A           | 0.5 | SH M10x30     |                      |
| <b>463-27R-13</b>         | 4  | 63             | 42.4  | 27     | 58   | 50  | 2.0  | ●            | A           | 0.5 | SH M12x35     |                      |
| <b>566-27R-13</b>         | 5  | 66             | 45.3  | 27     | 58   | 50  | 2.0  | ●            | A           | 0.6 | SH M12x35     |                      |
| <b>580-27R-13</b>         | 5  | 80             | 59.4  | 27     | 70   | 60  | 2.0  | ●            | A           | 1.3 | SH M12x35     |                      |
| <b>680-27R-13</b>         | 6  | 80             | 59.4  | 27     | 70   | 60  | 2.0  | ●            | A           | 1.3 | SH M12x35     |                      |
| <b>580-32R-13</b>         | 5  | 80             | 59.4  | 32     | 76   | 60  | 2.0  | ●            | A           | 1.3 | SH M16x35     |                      |
| <b>6100-32R-13</b>        | 6  | 100            | 79.4  | 32     | 76   | 60  | 2.0  | ●            | A           | 1.9 | SH M16x35     |                      |
| <b>7125-40R-13</b>        | 7  | 125            | 104.7 | 40     | 85   | 60  | 2.0  | ●            | A           | 2.5 | SH M20x40     |                      |
| <b>8160-40R-13</b>        | 8  | 160            | 139.4 | 40     | 110  | 60  | 2.0  | x            | C           | 3.5 | -             |                      |
| <b>9200-60R-13</b>        | 9  | 200            | 179.4 | 60     | 130  | 60  | 2.0  | x            | C           | 5.1 | -             |                      |
| <b>10250-60R-13</b>       | 10 | 250            | 229.4 | 60     | 160  | 60  | 2.0  | x            | C           | 9.1 | -             |                      |
| <b>TFMSB 463-25.4R-13</b> | 4  | 63             | 42.4  | 25.4   | 58   | 50  | 2.0  | ●            | A           | 0.5 | SH M12x35     |                      |
| <b>580-25.4R-13</b>       | 5  | 80             | 59.4  | 25.4   | 70   | 60  | 2.0  | ●            | A           | 1.3 | SH M12x35     |                      |
| <b>580-31.75R-13</b>      | 5  | 80             | 59.4  | 31.75  | 76   | 60  | 2.0  | ●            | A           | 1.3 | SH M16x35     |                      |
| <b>7125-38.1R-13</b>      | 7  | 125            | 104.7 | 38.1   | 80   | 60  | 2.0  | x            | B           | 2.2 | -             |                      |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

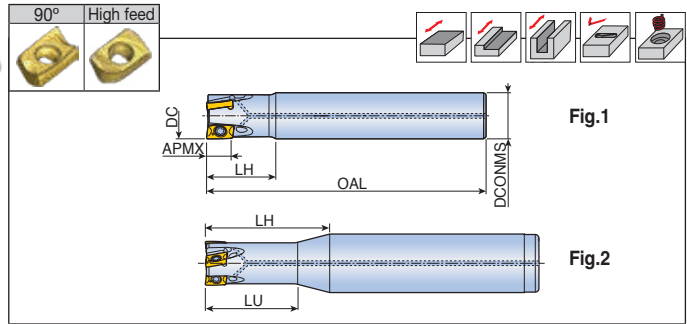
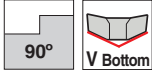
| Designation     | Screw     | Wrench |  |  |  |
|-----------------|-----------|--------|--|--|--|
|                 |           |        |  |  |  |
| <b>TFMSB-13</b> | TS 50115I | T-T20  |  |  |  |
|                 |           |        |  |  |  |
|                 |           |        |  |  |  |
|                 |           |        |  |  |  |

E312-E315
 E316-E317
 E318
 E383-E385

# 2S-TE90CV-05



## End mills

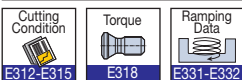


| Designation                |   | Dimension (mm) |        |     |    |    |      | Coolant hole | Fig. | Insert                  |
|----------------------------|---|----------------|--------|-----|----|----|------|--------------|------|-------------------------|
|                            |   | DC             | DCONMS | OAL | LH | LU | APMX |              |      |                         |
| <b>2S-TE90CV-106-06-05</b> | 1 | 6              | 6      | 60  | 12 | -  | 5.0  | ●            | 1    | CVK(H)T 0502...<br>E273 |
| <b>106-06-05-L50</b>       | 1 | 6              | 6      | 50  | 10 | -  | 5.0  | ●            | 1    |                         |
| <b>208-07-05</b>           | 2 | 8              | 7      | 80  | 12 | -  | 5.0  | ●            | 1    |                         |
| <b>208-08-05</b>           | 2 | 8              | 8      | 80  | 12 | -  | 5.0  | ●            | 1    |                         |
| <b>208-08-05-L50</b>       | 2 | 8              | 8      | 50  | 10 | -  | 5.0  | ●            | 1    |                         |
| <b>208-12-05</b>           | 2 | 8              | 12     | 80  | 25 | 18 | 5.0  | ●            | 2    |                         |
| <b>209-08-05</b>           | 2 | 9              | 8      | 80  | 12 | -  | 5.0  | ●            | 1    |                         |
| <b>210-10-05</b>           | 2 | 10             | 10     | 80  | 15 | -  | 5.0  | ●            | 1    |                         |
| <b>212-12-05</b>           | 2 | 12             | 12     | 80  | 15 | -  | 5.0  | ●            | 1    |                         |
| <b>310-09-05</b>           | 3 | 10             | 9      | 80  | 12 | -  | 5.0  | ●            | 1    |                         |
| <b>310-10-05</b>           | 3 | 10             | 10     | 80  | 15 | -  | 5.0  | ●            | 1    |                         |
| <b>310-10-05-L55</b>       | 3 | 10             | 10     | 55  | 12 | -  | 5.0  | ●            | 1    |                         |
| <b>310-16-05-L90</b>       | 3 | 10             | 16     | 90  | 34 | 22 | 5.0  | ●            | 2    |                         |
| <b>311-10-05</b>           | 3 | 11             | 10     | 80  | 12 | -  | 5.0  | ●            | 1    |                         |
| <b>312-12-05</b>           | 3 | 12             | 12     | 80  | 15 | -  | 5.0  | ●            | 1    |                         |
| <b>412-11-05</b>           | 4 | 12             | 11     | 80  | 12 | -  | 5.0  | ●            | 1    |                         |
| <b>412-12-05</b>           | 4 | 12             | 12     | 80  | 15 | -  | 5.0  | ●            | 1    |                         |
| <b>412-12-05-L60</b>       | 4 | 12             | 12     | 60  | 14 | -  | 5.0  | ●            | 1    |                         |
| <b>412-16-05-L100</b>      | 4 | 12             | 16     | 100 | 34 | 26 | 5.0  | ●            | 2    |                         |
| <b>413-12-05</b>           | 4 | 13             | 12     | 80  | 12 | -  | 5.0  | ●            | 1    |                         |
| <b>414-12-05</b>           | 4 | 14             | 12     | 80  | 10 | -  | 5.0  | ●            | 1    |                         |
| <b>514-14-05-L90</b>       | 5 | 14             | 14     | 90  | 15 | -  | 5.0  | ●            | 1    |                         |

► Cutter body for 'HF' insert should be modified with body corner radius 1.8 mm

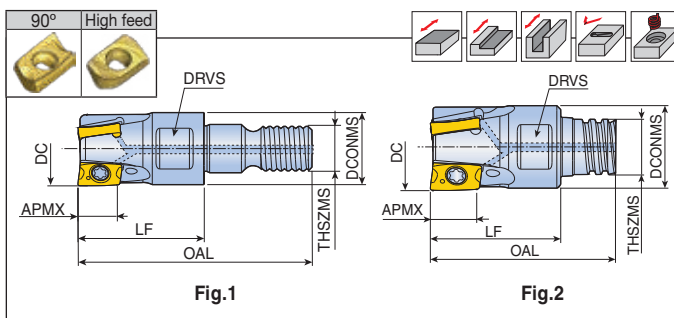
## Spare parts

| Designation         | Screw         | Wrench |  |  |  |
|---------------------|---------------|--------|--|--|--|
|                     |               |        |  |  |  |
| <b>2S-TE90CV-05</b> | TS 18033/HG-P | TD 6P  |  |  |  |
|                     |               |        |  |  |  |
|                     |               |        |  |  |  |
|                     |               |        |  |  |  |



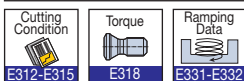


## Two metal electrical connectors with yellow insulation, likely for power or data transmission. They have a threaded end and a flat, rectangular connector head.



- ▶ Cutter body for '-HF' insert should be modified with body corner radius 1.8 mm
- ▶ Matched with T-FLEXTEC holder (Fig.1) & MAXI-RUSH holder (Fig.2)

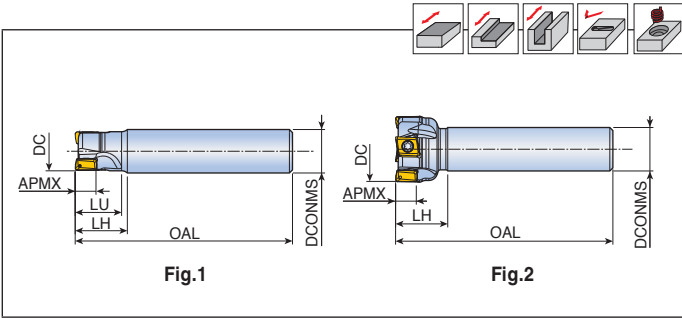
| Designation         | Screw                                                                               | Wrench                                                                              |  |  |  |
|---------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                     |  |  |  |  |  |
| <b>2S-TE90CV-05</b> | TS 18033/HG-P                                                                       | TD 6P                                                                               |  |  |  |
|                     |                                                                                     |                                                                                     |  |  |  |
|                     |                                                                                     |                                                                                     |  |  |  |
|                     |                                                                                     |                                                                                     |  |  |  |



4T-MTE90-05



End mills



| Designation         |   | Dimension (mm) |        |     |    |    |      | Fig. | Insert               |
|---------------------|---|----------------|--------|-----|----|----|------|------|----------------------|
|                     |   | DC             | DCONMS | OAL | LU | LH | APMX |      |                      |
| 4T-MTE90- 210-10-05 | 2 | 10             | 10     | 50  | 10 | 12 | 4.6  | 1    | LPHU 0502...<br>E276 |
| 212-10-05           | 2 | 12             | 10     | 50  | -  | 12 | 4.6  | 2    |                      |
| 314-10-05           | 3 | 14             | 10     | 50  | -  | 12 | 4.6  | 2    |                      |
| 416-10-05           | 4 | 16             | 10     | 50  | -  | 12 | 4.6  | 2    |                      |
| 420-10-05           | 4 | 20             | 10     | 50  | -  | 12 | 4.6  | 2    |                      |
| 520-12-05           | 5 | 20             | 12     | 60  | -  | 12 | 4.6  | 2    |                      |
| 430-10-05           | 4 | 30             | 10     | 50  | -  | 12 | 4.6  | 2    |                      |
| 630-12-05           | 6 | 30             | 12     | 60  | -  | 12 | 4.6  | 2    |                      |
|                     |   |                |        |     |    |    |      |      |                      |
|                     |   |                |        |     |    |    |      |      |                      |
|                     |   |                |        |     |    |    |      |      |                      |
|                     |   |                |        |     |    |    |      |      |                      |
|                     |   |                |        |     |    |    |      |      |                      |
|                     |   |                |        |     |    |    |      |      |                      |
|                     |   |                |        |     |    |    |      |      |                      |
|                     |   |                |        |     |    |    |      |      |                      |
|                     |   |                |        |     |    |    |      |      |                      |
|                     |   |                |        |     |    |    |      |      |                      |
|                     |   |                |        |     |    |    |      |      |                      |
|                     |   |                |        |     |    |    |      |      |                      |
|                     |   |                |        |     |    |    |      |      |                      |
|                     |   |                |        |     |    |    |      |      |                      |

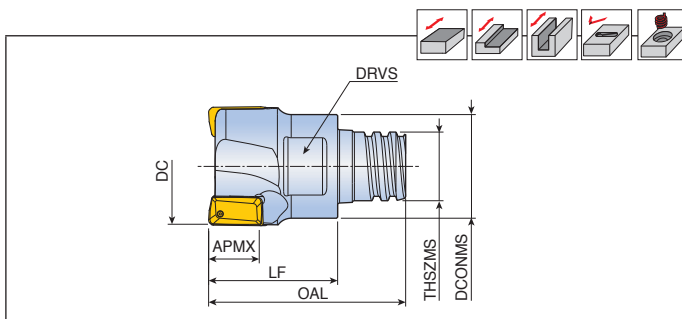
Spare parts

| Designation        | Screw         | Wrench |  |  |  |
|--------------------|---------------|--------|--|--|--|
|                    |               |        |  |  |  |
| 4T-MTE90-05 (Ø10)  | TS 18041/SG-P | TD 6P  |  |  |  |
| 4T-MTE90-05 (Ø12-) | TS 18049/HG-P | TD 6P  |  |  |  |
|                    |               |        |  |  |  |
|                    |               |        |  |  |  |
|                    |               |        |  |  |  |

E312-E315

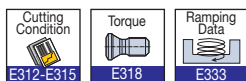
E318

E333



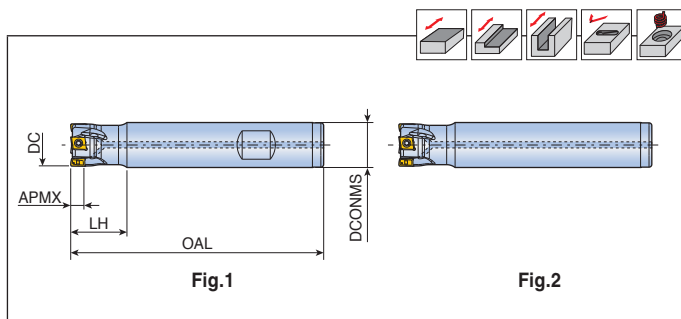
► Matched with MAXI-RUSH holder

| Designation                 | Screw                                                                               | Wrench                                                                              |  |  |  |
|-----------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                             |  |  |  |  |  |
| <b>4T-MTE90-S-05</b> (Ø10)  | TS 18041/SG-P                                                                       | TD 6P                                                                               |  |  |  |
| <b>4T-MTE90-S-05</b> (Ø12-) | TS 18049/HG-P                                                                       | TD 6P                                                                               |  |  |  |
|                             |                                                                                     |                                                                                     |  |  |  |





## End mills



| Designation                |   | Dimension (mm) |        |     |    |      | Coolant hole | Fig. | Insert                  |
|----------------------------|---|----------------|--------|-----|----|------|--------------|------|-------------------------|
|                            |   | DC             | DCONMS | OAL | LH | APMX |              |      |                         |
| <b>4T-TE90- 210-10-05</b>  | 2 | 10             | 10     | 80  | 15 | 4.6  | ●            | 2    | LPK(H)U 0502...<br>E276 |
| <b>211-10-05</b>           | 2 | 11             | 10     | 80  | 15 | 4.6  | ●            | 2    |                         |
| <b>212-12-05</b>           | 2 | 12             | 12     | 80  | 15 | 4.6  | ●            | 2    |                         |
| <b>312-12-05</b>           | 3 | 12             | 12     | 80  | 15 | 4.6  | ●            | 2    |                         |
| <b>313-12-05</b>           | 3 | 13             | 12     | 80  | 15 | 4.6  | ●            | 2    |                         |
| <b>316-W16-05</b>          | 3 | 16             | 16     | 90  | 20 | 4.6  | ●            | 1    |                         |
| <b>416-W16-05</b>          | 4 | 16             | 16     | 90  | 20 | 4.6  | ●            | 1    |                         |
| <b>420-W20-05</b>          | 4 | 20             | 20     | 100 | 25 | 4.6  | ●            | 1    |                         |
| <b>520-W20-05</b>          | 5 | 20             | 20     | 100 | 25 | 4.6  | ●            | 1    |                         |
| <b>625-W25-05</b>          | 6 | 25             | 25     | 110 | 30 | 4.6  | ●            | 1    | LPK(H)U 0904...<br>E276 |
| <b>832-W25-05</b>          | 8 | 32             | 25     | 110 | 20 | 4.6  | ●            | 1    |                         |
| <b>4T-TE90- 220-W20-09</b> | 2 | 20             | 20     | 100 | 30 | 8.3  | ●            | 1    |                         |
| <b>220-20-09-L170</b>      | 2 | 20             | 20     | 170 | 30 | 8.3  | ●            | 2    |                         |
| <b>320-W20-09</b>          | 3 | 20             | 20     | 100 | 30 | 8.3  | ●            | 1    |                         |
| <b>325-W25-09</b>          | 3 | 25             | 25     | 100 | 30 | 8.3  | ●            | 1    |                         |
| <b>325-25-09-L200</b>      | 3 | 25             | 25     | 200 | 30 | 8.3  | ●            | 2    |                         |
| <b>425-W25-09</b>          | 4 | 25             | 25     | 100 | 30 | 8.3  | ●            | 1    |                         |
| <b>425-25-09-L120</b>      | 4 | 25             | 25     | 120 | 30 | 8.3  | ●            | 2    |                         |
| <b>332-W32-09</b>          | 3 | 32             | 32     | 110 | 35 | 8.3  | ●            | 1    |                         |
| <b>332-32-09-L210</b>      | 3 | 32             | 32     | 210 | 35 | 8.3  | ●            | 2    |                         |
| <b>532-W32-09</b>          | 5 | 32             | 32     | 110 | 35 | 8.3  | ●            | 1    |                         |
| <b>532-32-09-L130</b>      | 5 | 32             | 32     | 130 | 35 | 8.3  | ●            | 2    |                         |
| <b>440-W32-09</b>          | 4 | 40             | 32     | 115 | 30 | 8.3  | ●            | 1    |                         |
| <b>440-32-09-L150</b>      | 4 | 40             | 32     | 150 | 30 | 8.3  | ●            | 2    |                         |
| <b>640-W32-09</b>          | 6 | 40             | 32     | 115 | 30 | 8.3  | ●            | 1    |                         |

## Spare parts

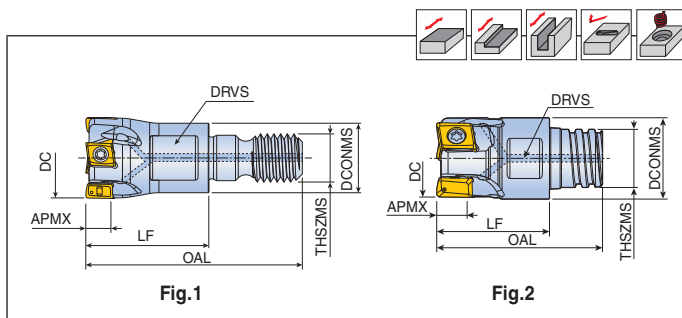
| Designation                 | Screw         | Wrench |              | Wrench handle |  |
|-----------------------------|---------------|--------|--------------|---------------|--|
|                             |               |        |              |               |  |
| <b>4T-TE90-05</b> (Ø10,Ø11) | TS 18041/SG-P | TD 6P  | -            | -             |  |
| <b>4T-TE90-05</b> (Ø12-)    | TS 18049/HG-P | TD 6P  | -            | -             |  |
| <b>4T-TE90-09</b>           | TS 30D082-P   | -      | TBLD T08P-W4 | THND 4W       |  |



E312-E315

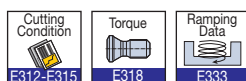
E318

E333



► Matched with T-FLEXTEC holder(Fig.1) & MAXI-RUSH holder(Fig.2)

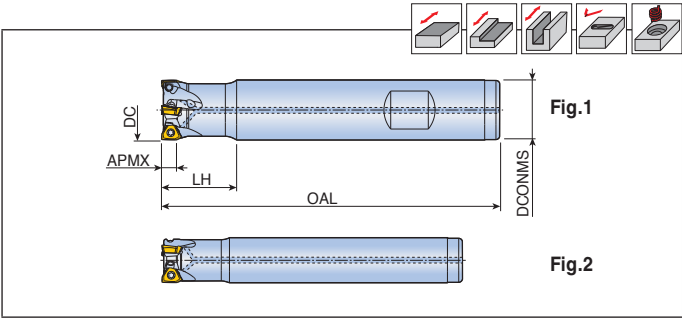
| Designation                 | Screw                                                                               | Wrench                                                                              |                                                                                     | Wrench handle                                                                       |  |
|-----------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                             |  |  |  |  |  |
| <b>4T-TE90-05</b> (Ø10,Ø11) | TS 18041/SG-P                                                                       | TD 6P                                                                               | -                                                                                   | -                                                                                   |  |
| <b>4T-TE90-05</b> (Ø12-)    | TS 18049/HG-P                                                                       | TD 6P                                                                               | -                                                                                   | -                                                                                   |  |
| <b>4T-TE90-09</b>           | TS 30D082-P                                                                         | -                                                                                   | TBLD T08P-W4                                                                        | THND 4W                                                                             |  |
|                             |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |



# 3P-TE90-04



End mills



| Designation        |   | Dimension (mm) |        |     |    |      | Coolant hole | Fig. | Insert               |
|--------------------|---|----------------|--------|-----|----|------|--------------|------|----------------------|
|                    |   | DC             | DCONMS | OAL | LH | APMX |              |      |                      |
| 3P-TE90- 108-08-04 | 1 | 8              | 8      | 80  | 17 | 3.5  | ●            | 2    | 3PKT 0402...<br>E250 |
| 210-10-04          | 2 | 10             | 10     | 80  | 17 | 3.5  | ●            | 2    |                      |
| 210-09-04-L        | 2 | 10             | 9      | 120 | 10 | 3.5  | ●            | 2    |                      |
| 211-10-04          | 2 | 11             | 10     | 80  | 11 | 3.5  | ●            | 2    |                      |
| 212-11-04-L        | 2 | 12             | 11     | 120 | 11 | 3.5  | ●            | 2    |                      |
| 212-12-04          | 2 | 12             | 12     | 80  | 18 | 3.5  | ●            | 2    |                      |
| 212-12-04-L        | 2 | 12             | 12     | 120 | 18 | 3.5  | ●            | 2    |                      |
| 312-12-04          | 3 | 12             | 12     | 80  | 18 | 3.5  | ●            | 2    |                      |
| 313-12-04          | 3 | 13             | 12     | 90  | 11 | 3.5  | ●            | 2    |                      |
| 314-12-04          | 3 | 14             | 12     | 90  | 12 | 3.5  | ●            | 2    |                      |
| 316-16-04          | 3 | 16             | 16     | 110 | 20 | 3.5  | ●            | 2    |                      |
| 416-W16-04         | 4 | 16             | 16     | 90  | 20 | 3.5  | ●            | 1    |                      |
|                    |   |                |        |     |    |      |              |      |                      |
|                    |   |                |        |     |    |      |              |      |                      |
|                    |   |                |        |     |    |      |              |      |                      |
|                    |   |                |        |     |    |      |              |      |                      |
|                    |   |                |        |     |    |      |              |      |                      |
|                    |   |                |        |     |    |      |              |      |                      |
|                    |   |                |        |     |    |      |              |      |                      |
|                    |   |                |        |     |    |      |              |      |                      |
|                    |   |                |        |     |    |      |              |      |                      |

## Spare parts

| Designation       | Screw         | Wrench |  |  |  |
|-------------------|---------------|--------|--|--|--|
|                   |               |        |  |  |  |
| 3P-TE90-04 (Ø8)   | TS 18033/HG-P | TD 6P  |  |  |  |
| 3P-TE90-04 (Ø10-) | TS 18041I/HG  | TD 6P  |  |  |  |
|                   |               |        |  |  |  |
|                   |               |        |  |  |  |

E312-E315

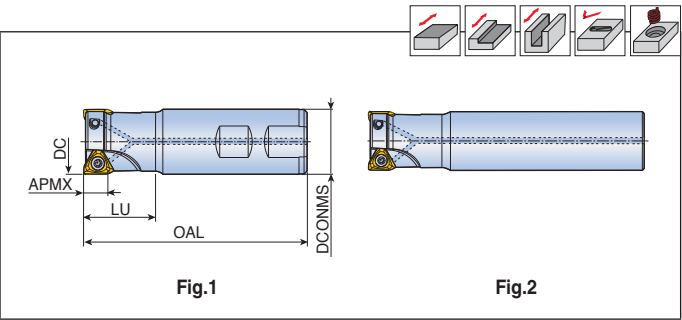
E318

E335-E337

# 3P TE90-06



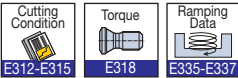
End mills



| Designation                   |  | Dimension (mm) |        |     |    |      | Coolant hole | Fig. | Insert                                                                                                    |
|-------------------------------|-----------------------------------------------------------------------------------|----------------|--------|-----|----|------|--------------|------|-----------------------------------------------------------------------------------------------------------|
|                               |                                                                                   | DC             | DCONMS | OAL | LU | APMX |              |      |                                                                                                           |
| <b>3P TE90- 112-12-06-L80</b> | 1                                                                                 | 12             | 12     | 80  | 20 | 4.7  | ●            | 2    | 3PK(H)T 0603...<br> E250 |
| <b>114-12-06-L80</b>          | 1                                                                                 | 14             | 12     | 80  | 20 | 4.7  | ●            | 2    |                                                                                                           |
| <b>216-W16-06</b>             | 2                                                                                 | 16             | 16     | 90  | 25 | 4.7  | ●            | 1    |                                                                                                           |
| <b>216-16-06-L110</b>         | 2                                                                                 | 16             | 16     | 110 | 25 | 4.7  | ●            | 2    |                                                                                                           |
| <b>216-16-06-L150</b>         | 2                                                                                 | 16             | 16     | 150 | 25 | 4.7  | ●            | 2    |                                                                                                           |
| <b>316-16-06-L110</b>         | 3                                                                                 | 16             | 16     | 110 | 25 | 4.7  | ●            | 2    |                                                                                                           |
| <b>217-16-06-L200</b>         | 2                                                                                 | 17             | 16     | 200 | 25 | 4.7  | ●            | 2    |                                                                                                           |
| <b>317-16-06-L110</b>         | 3                                                                                 | 17             | 16     | 110 | 25 | 4.7  | ●            | 2    |                                                                                                           |
| <b>318-W16-06</b>             | 3                                                                                 | 18             | 16     | 90  | 25 | 4.7  | ●            | 1    |                                                                                                           |
| <b>318-16-06-L150</b>         | 3                                                                                 | 18             | 16     | 150 | 25 | 4.7  | ●            | 2    |                                                                                                           |
| <b>319-16-06-L150</b>         | 3                                                                                 | 19             | 16     | 150 | 25 | 4.7  | ●            | 2    |                                                                                                           |
| <b>320-W20-06</b>             | 3                                                                                 | 20             | 20     | 105 | 25 | 4.7  | ●            | 1    |                                                                                                           |
| <b>320-20-06-L160</b>         | 3                                                                                 | 20             | 20     | 160 | 25 | 4.7  | ●            | 2    |                                                                                                           |
| <b>420-W20-06</b>             | 4                                                                                 | 20             | 20     | 105 | 25 | 4.7  | ●            | 1    |                                                                                                           |
| <b>420-19-06-L160</b>         | 4                                                                                 | 20             | 19     | 160 | 25 | 4.7  | ●            | 2    |                                                                                                           |
| <b>421-20-06-L160</b>         | 4                                                                                 | 21             | 20     | 160 | 25 | 4.7  | ●            | 2    |                                                                                                           |
| <b>422-W20-06</b>             | 4                                                                                 | 22             | 20     | 110 | 25 | 4.7  | ●            | 1    |                                                                                                           |
| <b>425-W20-06</b>             | 4                                                                                 | 25             | 20     | 115 | 25 | 4.7  | ●            | 1    |                                                                                                           |
| <b>525-W20-06</b>             | 5                                                                                 | 25             | 20     | 115 | 25 | 4.7  | ●            | 1    |                                                                                                           |
| <b>525-W25-06</b>             | 5                                                                                 | 25             | 25     | 115 | 25 | 4.7  | ●            | 1    |                                                                                                           |
| <b>630-W25-06</b>             | 6                                                                                 | 30             | 25     | 130 | 30 | 4.7  | ●            | 1    |                                                                                                           |
| <b>632-W25-06</b>             | 6                                                                                 | 32             | 25     | 130 | 30 | 4.7  | ●            | 1    |                                                                                                           |
| <b>732-W25-06</b>             | 7                                                                                 | 32             | 25     | 130 | 30 | 4.7  | ●            | 1    |                                                                                                           |
| <b>840-W32-06</b>             | 8                                                                                 | 40             | 32     | 130 | 30 | 4.7  | ●            | 1    |                                                                                                           |

## Spare parts

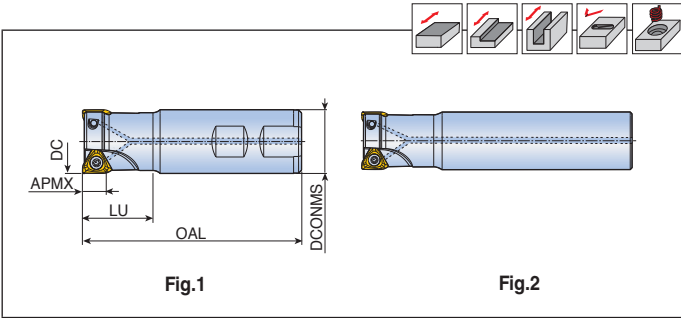
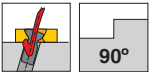
| Designation       | Screw          | Wrench |  |  |  |
|-------------------|----------------|--------|--|--|--|
|                   |                |        |  |  |  |
| <b>3P TE90-06</b> | TS 20043I/HG-P | TD 6P  |  |  |  |
|                   |                |        |  |  |  |
|                   |                |        |  |  |  |
|                   |                |        |  |  |  |



# 3P TE90-10



## End mills



| Designation             |   | Dimension (mm) |        |     |    |      | Coolant hole | Fig. | Insert                  |
|-------------------------|---|----------------|--------|-----|----|------|--------------|------|-------------------------|
|                         |   | DC             | DCONMS | OAL | LU | APMX |              |      |                         |
| 3P TE90- 116-16-10-L150 | 1 | 16             | 16     | 150 | 25 | 7.0  | ●            | 2    | 3PK(H)T 1004...<br>E250 |
| 116-W16-10              | 1 | 16             | 16     | 90  | 20 | 7.0  | ●            | 1    |                         |
| 220-W20-10              | 2 | 20             | 20     | 90  | 25 | 7.0  | ●            | 1    |                         |
| 220-19-10-L170          | 2 | 20             | 19     | 170 | 30 | 7.0  | ●            | 2    |                         |
| 220-20-10-L170          | 2 | 20             | 20     | 170 | 40 | 7.0  | ●            | 2    |                         |
| 221-20-10-L200          | 2 | 21             | 20     | 200 | 30 | 7.0  | ●            | 2    |                         |
| 221-20-10-L250-C        | 2 | 21             | 20     | 250 | 40 | 7.0  | ●            | 2    |                         |
| 222-W20-10              | 2 | 22             | 20     | 100 | 25 | 7.0  | ●            | 1    |                         |
| 225-25-10-L210          | 2 | 25             | 25     | 210 | 40 | 7.0  | ●            | 2    |                         |
| 325-W20-10              | 3 | 25             | 20     | 100 | 30 | 7.0  | ●            | 1    |                         |
| 325-W25-10              | 3 | 25             | 25     | 100 | 30 | 7.0  | ●            | 1    |                         |
| 325-24-10-L210          | 3 | 25             | 24     | 210 | 35 | 7.0  | ●            | 2    |                         |
| 325-25-10-L210          | 3 | 25             | 25     | 210 | 40 | 7.0  | ●            | 2    |                         |
| 226-25-10-L250          | 2 | 26             | 25     | 250 | 30 | 7.0  | ●            | 2    |                         |
| 330-W25-10              | 3 | 30             | 25     | 110 | 35 | 7.0  | ●            | 1    |                         |
| 232-W25-10              | 2 | 32             | 25     | 110 | 35 | 7.0  | ●            | 1    |                         |
| 332-W25-10              | 3 | 32             | 25     | 110 | 35 | 7.0  | ●            | 1    |                         |
| 333-32-10-L250          | 3 | 33             | 32     | 250 | 35 | 7.0  | ●            | 2    |                         |
| 333-32-10-L300-C        | 3 | 33             | 32     | 300 | 60 | 7.0  | ●            | 2    |                         |
| 432-W32-10              | 4 | 32             | 32     | 110 | 40 | 7.0  | ●            | 1    |                         |
| 440-32-10-L200          | 4 | 40             | 32     | 200 | 40 | 7.0  | ●            | 2    |                         |
| 532-W32-10              | 5 | 32             | 32     | 110 | 40 | 7.0  | ●            | 1    |                         |
| 540-W32-10              | 5 | 40             | 32     | 115 | 40 | 7.0  | ●            | 1    |                         |
| 640-W32-10              | 6 | 40             | 32     | 115 | 40 | 7.0  | ●            | 1    |                         |

## Spare parts

| Designation | Screw         | Wrench |  |  |  |
|-------------|---------------|--------|--|--|--|
|             |               |        |  |  |  |
| 3P TE90-10  | TS 25C065I/HG | TD 8   |  |  |  |
|             |               |        |  |  |  |
|             |               |        |  |  |  |
|             |               |        |  |  |  |

E312-E315

E318

E335-E337

# 3P TE90-15/19



## End mills

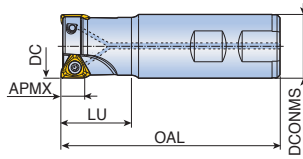
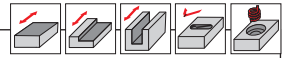
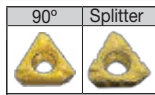


Fig.1



Fig.2

| Designation                    |  | Dimension (mm) |        |     |    |      | Coolant hole | Fig. | Insert                                                                                                                                                                                           |
|--------------------------------|-----------------------------------------------------------------------------------|----------------|--------|-----|----|------|--------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                |                                                                                   | DC             | DCONMS | OAL | LU | APMX |              |      |                                                                                                                                                                                                  |
| <b>3P TE90- 232-W32-15</b>     | 2                                                                                 | 32             | 32     | 110 | 40 | 11.0 | ●            | 1    |  3PK(H)T 1505...<br> E250-E251 |
| <b>232-32-15-L250</b>          | 2                                                                                 | 32             | 32     | 250 | 60 | 11.0 | ●            | 2    |                                                                                                                                                                                                  |
| <b>332-W25-15</b>              | 3                                                                                 | 32             | 25     | 100 | 40 | 11.0 | ●            | 1    |                                                                                                                                                                                                  |
| <b>332-W25-15-L155</b>         | 3                                                                                 | 32             | 25     | 155 | 35 | 11.0 | ●            | 2    |                                                                                                                                                                                                  |
| <b>332-W32-15</b>              | 3                                                                                 | 32             | 32     | 110 | 40 | 11.0 | ●            | 1    |                                                                                                                                                                                                  |
| <b>332-32-15-L150</b>          | 3                                                                                 | 32             | 32     | 150 | 40 | 11.0 | ●            | 2    |                                                                                                                                                                                                  |
| <b>332-32-15-L250</b>          | 3                                                                                 | 32             | 32     | 250 | 60 | 11.0 | ●            | 2    |                                                                                                                                                                                                  |
| <b>233-32-15-L200</b>          | 2                                                                                 | 33             | 32     | 200 | 40 | 11.0 | ●            | 2    |                                                                                                                                                                                                  |
| <b>233-32-15-L250</b>          | 2                                                                                 | 33             | 32     | 250 | 40 | 11.0 | ●            | 2    |                                                                                                                                                                                                  |
| <b>335-W32-15</b>              | 3                                                                                 | 35             | 32     | 110 | 40 | 11.0 | ●            | 1    |                                                                                                                                                                                                  |
| <b>340-W32-15</b>              | 3                                                                                 | 40             | 32     | 110 | 40 | 11.0 | ●            | 1    |                                                                                                                                                                                                  |
| <b>340-32-15-L200</b>          | 3                                                                                 | 40             | 32     | 200 | 40 | 11.0 | ●            | 2    |                                                                                                                                                                                                  |
| <b>440-W32-15</b>              | 4                                                                                 | 40             | 32     | 110 | 40 | 11.0 | ●            | 1    |                                                                                                                                                                                                  |
| <b>3P TE90- 240-32-19-L250</b> | 2                                                                                 | 40             | 32     | 250 | 45 | 15.0 | ●            | 2    |  3PK(H)T 1906...<br> E250-E251 |
| <b>340-W32-19</b>              | 3                                                                                 | 40             | 32     | 115 | 45 | 15.0 | ●            | 1    |                                                                                                                                                                                                  |
| <b>340-32-19-L200</b>          | 3                                                                                 | 40             | 32     | 200 | 45 | 15.0 | ●            | 2    |                                                                                                                                                                                                  |
| <b>450-W32-19</b>              | 4                                                                                 | 50             | 32     | 115 | 45 | 15.0 | ●            | 1    |                                                                                                                                                                                                  |
|                                |                                                                                   |                |        |     |    |      |              |      |                                                                                                                                                                                                  |
|                                |                                                                                   |                |        |     |    |      |              |      |                                                                                                                                                                                                  |
|                                |                                                                                   |                |        |     |    |      |              |      |                                                                                                                                                                                                  |
|                                |                                                                                   |                |        |     |    |      |              |      |                                                                                                                                                                                                  |

## Spare parts

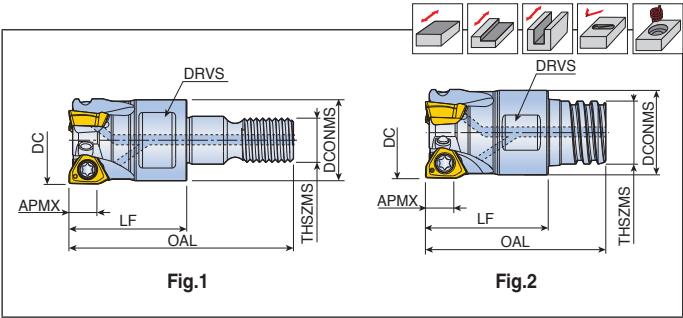
| Designation       | Screw      | Wrench |       |  |  |
|-------------------|------------|--------|-------|--|--|
|                   |            |        |       |  |  |
| <b>3P TE90-15</b> | TS 40B100I | TD 15  | -     |  |  |
| <b>3P TE90-19</b> | TS 45120I  | -      | T-T20 |  |  |
|                   |            |        |       |  |  |
|                   |            |        |       |  |  |



# 3P-TE90-M(S)-04/06



## Modular heads



| Designation         |   | Dimension (mm) |        |    |      |        |      |      | Coolant hole | Fig. | Insert              |
|---------------------|---|----------------|--------|----|------|--------|------|------|--------------|------|---------------------|
|                     |   | DC             | DCONMS | LF | OAL  | THSZMS | APMX | DRVS |              |      |                     |
| 3P-TE90-210-M06-04  | 2 | 10             | 9.7    | 17 | 31.5 | M06    | 3.5  | 8    | ●            | 1    | 3PKT 0402...<br>    |
| 312-M06-04          | 3 | 12             | 11     | 17 | 31.5 | M06    | 3.5  | 8    | ●            | 1    |                     |
| 416-M06-04          | 4 | 16             | 13     | 23 | 40.5 | M08    | 3.5  | 10   | ●            | 1    |                     |
| 3P-TE90-210-S06-04  | 2 | 10             | 9.6    | 15 | 21.3 | S06    | 3.5  | 8    | ●            | 2    | 3PK(H)T 0603...<br> |
| 312-S08-04          | 3 | 12             | 11.5   | 16 | 23.5 | S08    | 3.5  | 10   | ●            | 2    |                     |
| 416-S10-04          | 4 | 16             | 15.2   | 20 | 31.3 | S10    | 3.5  | 13   | ●            | 2    |                     |
| 3P TE90- 216-M08-06 | 2 | 16             | 13     | 23 | 40.5 | M08    | 4.7  | 10   | ●            | 1    | 3PK(H)T 0603...<br> |
| 217-M08-06          | 2 | 17             | 13     | 23 | 40.5 | M08    | 4.7  | 10   | ●            | 1    |                     |
| 320-M10-06          | 3 | 20             | 18     | 35 | 55   | M10    | 4.7  | 15   | ●            | 1    |                     |
| 420-M10-06          | 4 | 20             | 18     | 35 | 55   | M10    | 4.7  | 15   | ●            | 1    |                     |
| 425-M12-06          | 4 | 25             | 21     | 35 | 57   | M12    | 4.7  | 17   | ●            | 1    |                     |
| 525-M12-06          | 5 | 25             | 21     | 35 | 57   | M12    | 4.7  | 17   | ●            | 1    |                     |
| 632-M16-06          | 6 | 32             | 29     | 43 | 68   | M16    | 4.7  | 25   | ●            | 1    |                     |
| 732-M16-06          | 7 | 32             | 29     | 43 | 68   | M16    | 4.7  | 25   | ●            | 1    |                     |
| 735-M16-06          | 7 | 35             | 29     | 43 | 68   | M16    | 4.7  | 25   | ●            | 1    |                     |
|                     |   |                |        |    |      |        |      |      |              |      |                     |
|                     |   |                |        |    |      |        |      |      |              |      |                     |
|                     |   |                |        |    |      |        |      |      |              |      |                     |
|                     |   |                |        |    |      |        |      |      |              |      |                     |
|                     |   |                |        |    |      |        |      |      |              |      |                     |
|                     |   |                |        |    |      |        |      |      |              |      |                     |

► Matched with T-FLEXTEC holder(Fig.1) & MAXI-RUSH holder(Fig.2)

## Spare parts

| Designation       | Screw         | Wrench |  |  |  |
|-------------------|---------------|--------|--|--|--|
|                   |               |        |  |  |  |
| 3P-TE90-04 (Ø8)   | TS 18033/HG-P | TD 6P  |  |  |  |
| 3P-TE90-04 (Ø10-) | TS 18041/HG   | TD 6P  |  |  |  |
| 3P TE90-06        | TS 20043/HG-P | TD 6P  |  |  |  |
|                   |               |        |  |  |  |
|                   |               |        |  |  |  |

Cutting Condition  
E312-E315

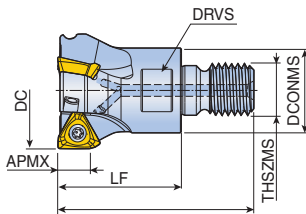
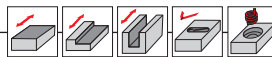
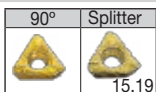
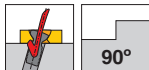
Torque  
E318

Ramping Data  
E335-E337

# 3P TE90-M-10/15/19



## Modular heads

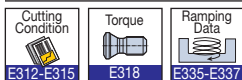


| Designation                |   | Dimension (mm) |        |    |     |        |      |      |   | Coolant hole | Insert          |
|----------------------------|---|----------------|--------|----|-----|--------|------|------|---|--------------|-----------------|
|                            |   | DC             | DCONMS | LF | OAL | THSZMS | APMX | DRVS |   |              |                 |
| <b>3P TE90- 220-M10-10</b> | 2 | 20             | 18     | 35 | 55  | M10    | 7.0  | 15   | ● |              | 3PK(H)T 1004... |
| <b>221-M10-10</b>          | 2 | 21             | 18     | 35 | 55  | M10    | 7.0  | 15   | ● |              | E250            |
| <b>325-M12-10</b>          | 3 | 25             | 21     | 35 | 57  | M12    | 7.0  | 17   | ● |              |                 |
| <b>326-M12-10</b>          | 3 | 26             | 21     | 35 | 57  | M12    | 7.0  | 17   | ● |              |                 |
| <b>432-M16-10</b>          | 4 | 32             | 29     | 43 | 68  | M16    | 7.0  | 25   | ● |              |                 |
| <b>532-M16-10</b>          | 5 | 32             | 29     | 43 | 68  | M16    | 7.0  | 25   | ● |              |                 |
| <b>535-M16-10</b>          | 5 | 35             | 29     | 43 | 68  | M16    | 7.0  | 25   | ● |              |                 |
| <b>540-M16-10</b>          | 5 | 40             | 29     | 43 | 68  | M16    | 7.0  | 25   | ● |              |                 |
| <b>640-M16-10</b>          | 6 | 40             | 29     | 43 | 68  | M16    | 7.0  | 25   | ● |              |                 |
| <b>642-M16-10</b>          | 6 | 42             | 29     | 43 | 68  | M16    | 7.0  | 25   | ● |              |                 |
| <b>3P TE90- 232-M16-15</b> | 2 | 32             | 29     | 43 | 68  | M16    | 11.0 | 25   | ● |              | 3PK(H)T 1505... |
| <b>233-M16-15</b>          | 2 | 33             | 29     | 43 | 68  | M16    | 11.0 | 25   | ● |              | E250-E251       |
| <b>332-M16-15</b>          | 3 | 32             | 29     | 43 | 68  | M16    | 11.0 | 25   | ● |              |                 |
| <b>340-M16-15</b>          | 3 | 40             | 29     | 43 | 68  | M16    | 11.0 | 25   | ● |              |                 |
| <b>440-M16-15</b>          | 4 | 40             | 29     | 43 | 68  | M16    | 11.0 | 25   | ● |              |                 |
| <b>3P TE90- 340-M16-19</b> | 3 | 40             | 29     | 43 | 68  | M16    | 15.0 | 25   | ● |              | 3PK(H)T 1906... |
|                            |   |                |        |    |     |        |      |      |   |              | E250-E251       |
|                            |   |                |        |    |     |        |      |      |   |              |                 |
|                            |   |                |        |    |     |        |      |      |   |              |                 |
|                            |   |                |        |    |     |        |      |      |   |              |                 |
|                            |   |                |        |    |     |        |      |      |   |              |                 |
|                            |   |                |        |    |     |        |      |      |   |              |                 |
|                            |   |                |        |    |     |        |      |      |   |              |                 |

► Matched with T-FLEXTEC holder

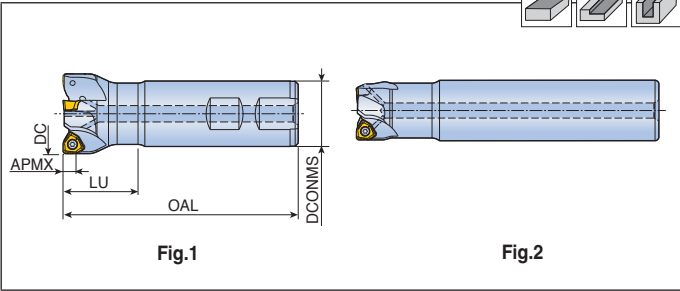
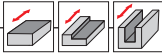
## Spare parts

| Designation       | Screw         | Wrench |       |  |  |
|-------------------|---------------|--------|-------|--|--|
|                   |               |        |       |  |  |
| <b>3P TE90-10</b> | TS 25C065I/HG | TD 8   | -     |  |  |
| <b>3P TE90-15</b> | TS 40B100I    | TD 15  | -     |  |  |
| <b>3P TE90-19</b> | TS 45120I     | -      | T-T20 |  |  |
|                   |               |        |       |  |  |
|                   |               |        |       |  |  |





## End Mills

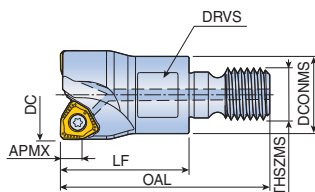
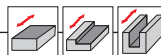


| Designation               |  | Dimension (mm) |        |     |    |      | Coolant hole | Fig. | Insert                                                                                                   |
|---------------------------|-----------------------------------------------------------------------------------|----------------|--------|-----|----|------|--------------|------|----------------------------------------------------------------------------------------------------------|
|                           |                                                                                   | DC             | DCONMS | OAL | LU | APMX |              |      |                                                                                                          |
| <b>6N TE90-320-W20-04</b> | 3                                                                                 | 20             | 20     | 90  | 30 | 4.1  | ●            | 1    | 6NKG 0403...<br> E256   |
| <b>320-20-04-L160</b>     | 3                                                                                 | 20             | 20     | 160 | 30 | 4.1  | ●            | 2    |                                                                                                          |
| <b>425-25-04-L170</b>     | 4                                                                                 | 25             | 25     | 170 | 30 | 4.1  | ●            | 2    |                                                                                                          |
| <b>525-W25-04</b>         | 5                                                                                 | 25             | 25     | 100 | 35 | 4.1  | ●            | 1    |                                                                                                          |
| <b>332-W32-04</b>         | 3                                                                                 | 32             | 32     | 110 | 43 | 4.1  | ●            | 1    |                                                                                                          |
| <b>532-32-04-L200</b>     | 5                                                                                 | 32             | 32     | 200 | 40 | 4.1  | ●            | 2    |                                                                                                          |
| <b>632-W32-04</b>         | 6                                                                                 | 32             | 32     | 110 | 40 | 4.1  | ●            | 1    |                                                                                                          |
| <b>440-W32-04</b>         | 4                                                                                 | 40             | 32     | 110 | 43 | 4.1  | ●            | 1    |                                                                                                          |
| <b>6N TE90-225-W25-06</b> | 2                                                                                 | 25             | 25     | 100 | 30 | 6.2  | ●            | 1    | 6NGU 0604...<br> E255   |
| <b>225-25-06-L150</b>     | 2                                                                                 | 25             | 25     | 150 | 30 | 6.2  | ●            | 2    |                                                                                                          |
| <b>232-W32-06</b>         | 2                                                                                 | 32             | 32     | 110 | 40 | 6.2  | ●            | 1    |                                                                                                          |
| <b>232-32-06-L160</b>     | 2                                                                                 | 32             | 32     | 160 | 40 | 6.2  | ●            | 2    |                                                                                                          |
| <b>332-W32-06</b>         | 3                                                                                 | 32             | 32     | 110 | 40 | 6.2  | ●            | 1    |                                                                                                          |
| <b>332-32-06-L160</b>     | 3                                                                                 | 32             | 32     | 160 | 40 | 6.2  | ●            | 2    |                                                                                                          |
| <b>332-32-06-L200</b>     | 3                                                                                 | 32             | 32     | 200 | 44 | 6.2  | ●            | 2    |                                                                                                          |
| <b>340-W32-06</b>         | 3                                                                                 | 40             | 32     | 115 | 40 | 6.2  | ●            | 1    |                                                                                                          |
| <b>340-32-06-L200</b>     | 3                                                                                 | 40             | 32     | 200 | 40 | 6.2  | ●            | 2    | 6NGU 0905...<br> E255 |
| <b>440-W32-06</b>         | 4                                                                                 | 40             | 32     | 115 | 40 | 6.2  | ●            | 1    |                                                                                                          |
| <b>6N TE90-232-W32-09</b> | 2                                                                                 | 32             | 32     | 110 | 40 | 9.2  | ●            | 1    |                                                                                                          |
| <b>232-32-09-L160</b>     | 2                                                                                 | 32             | 32     | 160 | 60 | 9.2  | ●            | 2    |                                                                                                          |
| <b>340-W32-09</b>         | 3                                                                                 | 40             | 32     | 120 | 40 | 9.2  | ●            | 1    |                                                                                                          |
| <b>340-32-09-L200</b>     | 3                                                                                 | 40             | 32     | 200 | 40 | 9.2  | ●            | 2    |                                                                                                          |
| <b>440-W32-09</b>         | 4                                                                                 | 40             | 32     | 120 | 40 | 9.2  | ●            | 1    |                                                                                                          |

## Spare parts

| Designation       | Screw        | Wrench |  |  |  |
|-------------------|--------------|--------|--|--|--|
|                   |              |        |  |  |  |
| <b>6N TE90-04</b> | TS 25064I    | TD 8   |  |  |  |
| <b>6N TE90-06</b> | TS 30085I/HG | TD 9   |  |  |  |
| <b>6N TE90-09</b> | TS 40B100I   | TD15   |  |  |  |
|                   |              |        |  |  |  |
|                   |              |        |  |  |  |

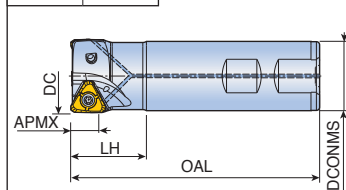
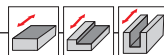


[illegible]

| Designation       | Screw                                                                               | Wrench                                                                              |  |  |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                   |  |  |  |  |  |
| <b>6N TE90-04</b> | TS 25064I                                                                           | TD 8                                                                                |  |  |  |
| <b>6N TE90-06</b> | TS 30085I/HG                                                                        | TD 9                                                                                |  |  |  |
| <b>6N TE90-09</b> | TS 40B100I                                                                          | TD15                                                                                |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |

# MILL2RUSH

| 90°                                                                               | Splitter                                                                          |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |  |

[illegible]

**Fig.2**

[illegible]

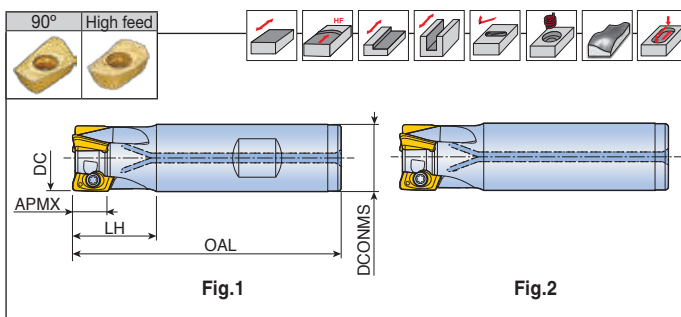
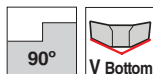
## Spare parts

| Designation        | Screw                                                                               | Wrench                                                                              |  |  |  |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                    |  |  |  |  |  |
| <b>SCRM90TN-18</b> | TS 40B100I                                                                          | T-T15                                                                               |  |  |  |
|                    |                                                                                     |                                                                                     |  |  |  |
|                    |                                                                                     |                                                                                     |  |  |  |
|                    |                                                                                     |                                                                                     |  |  |  |
|                    |                                                                                     |                                                                                     |  |  |  |



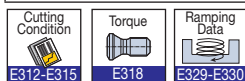


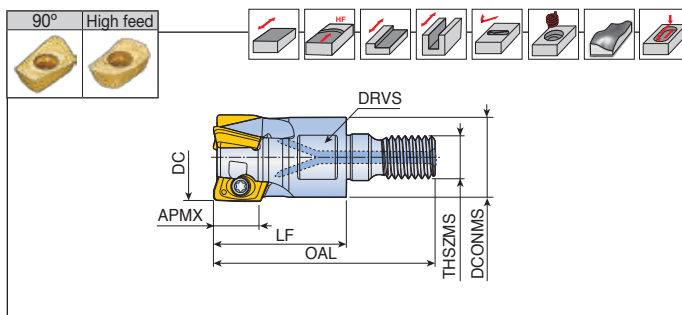
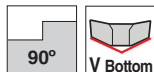
**End mills**



- ▶ When using the 'AVKT 1004R-HF' insert, the cutter body needs to be modified to a corner radius of 3.0 mm
- ▶ When using 'AVKT 10' insert with a corner radius of 2.0 mm or bigger, the cutter body corner radius should be adjusted to insert "R" + 0.2 mm

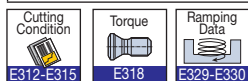
| Designation      | Screw                                                                               | Wrench                                                                              |  |  |  |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                  |  |  |  |  |  |
| <b>TE90AV-10</b> | TS 30B062/HG-P                                                                      | TD 8P                                                                               |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |



[illegible]

- ▶ When using the 'AVKT 1004R-HF' insert, the cutter body needs to be modified to a corner radius of 3.0 mm
- ▶ When using 'AVKT 10' insert with a corner radius of 2.0 mm or bigger, the cutter body corner radius should be adjusted to insert "R" + 0.2 mm
- ▶ Matched with T-FLEXTEC holder

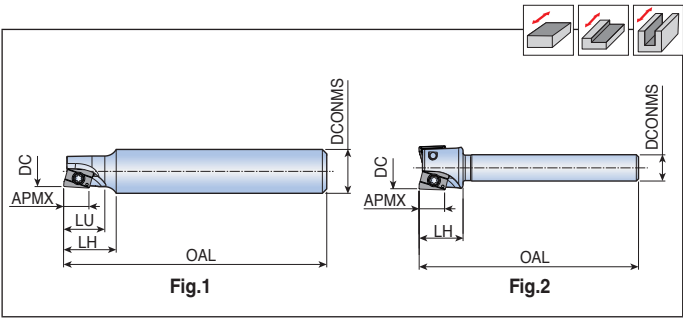
| Designation        | Screw                                                                               | Wrench                                                                              |  |  |  |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                    |  |  |  |  |  |
| <b>TE90AV-M-10</b> | TS 30B062/HG-P                                                                      | TD 8P                                                                               |  |  |  |
|                    |                                                                                     |                                                                                     |  |  |  |
|                    |                                                                                     |                                                                                     |  |  |  |
|                    |                                                                                     |                                                                                     |  |  |  |
|                    |                                                                                     |                                                                                     |  |  |  |



# MTE90AX-06-L



End mills



| Designation           |   | Dimension (mm) |        |     |    |    |      | Fig. | Insert               |
|-----------------------|---|----------------|--------|-----|----|----|------|------|----------------------|
|                       |   | DC             | DCONMS | OAL | LU | LH | APMX |      |                      |
| MTE90AX 108-10-06-L60 | 1 | 8              | 10     | 60  | 9  | 12 | 5.5  | 1    | AXCT 06-L...<br>E265 |
| 210-05-06-L40         | 2 | 10             | 5      | 40  | -  | 10 | 5.5  | 2    |                      |
| 210-06-06-L50         | 2 | 10             | 6      | 50  | -  | 10 | 5.5  | 2    |                      |
| 210-07-06-L50         | 2 | 10             | 7      | 50  | -  | 10 | 5.5  | 2    |                      |
| 210-10-06-L50         | 2 | 10             | 10     | 50  | 10 | 12 | 5.5  | 1    |                      |
| 212-10-06-L50         | 2 | 12             | 10     | 50  | -  | 10 | 5.5  | 2    |                      |
| 214-10-06-L50         | 2 | 14             | 10     | 50  | -  | 10 | 5.5  | 2    |                      |
| 315-05-06-L40         | 3 | 15             | 5      | 40  | -  | 10 | 5.5  | 2    |                      |
| 316-07-06-L50         | 3 | 16             | 7      | 50  | -  | 10 | 5.5  | 2    |                      |
| 316-10-06-L50         | 3 | 16             | 10     | 50  | -  | 10 | 5.5  | 2    |                      |
| 320-07-06-L50         | 3 | 20             | 7      | 50  | -  | 10 | 5.5  | 2    |                      |
| 320-10-06-L50         | 3 | 20             | 10     | 50  | -  | 10 | 5.5  | 2    |                      |
| 530-10-06-L50         | 5 | 30             | 10     | 50  | -  | 10 | 5.5  | 2    |                      |
|                       |   |                |        |     |    |    |      |      |                      |
|                       |   |                |        |     |    |    |      |      |                      |
|                       |   |                |        |     |    |    |      |      |                      |
|                       |   |                |        |     |    |    |      |      |                      |
|                       |   |                |        |     |    |    |      |      |                      |
|                       |   |                |        |     |    |    |      |      |                      |
|                       |   |                |        |     |    |    |      |      |                      |
|                       |   |                |        |     |    |    |      |      |                      |

► Cutter body for 'AXMT 06' insert with corner radius more than 1.0mm should be modified accordingly body  
"RE"=Insert "RE"-0.1mm

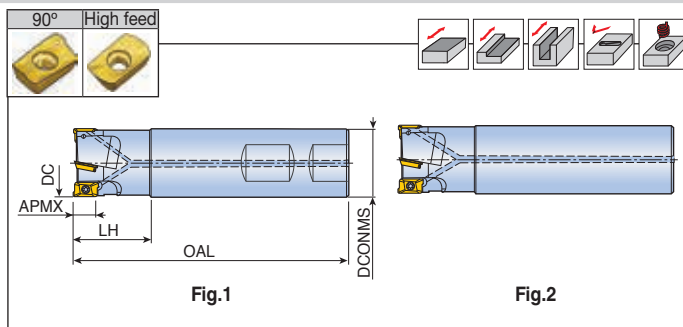
## Spare parts

| Designation  | Screw        | Wrench |  |  |  |
|--------------|--------------|--------|--|--|--|
|              |              |        |  |  |  |
| MTE90AX-06-L | TS 18041I/HG | TD 6P  |  |  |  |
|              |              |        |  |  |  |
|              |              |        |  |  |  |
|              |              |        |  |  |  |
|              |              |        |  |  |  |

E312-E315

E318

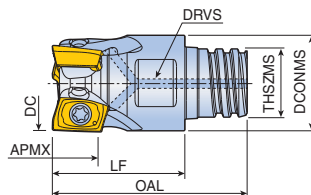
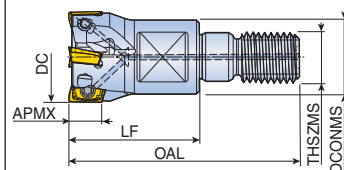
**CHASE MILL**



|                                                                                                                             |                                                                                                               |                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
|  <p>Cutting Condition</p> <p>E312-E315</p> |  <p>Torque</p> <p>E318</p> |  <p>Ramping Data</p> <p>E360-E366</p> |
|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|



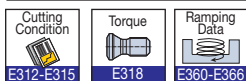
## Two views of a 10-pin D-sub connector. The top view shows the connector from the front, highlighting the yellow latch mechanism. The bottom view shows the connector from the back, showing the pin arrangement.



**Fig.2**

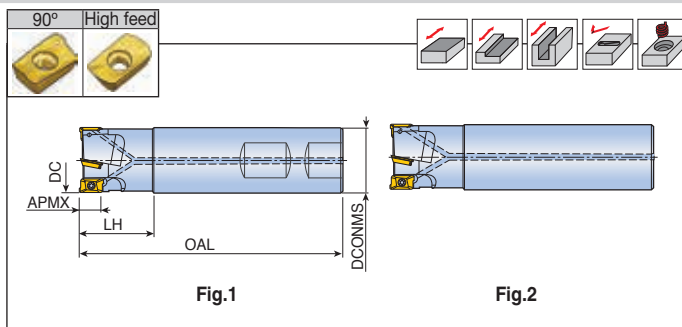
- ▶ Matched with T-FLEXTEC holder(Fig.1) & MAXI-RUSH holder(Fig.2)
- ▶ Cutter body for 'AXMT 06' insert with corner radius more than 1.0mm should be modified accordingly body "RE"=Insert "RE"-0.1mm

| Designation      | Screw                                                                               | Wrench                                                                              |  |  |  |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                  |  |  |  |  |  |
| <b>TE90AX-06</b> | TS 18041I/HG                                                                        | TD 6P                                                                               |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |

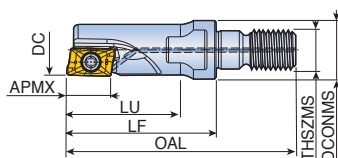
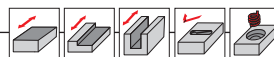




**CHASE MILL**



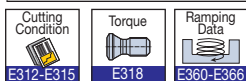
|                                                                                                                             |                                                                                                               |                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <p>Cutting Condition</p>  <p>E312-E315</p> | <p>Torque</p>  <p>E318</p> | <p>Ramping Data</p>  <p>E360-E366</p> |
|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|



**Fig.2**

- ▶ Matched with T-FLEXTec holder
- ▶ Cutter body for 'APKT09' insert with corner radius more than 2.4mm should be modified accordingly  
body "RE"=Insert "RE"-0.2mm

| Designation         | Screw                                                                               | Wrench                                                                              |  |  |  |
|---------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                     |  |  |  |  |  |
| <b>2S-TE90AP-09</b> | TS 25055I/HG                                                                        | TD 8                                                                                |  |  |  |
|                     |                                                                                     |                                                                                     |  |  |  |
|                     |                                                                                     |                                                                                     |  |  |  |
|                     |                                                                                     |                                                                                     |  |  |  |



# TE90AP-12



## End mills

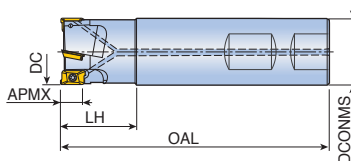
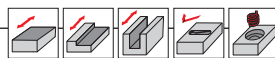


Fig.1

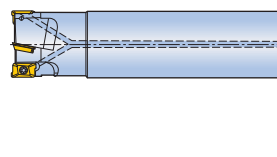
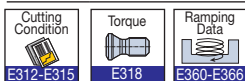


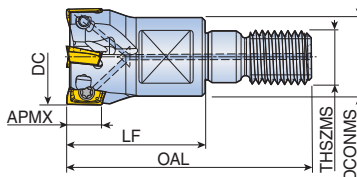
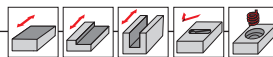
Fig.2

| Designation                |   |  | Dimension (mm) |        |     |    |      | Coolant hole | Fig. | Insert                        |
|----------------------------|---|--|----------------|--------|-----|----|------|--------------|------|-------------------------------|
|                            |   |  | DC             | DCONMS | OAL | LH | APMX |              |      |                               |
| <b>TE90AP 116-W16-12-C</b> | 1 |  | 16             | 16     | 85  | 26 | 12.0 | ●            | 1    | APK(C)T 1204....<br>E260,E264 |
| <b>218-W20-12-C</b>        | 2 |  | 18             | 20     | 85  | 26 | 12.0 | ●            | 1    |                               |
| <b>220-19-12-L</b>         | 2 |  | 20             | 19     | 170 | 30 | 12.0 | ●            | 2    |                               |
| <b>220-W20-12-C</b>        | 2 |  | 20             | 20     | 90  | 30 | 12.0 | ●            | 1    |                               |
| <b>220-W20-12-L-C</b>      | 2 |  | 20             | 20     | 125 | 30 | 12.0 | ●            | 1    |                               |
| <b>220-20-12-L</b>         | 2 |  | 20             | 20     | 170 | 30 | 12.0 | ●            | 2    |                               |
| <b>220-20-12-L200</b>      | 2 |  | 20             | 20     | 200 | 30 | 12.0 | ●            | 2    |                               |
| <b>221-20-12-L200</b>      | 2 |  | 21             | 20     | 200 | 30 | 12.0 | ●            | 2    |                               |
| <b>221-20-12-L250</b>      | 2 |  | 21             | 20     | 250 | 30 | 12.0 | ●            | 2    |                               |
| <b>225-24-12-L</b>         | 2 |  | 25             | 24     | 200 | 40 | 12.0 | ●            | 2    |                               |
| <b>225-W25-12-L-C</b>      | 2 |  | 25             | 25     | 145 | 40 | 12.0 | ●            | 1    |                               |
| <b>225-25-12-L</b>         | 2 |  | 25             | 25     | 210 | 40 | 12.0 | ●            | 2    |                               |
| <b>225-25-12-L200</b>      | 2 |  | 25             | 25     | 200 | 40 | 12.0 | ●            | 2    |                               |
| <b>325-W25-12-C</b>        | 3 |  | 25             | 25     | 100 | 40 | 12.0 | ●            | 1    |                               |
| <b>226-25-12-L200</b>      | 2 |  | 26             | 25     | 200 | 40 | 12.0 | ●            | 2    |                               |
| <b>226-25-12-L250</b>      | 2 |  | 26             | 25     | 250 | 40 | 12.0 | ●            | 2    |                               |
| <b>232-25-12-L</b>         | 2 |  | 32             | 25     | 250 | 40 | 12.0 | ●            | 2    |                               |
| <b>332-W25-12-L-C</b>      | 3 |  | 32             | 25     | 155 | 35 | 12.0 | ●            | 1    |                               |
| <b>332-W32-12-C</b>        | 3 |  | 32             | 32     | 110 | 40 | 12.0 | ●            | 1    |                               |
| <b>332-32-12-L</b>         | 3 |  | 32             | 32     | 250 | 40 | 12.0 | ●            | 2    |                               |
| <b>332-32-12-L150</b>      | 3 |  | 32             | 32     | 150 | 40 | 12.0 | ●            | 2    |                               |
| <b>432-W25-12-C</b>        | 4 |  | 32             | 25     | 100 | 40 | 12.0 | ●            | 1    |                               |
| <b>233-32-12-L200</b>      | 2 |  | 33             | 32     | 200 | 40 | 12.0 | ●            | 2    |                               |
| <b>233-32-12-L250</b>      | 2 |  | 33             | 32     | 250 | 40 | 12.0 | ●            | 2    |                               |
| <b>333-32-12-L200</b>      | 3 |  | 33             | 32     | 200 | 40 | 12.0 | ●            | 2    |                               |
| <b>333-32-12-L250</b>      | 3 |  | 33             | 32     | 250 | 40 | 12.0 | ●            | 2    |                               |
| <b>435-W25-12</b>          | 4 |  | 35             | 25     | 100 | 40 | 12.0 | ●            | 1    |                               |
| <b>440-W32-12-C</b>        | 4 |  | 40             | 32     | 115 | 45 | 12.0 | ●            | 1    |                               |
| <b>440-32-12-L</b>         | 4 |  | 40             | 32     | 250 | 40 | 12.0 | ●            | 2    |                               |
| <b>540-W32-12-C</b>        | 5 |  | 40             | 32     | 115 | 45 | 12.0 | ●            | 1    |                               |
|                            |   |  |                |        |     |    |      |              |      |                               |
|                            |   |  |                |        |     |    |      |              |      |                               |
|                            |   |  |                |        |     |    |      |              |      |                               |
|                            |   |  |                |        |     |    |      |              |      |                               |
|                            |   |  |                |        |     |    |      |              |      |                               |



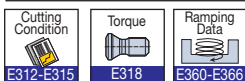


| 90°                                                                               | High feed                                                                         | Splitter                                                                          |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |  |  |



- ▶ Matched with T-FLEXTec holder
- ▶ Cutter body for 'APKT 12' insert with corner radius more than 1.6mm should be modified accordingly  
body "RE"=Insert "RE"-0.5mm

| Designation                | Screw                                                                               | Wrench                                                                              |  |  |  |
|----------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                            |  |  |  |  |  |
| <b>TE90AP-12</b> (Ø16-Ø26) | TS 35A070I/HG                                                                       | TD 10P                                                                              |  |  |  |
| <b>TE90AP-12</b> (Ø32-)    | TS 35A088I/HG                                                                       | TD 10P                                                                              |  |  |  |
|                            |                                                                                     |                                                                                     |  |  |  |
|                            |                                                                                     |                                                                                     |  |  |  |



# TE90AP-17



## End mills

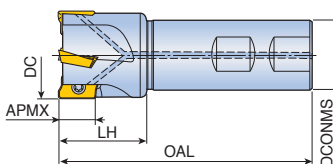
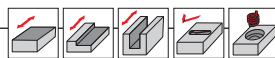


Fig.1

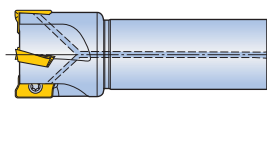


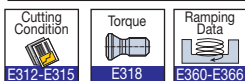
Fig.2

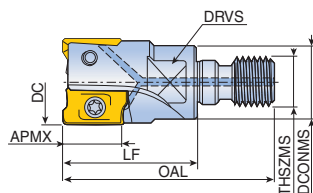
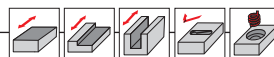
| Designation                |   | Dimension (mm) |        |     |    |      | Coolant hole | Fig. | Insert                       |
|----------------------------|---|----------------|--------|-----|----|------|--------------|------|------------------------------|
|                            |   | DC             | DCONMS | OAL | LH | APMX |              |      |                              |
| <b>TE90AP 120-W20-17-C</b> | 1 | 20             | 20     | 90  | 32 | 16.1 | ●            | 1    | APK(C)T 1705...<br>E261-E262 |
| <b>225-24-17-L</b>         | 2 | 25             | 24     | 210 | 40 | 16.1 | x            | 2    |                              |
| <b>225-W25-17-C</b>        | 2 | 25             | 25     | 100 | 39 | 16.1 | ●            | 1    |                              |
| <b>225-25-17-L</b>         | 2 | 25             | 25     | 210 | 40 | 16.1 | x            | 2    |                              |
| <b>226-25-17-L200</b>      | 2 | 26             | 25     | 200 | 40 | 16.1 | ●            | 2    |                              |
| <b>226-25-17-L250</b>      | 2 | 26             | 25     | 250 | 40 | 16.1 | ●            | 2    |                              |
| <b>232-32-17-L</b>         | 2 | 32             | 32     | 250 | 65 | 16.1 | x            | 2    |                              |
| <b>233-32-17-L250</b>      | 2 | 33             | 32     | 250 | 40 | 16.1 | ●            | 2    |                              |
| <b>233-32-17-L300</b>      | 2 | 33             | 32     | 300 | 40 | 16.1 | ●            | 2    |                              |
| <b>332-W32-17-C</b>        | 3 | 32             | 32     | 110 | 40 | 16.1 | ●            | 1    |                              |
| <b>332-32-17-L</b>         | 3 | 32             | 32     | 200 | 65 | 16.1 | x            | 2    |                              |
| <b>333-32-17-L200</b>      | 3 | 33             | 32     | 200 | 55 | 16.1 | ●            | 2    |                              |
| <b>333-32-17-L250</b>      | 3 | 33             | 32     | 250 | 55 | 16.1 | ●            | 2    |                              |
| <b>240-32-17-L</b>         | 2 | 40             | 32     | 250 | 57 | 16.1 | x            | 2    |                              |
| <b>340-W32-17</b>          | 3 | 40             | 32     | 110 | 40 | 16.1 | x            | 1    |                              |
| <b>340-32-17-L</b>         | 3 | 40             | 32     | 200 | 54 | 16.1 | x            | 2    |                              |
| <b>440-W32-17-C</b>        | 4 | 40             | 32     | 115 | 45 | 16.1 | ●            | 1    |                              |
| <b>440-32-17-L</b>         | 4 | 40             | 32     | 200 | 57 | 16.1 | x            | 2    |                              |
|                            |   |                |        |     |    |      |              |      |                              |
|                            |   |                |        |     |    |      |              |      |                              |

- Cutter body for 'APKT 17' insert with corner radius more than 1.6mm should be modified accordingly  
body "RE"=Insert "RE"-0.8mm

## Spare parts

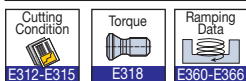
| Designation                | Screw        | Wrench |  |  |  |
|----------------------------|--------------|--------|--|--|--|
|                            |              |        |  |  |  |
| <b>TE90AP-17 (Ø20-Ø25)</b> | TS 40085I/HG | TD 15  |  |  |  |
| <b>TE90AP-17 (Ø26-Ø63)</b> | TS 40093I/HG | TD 15  |  |  |  |
|                            |              |        |  |  |  |
|                            |              |        |  |  |  |

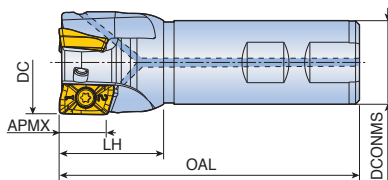
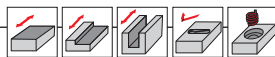




- ▶ Matched with T-FLEXTEC holder
- ▶ Cutter body for 'APKT 17' insert with corner radius more than 1.6mm should be modified accordingly  
body "RE"=Insert "RE"-0.8mm

| Designation                | Screw                                                                               | Wrench                                                                              |  |  |  |
|----------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                            |  |  |  |  |  |
| <b>TE90AP-17</b> (Ø20-Ø25) | TS 40085I/HG                                                                        | TD 15                                                                               |  |  |  |
| <b>TE90AP-17</b> (Ø26-)    | TS 40093I/HG                                                                        | TD 15                                                                               |  |  |  |
|                            |                                                                                     |                                                                                     |  |  |  |
|                            |                                                                                     |                                                                                     |  |  |  |
|                            |                                                                                     |                                                                                     |  |  |  |



[illegible]

| Designation         | Screw                                                                               | Wrench                                                                              |  |  |  |
|---------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                     |  |  |  |  |  |
| <b>2S-TE90AP-19</b> | TS 50115I                                                                           | TD 20                                                                               |  |  |  |
|                     |                                                                                     |                                                                                     |  |  |  |
|                     |                                                                                     |                                                                                     |  |  |  |
|                     |                                                                                     |                                                                                     |  |  |  |
|                     |                                                                                     |                                                                                     |  |  |  |



# TE90AN-11/16



## End mills

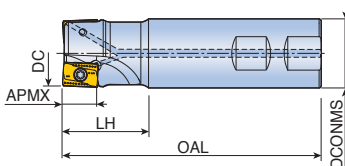
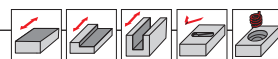


Fig.1

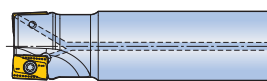
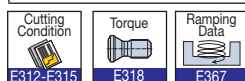


Fig.2

| Designation               |   | Dimension (mm) |        |     |    |      | Coolant hole | Fig. | Insert                  |
|---------------------------|---|----------------|--------|-----|----|------|--------------|------|-------------------------|
|                           |   | DC             | DCONMS | OAL | LH | APMX |              |      |                         |
| <b>TE90AN 225-24-11-L</b> | 2 | 25             | 24     | 200 | 40 | 11.0 | ●            | 2    | ANM(H)X 1106...<br>E258 |
| <b>225-W25-11</b>         | 2 | 25             | 25     | 100 | 40 | 11.0 | ●            | 1    |                         |
| <b>225-25-11-L</b>        | 2 | 25             | 25     | 200 | 40 | 11.0 | ●            | 2    |                         |
| <b>226-25-11-L</b>        | 2 | 26             | 25     | 200 | 40 | 11.0 | ●            | 2    |                         |
| <b>332-W32-11</b>         | 3 | 32             | 32     | 110 | 40 | 11.0 | ●            | 1    |                         |
| <b>332-32-11-L</b>        | 3 | 32             | 32     | 200 | 40 | 11.0 | ●            | 2    |                         |
| <b>233-32-11-L</b>        | 2 | 33             | 32     | 250 | 40 | 11.0 | ●            | 2    |                         |
| <b>333-32-11-L</b>        | 3 | 33             | 32     | 200 | 40 | 11.0 | ●            | 2    |                         |
| <b>340-32-11-L</b>        | 3 | 40             | 32     | 250 | 40 | 11.0 | ●            | 2    |                         |
| <b>440-W32-11</b>         | 4 | 40             | 32     | 115 | 40 | 11.0 | ●            | 1    |                         |
| <b>440-32-11-L</b>        | 4 | 40             | 32     | 200 | 40 | 11.0 | ●            | 2    | ANM(H)X 1607...<br>E258 |
| <b>TE90AN 232-W32-16</b>  | 2 | 32             | 32     | 110 | 30 | 15.0 | ●            | 1    |                         |
| <b>232-32-16</b>          | 2 | 32             | 32     | 150 | 45 | 15.0 | ●            | 2    |                         |
| <b>232-32-16-L250</b>     | 2 | 32             | 32     | 250 | 40 | 15.0 | ●            | 2    |                         |
| <b>233-32-16-L200</b>     | 2 | 33             | 32     | 200 | 55 | 15.0 | ●            | 2    |                         |
| <b>340-W32-16</b>         | 3 | 40             | 32     | 115 | 35 | 15.0 | ●            | 1    |                         |
| <b>340-32-16</b>          | 3 | 40             | 32     | 150 | 45 | 15.0 | ●            | 2    |                         |
| <b>340-32-16-L250</b>     | 3 | 40             | 32     | 250 | 45 | 15.0 | ●            | 2    |                         |
| <b>450-32-16</b>          | 4 | 50             | 32     | 150 | 50 | 15.0 | ●            | 2    |                         |
|                           |   |                |        |     |    |      |              |      |                         |

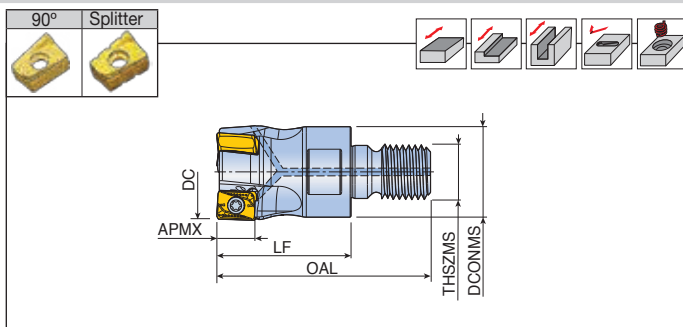
## Spare parts

| Designation      | Screw         | Wrench |  |  |  |
|------------------|---------------|--------|--|--|--|
|                  |               |        |  |  |  |
| <b>TE90AN-11</b> | TS 35A088I/HG | TD 10P |  |  |  |
| <b>TE90AN-16</b> | TS 40120I     | TD 15  |  |  |  |
|                  |               |        |  |  |  |
|                  |               |        |  |  |  |





**CHASE2MILL**

[illegible]

## Spare parts

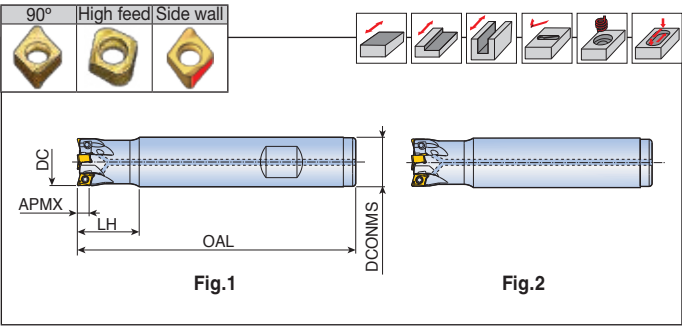
| Designation      | Screw                                                                               | Wrench                                                                              |  |  |  |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                  |  |  |  |  |  |
| <b>TE90AN-11</b> | TS 35A088I/HG                                                                       | TD 10P                                                                              |  |  |  |
| <b>TE90AN-16</b> | TS 40120I                                                                           | TD 15                                                                               |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |



# 4N TE90-04



End mills



| Designation              |    | Dimension (mm) |        |     |    |      | Coolant hole | Fig. | Insert                    |
|--------------------------|----|----------------|--------|-----|----|------|--------------|------|---------------------------|
|                          |    | DC             | DCONMS | OAL | LH | APMX |              |      |                           |
| <b>4N TE90-108-08-04</b> | 1  | 8              | 8      | 80  | 17 | 3.5  | ●            | 2    | 4NKT 0402...<br>E252-E253 |
| <b>210-10-04</b>         | 2  | 10             | 10     | 80  | 17 | 3.5  | ●            | 2    |                           |
| <b>210-10-04-L55</b>     | 2  | 10             | 10     | 55  | 12 | 3.5  | ●            | 2    |                           |
| <b>211-10-04</b>         | 2  | 11             | 10     | 80  | 17 | 3.5  | ●            | 2    |                           |
| <b>212-12-04</b>         | 2  | 12             | 12     | 80  | 18 | 3.5  | ●            | 2    |                           |
| <b>312-12-04</b>         | 3  | 12             | 12     | 80  | 18 | 3.5  | ●            | 2    |                           |
| <b>312-12-04-L60</b>     | 3  | 12             | 12     | 60  | 14 | 3.5  | ●            | 2    |                           |
| <b>313-12-04</b>         | 3  | 13             | 12     | 90  | 20 | 3.5  | ●            | 2    |                           |
| <b>316-16-04</b>         | 3  | 16             | 16     | 90  | 20 | 3.5  | ●            | 2    |                           |
| <b>416-W16-04</b>        | 4  | 16             | 16     | 90  | 20 | 3.5  | ●            | 1    |                           |
| <b>416-W16-04-L68</b>    | 4  | 16             | 16     | 68  | 18 | 3.5  | ●            | 1    |                           |
| <b>417-16-04</b>         | 4  | 17             | 16     | 90  | 20 | 3.5  | ●            | 2    |                           |
| <b>420-20-04-L</b>       | 4  | 20             | 20     | 160 | 25 | 3.5  | ●            | 2    |                           |
| <b>520-W20-04</b>        | 5  | 20             | 20     | 105 | 25 | 3.5  | ●            | 1    |                           |
| <b>520-W20-04-L75</b>    | 5  | 20             | 20     | 75  | 22 | 3.5  | ●            | 1    |                           |
| <b>725-W25-04</b>        | 7  | 25             | 25     | 120 | 30 | 3.5  | ●            | 1    |                           |
| <b>832-W25-04</b>        | 8  | 32             | 25     | 130 | 35 | 3.5  | ●            | 1    |                           |
| <b>1040-W32-04</b>       | 10 | 40             | 32     | 140 | 40 | 3.5  | ●            | 1    |                           |
|                          |    |                |        |     |    |      |              |      |                           |
|                          |    |                |        |     |    |      |              |      |                           |
|                          |    |                |        |     |    |      |              |      |                           |

▶ Cutter body for '4NKT 040212R-HF' insert should be modified with body corner radius 1.2 mm

## Spare parts

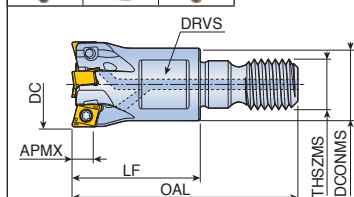
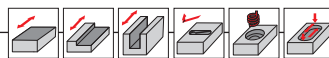
| Designation       | Screw        | Wrench |  |  |  |
|-------------------|--------------|--------|--|--|--|
|                   |              |        |  |  |  |
| <b>4N TE90-04</b> | TS 18041I/HG | TD 6P  |  |  |  |
|                   |              |        |  |  |  |
|                   |              |        |  |  |  |
|                   |              |        |  |  |  |

E312-E315

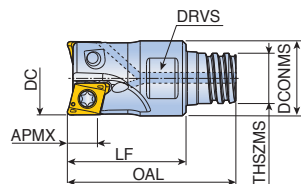
E318

E338-E359

**CHASE 4 MILL**



**Fig.1**



**Fig.2**

- ▶ Cutter body for '4NK1 040212R-HF' insert should be modified with body corner radius 1.2 mm
- ▶ Matched with T-FLEXTEC holder(Fig.1) & MAXI-RUSH holder(Fig.2)

| Designation       | Screw                                                                               | Wrench                                                                              |  |  |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                   |  |  |  |  |  |
| <b>4N TE90-04</b> | TS 18041I/HG                                                                        | TD 6P                                                                               |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |



# 4N TE90-06



## End mills

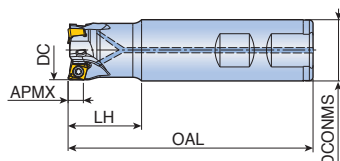
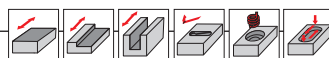


Fig.1

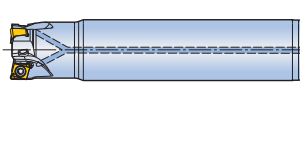


Fig.2

| Designation                   |   | Dimension (mm) |        |     |    |      | Coolant hole | Fig. | Insert                         |
|-------------------------------|---|----------------|--------|-----|----|------|--------------|------|--------------------------------|
|                               |   | DC             | DCONMS | OAL | LH | APMX |              |      |                                |
| <b>4N TE90-216-15-06-L150</b> | 2 | 16             | 15     | 150 | 25 | 6.0  | ●            | 2    | 4NK(H)T 0603.....<br>E252-E253 |
| <b>216-W16-06</b>             | 2 | 16             | 16     | 90  | 25 | 6.0  | ●            | 1    |                                |
| <b>216-16-06-L100</b>         | 2 | 16             | 16     | 100 | 25 | 6.0  | ●            | 2    |                                |
| <b>216-16-06-L150</b>         | 2 | 16             | 16     | 150 | 25 | 6.0  | ●            | 2    |                                |
| <b>217-16-06</b>              | 2 | 17             | 16     | 90  | 25 | 6.0  | ●            | 2    |                                |
| <b>217-16-06-L200</b>         | 2 | 17             | 16     | 200 | 25 | 6.0  | ●            | 2    |                                |
| <b>218-W16-06</b>             | 2 | 18             | 16     | 90  | 25 | 6.0  | ●            | 1    |                                |
| <b>218-16-06-L150</b>         | 2 | 18             | 16     | 150 | 25 | 6.0  | ●            | 2    |                                |
| <b>220-19-06-L160</b>         | 2 | 20             | 19     | 160 | 25 | 6.0  | ●            | 2    |                                |
| <b>220-W20-06</b>             | 2 | 20             | 20     | 90  | 25 | 6.0  | ●            | 1    |                                |
| <b>220-20-06-L110</b>         | 2 | 20             | 20     | 110 | 25 | 6.0  | ●            | 2    |                                |
| <b>220-20-06-L160</b>         | 2 | 20             | 20     | 160 | 25 | 6.0  | ●            | 2    |                                |
| <b>320-W20-06</b>             | 3 | 20             | 20     | 90  | 25 | 6.0  | ●            | 1    |                                |
| <b>320-20-06-L110</b>         | 3 | 20             | 20     | 110 | 25 | 6.0  | ●            | 2    |                                |
| <b>221-20-06-L200</b>         | 2 | 21             | 20     | 200 | 25 | 6.0  | ●            | 2    |                                |
| <b>325-W25-06</b>             | 3 | 25             | 25     | 100 | 30 | 6.0  | ●            | 1    |                                |
| <b>325-25-06-L120</b>         | 3 | 25             | 25     | 120 | 30 | 6.0  | ●            | 2    |                                |
| <b>325-25-06-L200</b>         | 3 | 25             | 25     | 200 | 30 | 6.0  | ●            | 2    |                                |
| <b>326-25-06-L200</b>         | 3 | 26             | 25     | 200 | 30 | 6.0  | ●            | 2    |                                |
| <b>425-W25-06</b>             | 4 | 25             | 25     | 100 | 30 | 6.0  | ●            | 1    |                                |
| <b>425-25-06-L120</b>         | 4 | 25             | 25     | 120 | 30 | 6.0  | ●            | 2    |                                |
| <b>432-W32-06</b>             | 4 | 32             | 32     | 110 | 35 | 6.0  | ●            | 1    |                                |
| <b>432-32-06-L130</b>         | 4 | 32             | 32     | 130 | 35 | 6.0  | ●            | 2    |                                |
| <b>432-32-06-L210</b>         | 4 | 32             | 32     | 210 | 35 | 6.0  | ●            | 2    |                                |
| <b>433-32-06-L220</b>         | 4 | 33             | 32     | 220 | 35 | 6.0  | ●            | 2    |                                |
| <b>532-W32-06</b>             | 5 | 32             | 32     | 110 | 35 | 6.0  | ●            | 1    |                                |
| <b>532-32-06-L130</b>         | 5 | 32             | 32     | 130 | 35 | 6.0  | ●            | 2    |                                |
| <b>540-W32-06</b>             | 5 | 40             | 32     | 110 | 40 | 6.0  | ●            | 1    |                                |
| <b>540-32-06-L150</b>         | 5 | 40             | 32     | 150 | 40 | 6.0  | ●            | 2    |                                |
| <b>540-32-06-L250</b>         | 5 | 40             | 32     | 250 | 40 | 6.0  | ●            | 2    |                                |
| <b>640-W32-06</b>             | 6 | 40             | 32     | 110 | 35 | 6.0  | ●            | 1    |                                |
| <b>640-32-06-L150</b>         | 6 | 40             | 32     | 150 | 35 | 6.0  | ●            | 2    |                                |
|                               |   |                |        |     |    |      |              |      |                                |
|                               |   |                |        |     |    |      |              |      |                                |
|                               |   |                |        |     |    |      |              |      |                                |
|                               |   |                |        |     |    |      |              |      |                                |

► Cutter body for '4NKT 060320R-HF' and '4NHT 060320R-F' inserts should be modified with body corner radius 2.0 mm



E312-E315



E318

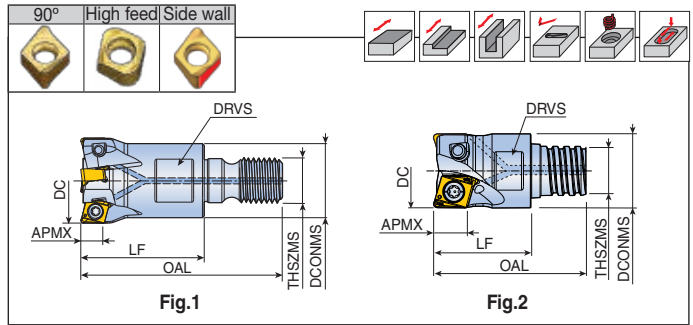


E338-E359

# 4N TE90-M(S)-06



## Modular heads



| Designation         |  | Dimension (mm) |        |    |      |        |      |      |   | Coolant hole | Fig.                                                                                                           | Insert |
|---------------------|-----------------------------------------------------------------------------------|----------------|--------|----|------|--------|------|------|---|--------------|----------------------------------------------------------------------------------------------------------------|--------|
|                     |                                                                                   | DC             | DCONMS | LF | OAL  | THSZMS | APMX | DRVS |   |              |                                                                                                                |        |
| 4N TE90- 216-M08-06 | 2                                                                                 | 16             | 13     | 23 | 40.5 | M08    | 6.0  | 10   | ● | 1            | 4NK(H)T 0603...<br> E252-E253 |        |
|                     | 2                                                                                 | 17             | 13     | 23 | 40.5 | M08    | 6.0  | 10   | ● | 1            |                                                                                                                |        |
|                     | 2                                                                                 | 20             | 18     | 35 | 55   | M10    | 6.0  | 15   | ● | 1            |                                                                                                                |        |
|                     | 3                                                                                 | 20             | 18     | 35 | 55   | M10    | 6.0  | 15   | ● | 1            |                                                                                                                |        |
|                     | 3                                                                                 | 21             | 18     | 35 | 55   | M10    | 6.0  | 15   | ● | 1            |                                                                                                                |        |
|                     | 3                                                                                 | 25             | 21     | 35 | 57   | M12    | 6.0  | 17   | ● | 1            |                                                                                                                |        |
|                     | 4                                                                                 | 25             | 21     | 35 | 57   | M12    | 6.0  | 17   | ● | 1            |                                                                                                                |        |
|                     | 4                                                                                 | 26             | 21     | 35 | 57   | M12    | 6.0  | 17   | ● | 1            |                                                                                                                |        |
|                     | 4                                                                                 | 32             | 29     | 43 | 68   | M16    | 6.0  | 25   | ● | 1            |                                                                                                                |        |
|                     | 5                                                                                 | 32             | 29     | 43 | 68   | M16    | 6.0  | 25   | ● | 1            |                                                                                                                |        |
|                     | 5                                                                                 | 33             | 29     | 43 | 68   | M16    | 6.0  | 25   | ● | 1            |                                                                                                                |        |
|                     | 5                                                                                 | 35             | 29     | 43 | 68   | M16    | 6.0  | 25   | ● | 1            |                                                                                                                |        |
|                     | 5                                                                                 | 40             | 29     | 43 | 68   | M16    | 6.0  | 25   | ● | 1            |                                                                                                                |        |
|                     | 6                                                                                 | 40             | 29     | 43 | 68   | M16    | 6.0  | 25   | ● | 1            |                                                                                                                |        |
| 6                   | 42                                                                                | 29             | 43     | 68 | M16  | 6.0    | 25   | ●    | 1 |              |                                                                                                                |        |
| 4N TE90- 216-S10-06 | 2                                                                                 | 16             | 15.2   | 20 | 31.3 | S10    | 6.0  | 8    | ● | 2            |                                                                                                                |        |
|                     |                                                                                   |                |        |    |      |        |      |      |   |              |                                                                                                                |        |
|                     |                                                                                   |                |        |    |      |        |      |      |   |              |                                                                                                                |        |
|                     |                                                                                   |                |        |    |      |        |      |      |   |              |                                                                                                                |        |
|                     |                                                                                   |                |        |    |      |        |      |      |   |              |                                                                                                                |        |
|                     |                                                                                   |                |        |    |      |        |      |      |   |              |                                                                                                                |        |

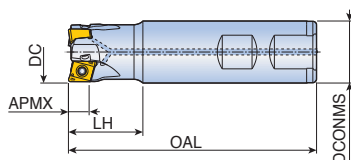
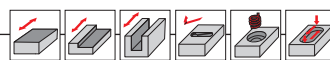
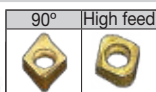
- Cutter body for '4NKT 060320R-HF' and '4NHT 060320R-F' inserts should be modified with body corner radius 2.0 mm
- Matched with T-FLEXTEC holder(Fig.1) & MAXI-RUSH holder(Fig.2)

## Spare parts

| Designation | Screw        | Wrench |  |  |  |
|-------------|--------------|--------|--|--|--|
|             |              |        |  |  |  |
| 4N TE90-06  | TS 30B068/HG | TD 8   |  |  |  |
|             |              |        |  |  |  |
|             |              |        |  |  |  |
|             |              |        |  |  |  |
|             |              |        |  |  |  |



**CHASE 4 MILL**



**Fig.1**

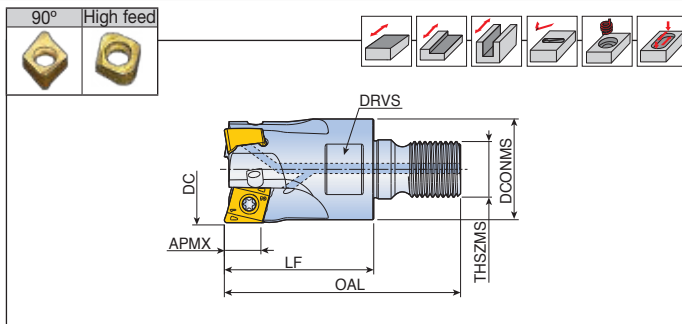


**Fig.2**

|                                                                                                                              |                                                                                                               |                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <p>Cutting Condition</p>  <p>E312-E315</p> | <p>Torque</p>  <p>E318</p> | <p>Ramping Data</p>  <p>E338-E359</p> |
|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|

- ▶ Cutter body for '4NKT 090432R-HF' insert should be modified with body corner radius 3.2mm
- ▶ Cutter body for '4NKT 110640R-HF' insert should be modified with body corner radius 4.0 mm
- ▶ Cutter body for '4NKT 140750R-HF' insert should be modified with body corner radius 5.0 mm

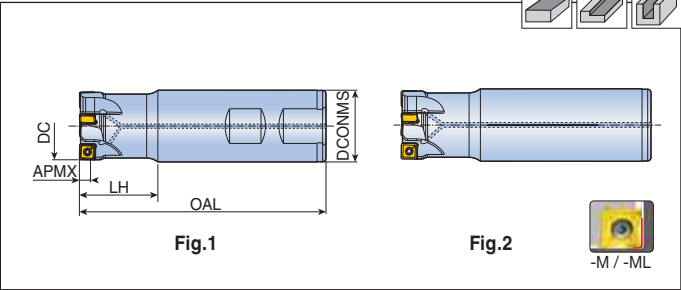
**CHASE 4 MILL**



# 8D-TE90-07



End mills



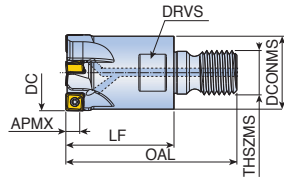
| Designation         |   | Dimension (mm) |        |    |     |      | Coolant hole | Fig. | Insert               |
|---------------------|---|----------------|--------|----|-----|------|--------------|------|----------------------|
|                     |   | DC             | DCONMS | LH | OAL | APMX |              |      |                      |
| 8D-TE90- 216-W16-07 | 2 | 16             | 16     | 20 | 90  | 5.0  | ●            | 1    | SQKU 0703...<br>E297 |
| 216-16-07-L110      | 2 | 16             | 16     | 20 | 110 | 5.0  | ●            | 2    |                      |
| 217-16-07-L110      | 2 | 17             | 16     | 20 | 110 | 5.0  | ●            | 2    |                      |
| 220-W20-07          | 2 | 20             | 20     | 25 | 90  | 5.0  | ●            | 1    |                      |
| 220-20-07-L160      | 2 | 20             | 20     | 25 | 160 | 5.0  | ●            | 2    |                      |
| 320-W20-07          | 3 | 20             | 20     | 25 | 90  | 5.0  | ●            | 1    |                      |
| 221-20-07-L160      | 2 | 21             | 20     | 25 | 160 | 5.0  | ●            | 2    |                      |
| 325-W25-07          | 3 | 25             | 25     | 30 | 100 | 5.0  | ●            | 1    |                      |
| 325-25-07-L160      | 3 | 25             | 25     | 30 | 160 | 5.0  | ●            | 2    |                      |
| 425-W25-07          | 4 | 25             | 25     | 30 | 100 | 5.0  | ●            | 1    |                      |
| 326-25-07-L160      | 3 | 26             | 25     | 30 | 160 | 5.0  | ●            | 2    |                      |
| 432-W32-07          | 4 | 32             | 32     | 35 | 110 | 5.0  | ●            | 1    |                      |
| 432-32-07-L200      | 4 | 32             | 32     | 35 | 200 | 5.0  | ●            | 2    |                      |
| 632-W32-07          | 6 | 32             | 32     | 35 | 110 | 5.0  | ●            | 1    |                      |
| 433-32-07-L200      | 4 | 33             | 32     | 35 | 200 | 5.0  | ●            | 2    |                      |
| 540-W32-07          | 5 | 40             | 32     | 40 | 110 | 5.0  | ●            | 1    |                      |
| 840-W32-07          | 8 | 40             | 32     | 40 | 110 | 5.0  | ●            | 1    |                      |
|                     |   |                |        |    |     |      |              |      |                      |
|                     |   |                |        |    |     |      |              |      |                      |
|                     |   |                |        |    |     |      |              |      |                      |
|                     |   |                |        |    |     |      |              |      |                      |

## Spare parts

| Designation | Screw          | Wrench |  |  |  |
|-------------|----------------|--------|--|--|--|
|             |                |        |  |  |  |
| 8D-TE90-07  | TS 25D060/HG-P | TD 7P  |  |  |  |
|             |                |        |  |  |  |
|             |                |        |  |  |  |
|             |                |        |  |  |  |
|             |                |        |  |  |  |







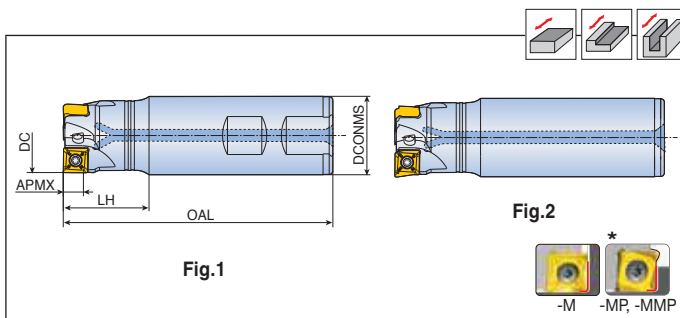
-M / -ML

[illegible]

| Designation         | Screw                                                                               | Wrench                                                                              |  |  |  |
|---------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                     |  |  |  |  |  |
| <b>8D-TE90-M-07</b> | TS 25D060/HG-P                                                                      | TD 7P                                                                               |  |  |  |
|                     |                                                                                     |                                                                                     |  |  |  |
|                     |                                                                                     |                                                                                     |  |  |  |
|                     |                                                                                     |                                                                                     |  |  |  |

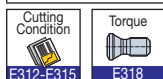


**CHASE 8 MILL**

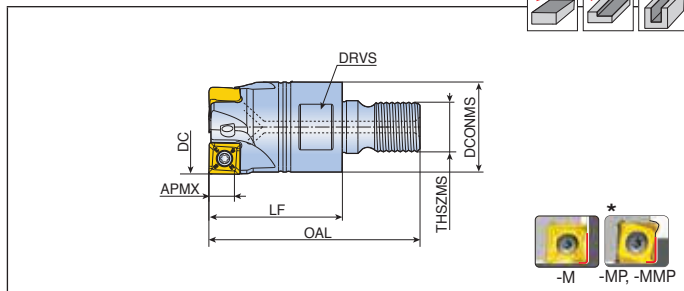
[illegible]

## Spare parts

| Designation       | Screw                                                                               | Wrench                                                                              |  |  |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                   |  |  |  |  |  |
| <b>8D-TE90-10</b> | TS 35A088/HG                                                                        | TD 10P                                                                              |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |

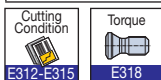


**CHASE & MILL**  
BY FINEST & SHARPEST

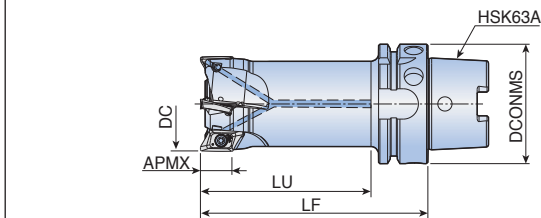


►\*:Multi-Step milling is not recommended over the APMX ►\*\*:When applying SQHU insert, APMX is 6.5 mm.  
► Matched with T-FLEXTEC holder

| Designation         | Screw                                                                               | Wrench                                                                              |  |  |  |
|---------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                     |  |  |  |  |  |
| <b>8D-TE90-M-10</b> | TS 35A088I/HG                                                                       | TD 10P                                                                              |  |  |  |
|                     |                                                                                     |                                                                                     |  |  |  |
|                     |                                                                                     |                                                                                     |  |  |  |
|                     |                                                                                     |                                                                                     |  |  |  |



**CHASE ALU**

[illegible]

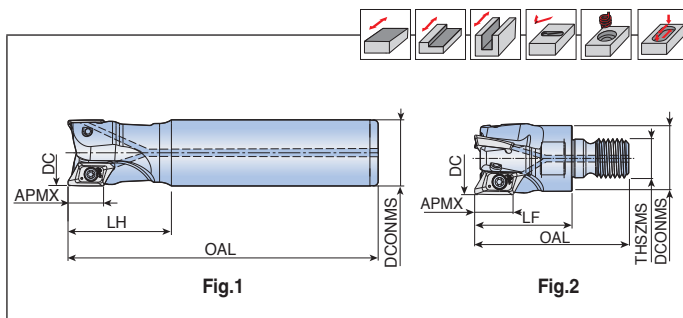
## Spare parts

| Designation             | Screw                                                                               | Wrench                                                                              |  |  |  |
|-------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                         |  |  |  |  |  |
| <b>TE90XE-16</b> (Ø25)  | TS 40085I/HG                                                                        | T-T15                                                                               |  |  |  |
| <b>TE90XE-16</b> (Ø32-) | TS 40093I/HG                                                                        | T-T15                                                                               |  |  |  |
|                         |                                                                                     |                                                                                     |  |  |  |
|                         |                                                                                     |                                                                                     |  |  |  |
|                         |                                                                                     |                                                                                     |  |  |  |



# TE90XEV-16/22

## End mills & Modular heads

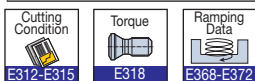


| Designation    |                       |   | Dimension (mm) |        |     |        |    |     |      | Coolant hole | Fig. | Max RPM | Insert               |
|----------------|-----------------------|---|----------------|--------|-----|--------|----|-----|------|--------------|------|---------|----------------------|
|                |                       |   | DC             | DCONMS | OAL | THSZMS | LF | LH  | APMX |              |      |         |                      |
| <b>TE90XEV</b> | <b>225-25-16</b>      | 2 | 25             | 25     | 125 | -      | -  | 55  | 16   | ●            | 1    | 52,000  | XEVT 1605...<br>305  |
|                | <b>225-25-16-L170</b> | 2 | 25             | 25     | 170 | -      | -  | 70  | 16   | ●            | 1    | 52,000  |                      |
|                | <b>232-32-16</b>      | 2 | 32             | 32     | 150 | -      | -  | 50  | 16   | ●            | 1    | 46,000  |                      |
|                | <b>232-32-16-L200</b> | 2 | 32             | 32     | 200 | -      | -  | 80  | 16   | ●            | 1    | 46,000  |                      |
|                | <b>332-32-16</b>      | 3 | 32             | 32     | 150 | -      | -  | 50  | 16   | ●            | 1    | 46,000  |                      |
|                | <b>332-32-16-L200</b> | 3 | 32             | 32     | 200 | -      | -  | 80  | 16   | ●            | 1    | 46,000  |                      |
|                | <b>340-32-16</b>      | 3 | 40             | 32     | 170 | -      | -  | 55  | 16   | ●            | 1    | 41,200  |                      |
|                | <b>340-32-16-L250</b> | 3 | 40             | 32     | 250 | -      | -  | 55  | 16   | ●            | 1    | 41,200  |                      |
| <b>TE90XEV</b> | <b>225-M12-16</b>     | 2 | 25             | 21     | 65  | M12    | 43 | -   | 16   | ●            | 2    | 52,000  | XEVT 2206...<br>E305 |
|                | <b>232-M16-16</b>     | 2 | 32             | 29     | 68  | M16    | 43 | -   | 16   | ●            | 2    | 46,000  |                      |
|                | <b>332-M16-16</b>     | 3 | 32             | 29     | 68  | M16    | 43 | -   | 16   | ●            | 2    | 46,000  |                      |
|                | <b>340-M16-16</b>     | 3 | 40             | 29     | 68  | M16    | 43 | -   | 16   | ●            | 2    | 41,200  |                      |
| <b>TE90XEV</b> | <b>232-32-22</b>      | 2 | 32             | 32     | 160 | -      | -  | 100 | 21   | ●            | 1    | 37,500  | XEVT 2206...<br>E305 |
|                | <b>340-40-22</b>      | 3 | 40             | 40     | 160 | -      | -  | 80  | 21   | ●            | 1    | 35,100  |                      |
|                |                       |   |                |        |     |        |    |     |      |              |      |         |                      |
|                |                       |   |                |        |     |        |    |     |      |              |      |         |                      |
|                |                       |   |                |        |     |        |    |     |      |              |      |         |                      |
|                |                       |   |                |        |     |        |    |     |      |              |      |         |                      |

- Matched with T-FLEXTEC holder(Fig.2)
- Cutter body for inserts with corner radii more than 3.2mm (XEVT 16) and 3.0mm (XEVT 22) should be modified as follows: body "RE"-insert "RE"-0.3mm

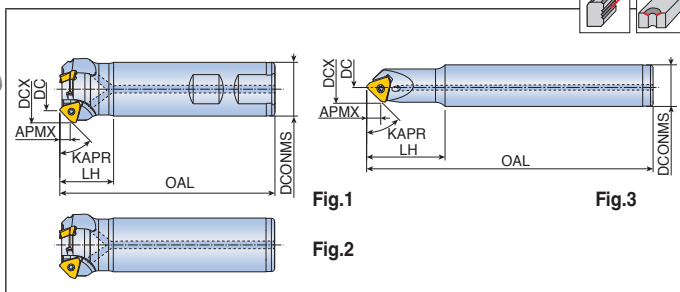
## Spare parts

| Designation             | Screw        | Wrench |  |  |  |
|-------------------------|--------------|--------|--|--|--|
|                         |              |        |  |  |  |
| <b>TE90XEV-16 (Ø25)</b> | TS 40085I/HG | T-T 15 |  |  |  |
| <b>TE90XEV-16 (Ø32)</b> | TS 40093I/HG | T-T 15 |  |  |  |
| <b>TE90XEV-22 (Ø32)</b> | TS 50105I    | T-T 20 |  |  |  |
| <b>TE90XEV-22 (Ø40)</b> | TS 50115I    | T-T 20 |  |  |  |



# 3P-TCF-06/10

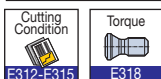
### End mills for chamfering

[illegible]

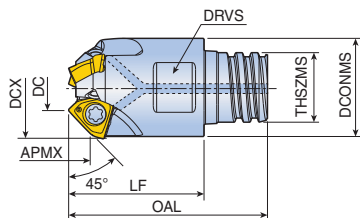
► Coolant through type

## Spare parts

| Designation      | Screw                                                                               | Wrench                                                                              |  |  |  |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                  |  |  |  |  |  |
| <b>3P-TCF-06</b> | TS 20043/HG-P                                                                       | TD 6P                                                                               |  |  |  |
| <b>3P-TCF-10</b> | TS 25C065I/HG                                                                       | TD 8                                                                                |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |



**MILL RUSH**  
 AVAILABLE AT ALL

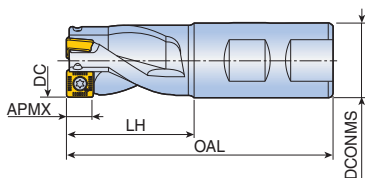
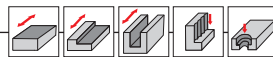


45°

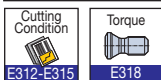
- ▶ Matched with MAXI-RUSH holder
- ▶ Coolant through type

| Designation        | Screw                                                                               | Wrench                                                                              |  |  |  |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                    |  |  |  |  |  |
| <b>3P-TCF-S-04</b> | TS 18033/HG-P                                                                       | TD 6P                                                                               |  |  |  |
|                    |                                                                                     |                                                                                     |  |  |  |
|                    |                                                                                     |                                                                                     |  |  |  |
|                    |                                                                                     |                                                                                     |  |  |  |

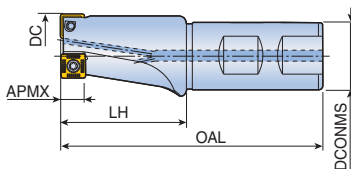
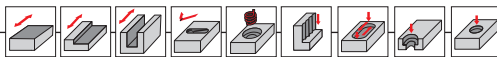


[illegible]

| Designation          | Screw                                                                               | Wrench                                                                              |  |  |  |
|----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                      |  |  |  |  |  |
| <b>TSF</b> (Ø12)     | TS 22046I                                                                           | TD 7                                                                                |  |  |  |
| <b>TSF</b> (Ø16-Ø20) | TS 22052I/HG                                                                        | TD 7                                                                                |  |  |  |
| <b>TSF</b> (Ø22-Ø25) | TS 35088I                                                                           | TD 10                                                                               |  |  |  |
| <b>TSF</b> (Ø32-Ø40) | TS 40093I                                                                           | TD 15                                                                               |  |  |  |
| <b>TSF</b> (Ø45-Ø50) | TS 50A121I/HG                                                                       | TD 20                                                                               |  |  |  |



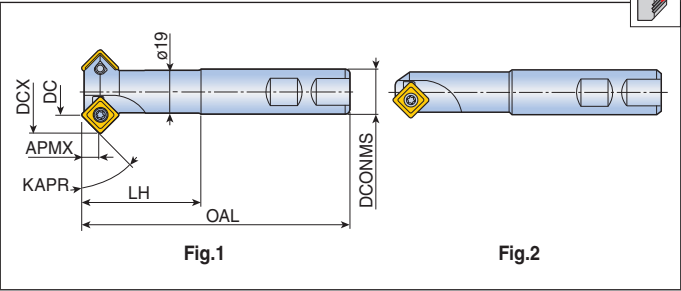


[illegible]

| Designation          | Screw                                                                               | Wrench                                                                              |  |  |  |
|----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                      |  |  |  |  |  |
| <b>TDM</b> (Ø12)     | TS 22046I                                                                           | TD 7                                                                                |  |  |  |
| <b>TDM</b> (Ø16-Ø22) | TS 22052I/HG                                                                        | TD 7                                                                                |  |  |  |
| <b>TDM</b> (Ø25-Ø28) | TS 35088I                                                                           | TD 10                                                                               |  |  |  |
| <b>TDM</b> (Ø32-Ø40) | TS 40093I                                                                           | TD 15                                                                               |  |  |  |
| <b>TDM</b> (Ø45-Ø50) | TS 50A121I/HG                                                                       | TD 20                                                                               |  |  |  |



End mills



| Designation   |   | Dimension (mm) |      |    |        |     |    |      | Fig. | Application range(mm) | Insert                    |
|---------------|---|----------------|------|----|--------|-----|----|------|------|-----------------------|---------------------------|
|               |   | KAPR           | DCX  | DC | DCONMS | OAL | LH | APMX |      |                       |                           |
| TCF 15 D25-11 | 2 | 75°            | 30.5 | 25 | 20     | 120 | 40 | 10.1 | 1    | Ø26.3-Ø30.0           | SPMT(G) 1104...EM<br>E295 |
| 30 D25-11     | 2 | 60°            | 35.5 | 25 | 20     | 120 | 40 | 8.9  | 1    | Ø26.3-Ø34.0           |                           |
| 45 D07-11     | 1 | 45°            | 21.5 | 7  | 20     | 120 | 40 | 7.2  | 2    | Ø8.3-Ø20.9            |                           |
| 45 D19-11     | 2 | 45°            | 33.4 | 19 | 20     | 120 | 40 | 7.2  | 1    | Ø20.3-Ø32.9           |                           |
| 45 D25-11     | 3 | 45°            | 39.4 | 25 | 20     | 120 | 40 | 7.2  | 1    | Ø26.3-Ø38.9           |                           |
|               |   |                |      |    |        |     |    |      |      |                       |                           |
|               |   |                |      |    |        |     |    |      |      |                       |                           |
|               |   |                |      |    |        |     |    |      |      |                       |                           |
|               |   |                |      |    |        |     |    |      |      |                       |                           |
|               |   |                |      |    |        |     |    |      |      |                       |                           |
|               |   |                |      |    |        |     |    |      |      |                       |                           |
|               |   |                |      |    |        |     |    |      |      |                       |                           |
|               |   |                |      |    |        |     |    |      |      |                       |                           |
|               |   |                |      |    |        |     |    |      |      |                       |                           |
|               |   |                |      |    |        |     |    |      |      |                       |                           |
|               |   |                |      |    |        |     |    |      |      |                       |                           |

Spare parts

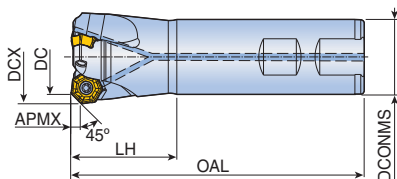
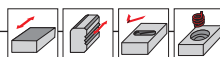
| Designation | Screw     | Wrench |  |  |  |
|-------------|-----------|--------|--|--|--|
|             |           |        |  |  |  |
| TCF-11      | TS 40093I | TD 15  |  |  |  |
|             |           |        |  |  |  |
|             |           |        |  |  |  |
|             |           |        |  |  |  |

E312-E315

E318

**7S-E45-06**

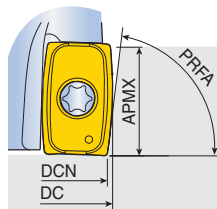
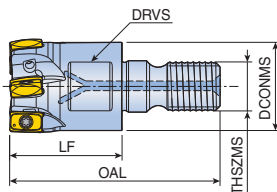
## End mills

[illegible]

## Spare parts

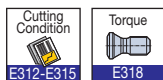
| Designation             | Screw                                                                               | Wrench                                                                              |  |  |  |
|-------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                         |  |  |  |  |  |
| <b>7S-E45-06</b> (-Ø40) | TS 40085I/HG                                                                        | TD 15                                                                               |  |  |  |
| <b>7S-E45-06</b> (Ø50)  | TS 40093I/HG                                                                        | TD 15                                                                               |  |  |  |
|                         |                                                                                     |                                                                                     |  |  |  |
|                         |                                                                                     |                                                                                     |  |  |  |

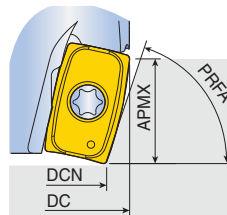
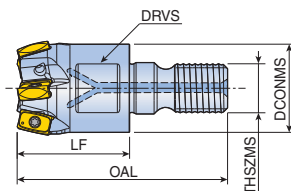




► Matched with T-FLEXTEC holder

| Designation       | Screw                                                                               | Wrench                                                                              |  |  |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                   |  |  |  |  |  |
| <b>TBR90-M-06</b> | TS 18041I/HG                                                                        | TD 6P                                                                               |  |  |  |
| <b>TBR90-M-12</b> | TS 30B068I/HG                                                                       | TD 8                                                                                |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |

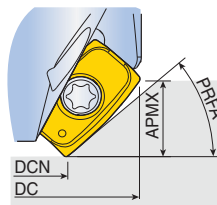
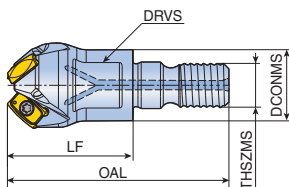




► Matched with T-FLEXTEC holder

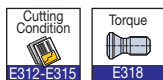
| Designation       | Screw                                                                               | Wrench                                                                              |  |  |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                   |  |  |  |  |  |
| <b>TBR75-M-06</b> | TS 18041I/HG                                                                        | TD 6P                                                                               |  |  |  |
| <b>TBR75-M-12</b> | TS 30B068I/HG                                                                       | TD 8                                                                                |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |



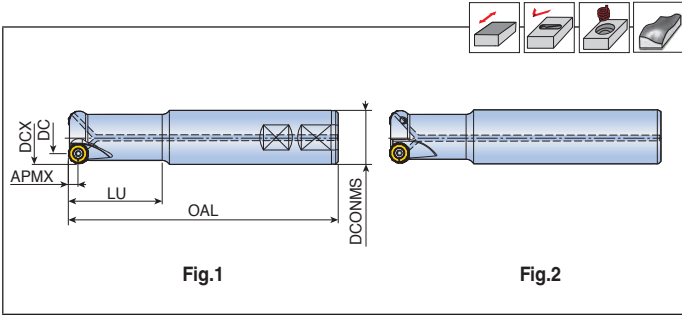
[illegible]

## Spare parts

| Designation       | Screw                                                                               | Wrench                                                                              |  |  |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                   |  |  |  |  |  |
| <b>TBR45-M-06</b> | TS 18041I/HG                                                                        | TD 6P                                                                               |  |  |  |
| <b>TBR45-M-12</b> | TS 30B068I/HG                                                                       | TD 8                                                                                |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |
|                   |                                                                                     |                                                                                     |  |  |  |



End mills



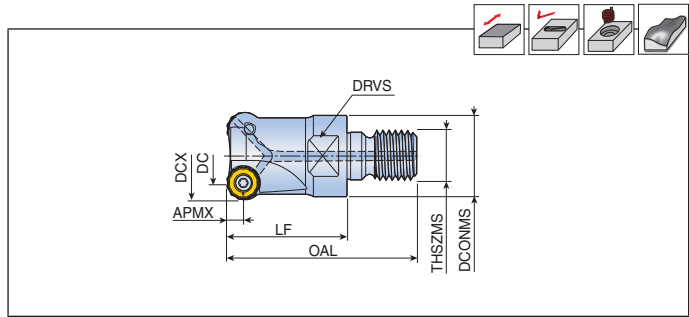
| Designation                  |   | Dimension (mm) |    |        |     |     |      | Coolant hole | Fig. | Insert               |
|------------------------------|---|----------------|----|--------|-----|-----|------|--------------|------|----------------------|
|                              |   | DCX            | DC | DCONMS | OAL | LU  | APMX |              |      |                      |
| <b>TERNS 225-25-10-L160</b>  | 2 | 25             | 15 | 25     | 160 | 60  | 5.0  | ●            | 2    | RNMU 1004...<br>E284 |
| <b>225-32-10-L250</b>        | 2 | 25             | 15 | 32     | 250 | 40  | 5.0  | ●            | 2    |                      |
| <b>325-25-10-L160</b>        | 3 | 25             | 15 | 25     | 160 | 60  | 5.0  | ●            | 2    |                      |
| <b>226-25-10-L200</b>        | 2 | 26             | 16 | 25     | 200 | 80  | 5.0  | ●            | 2    |                      |
| <b>332-32-10-L180</b>        | 3 | 32             | 22 | 32     | 180 | 70  | 5.0  | ●            | 2    |                      |
| <b>332-32-10-L250</b>        | 3 | 32             | 22 | 32     | 250 | 100 | 5.0  | ●            | 2    |                      |
| <b>432-32-10-L180</b>        | 4 | 32             | 22 | 32     | 180 | 70  | 5.0  | ●            | 2    |                      |
| <b>432-32-10-L250</b>        | 4 | 32             | 22 | 32     | 250 | 100 | 5.0  | ●            | 2    |                      |
| <b>433-32-10-L200</b>        | 4 | 33             | 23 | 32     | 200 | 80  | 5.0  | ●            | 2    |                      |
| <b>433-32-10-L250</b>        | 4 | 33             | 23 | 32     | 250 | 100 | 5.0  | ●            | 2    |                      |
| <b>TERNS 232-32-12-L150</b>  | 2 | 32             | 20 | 32     | 150 | 50  | 6.0  | ●            | 2    | RNMU 1205...<br>E284 |
| <b>232-32-12-L200</b>        | 2 | 32             | 20 | 32     | 200 | 60  | 6.0  | ●            | 2    |                      |
| <b>232-32-12-L</b>           | 2 | 32             | 20 | 32     | 250 | 50  | 6.0  | ●            | 2    |                      |
| <b>332-W32-12</b>            | 3 | 32             | 20 | 32     | 160 | 60  | 6.0  | ●            | 1    |                      |
| <b>332-32-12-L200</b>        | 3 | 32             | 20 | 32     | 200 | 70  | 6.0  | ●            | 2    |                      |
| <b>332-32-12-L250</b>        | 3 | 32             | 20 | 32     | 250 | 60  | 6.0  | ●            | 2    |                      |
| <b>233-32-12-L200</b>        | 2 | 33             | 21 | 32     | 200 | 50  | 6.0  | ●            | 2    |                      |
| <b>233-32-12-L250</b>        | 2 | 33             | 21 | 32     | 250 | 50  | 6.0  | ●            | 2    |                      |
| <b>333-32-12-L200</b>        | 3 | 33             | 21 | 32     | 200 | 70  | 6.0  | ●            | 2    |                      |
| <b>333-32-12-L250</b>        | 3 | 33             | 21 | 32     | 250 | 60  | 6.0  | ●            | 2    |                      |
| <b>340-W32-12</b>            | 3 | 40             | 28 | 32     | 160 | 50  | 6.0  | ●            | 1    |                      |
| <b>340-32-12-L250</b>        | 3 | 40             | 28 | 32     | 250 | 50  | 6.0  | ●            | 2    |                      |
| <b>440-W32-12</b>            | 4 | 40             | 28 | 32     | 160 | 50  | 6.0  | ●            | 1    |                      |
| <b>440-32-12-L250</b>        | 4 | 40             | 28 | 32     | 250 | 60  | 6.0  | ●            | 2    |                      |
| <b>450-32-12-L200</b>        | 4 | 50             | 38 | 32     | 200 | 70  | 6.0  | ●            | 2    |                      |
| <b>550-32-12-L250</b>        | 5 | 50             | 38 | 32     | 250 | 60  | 6.0  | ●            | 2    |                      |
| <b>TERNS 240-W32-16-L160</b> | 2 | 40             | 24 | 32     | 160 | 50  | 6.0  | ●            | 1    | RNMU 1606...<br>E284 |
| <b>240-32-16-L180</b>        | 2 | 40             | 24 | 32     | 180 | 70  | 8.0  | ●            | 2    |                      |
| <b>240-32-16-L250</b>        | 2 | 40             | 24 | 32     | 250 | 100 | 8.0  | ●            | 2    |                      |
| <b>340-32-16-L180</b>        | 3 | 40             | 24 | 32     | 180 | 70  | 8.0  | ●            | 2    |                      |
| <b>340-32-16-L250</b>        | 3 | 40             | 24 | 32     | 250 | 100 | 8.0  | ●            | 2    |                      |
|                              |   |                |    |        |     |     |      |              |      |                      |
|                              |   |                |    |        |     |     |      |              |      |                      |
|                              |   |                |    |        |     |     |      |              |      |                      |
|                              |   |                |    |        |     |     |      |              |      |                      |
|                              |   |                |    |        |     |     |      |              |      |                      |

Cutting Condition  
E312-E315

Torque  
E318

Ramping Data  
E386-E387

## Modular heads

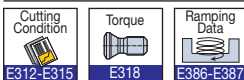


| Designation             |   | Dimension (mm) |    |        |    |     |        |      |      | Coolant hole | Insert               |
|-------------------------|---|----------------|----|--------|----|-----|--------|------|------|--------------|----------------------|
|                         |   | DCX            | DC | DCONMS | LF | OAL | THSZMS | APMX | DRVS |              |                      |
| <b>TERNS 225-M12-10</b> | 2 | 25             | 15 | 21     | 35 | 57  | M12    | 5.0  | 17   | ●            | RNMU 1004...<br>E284 |
| <b>325-M12-10</b>       | 3 | 25             | 15 | 21     | 35 | 57  | M12    | 5.0  | 17   | ●            |                      |
| <b>432-M16-10</b>       | 4 | 32             | 22 | 29     | 43 | 68  | M16    | 5.0  | 25   | ●            |                      |
| <b>542-M16-10</b>       | 5 | 42             | 32 | 29     | 43 | 68  | M16    | 5.0  | 25   | ●            |                      |
| <b>TERNS 232-M16-12</b> | 2 | 32             | 20 | 29     | 43 | 68  | M16    | 6.0  | 25   | ●            | RNMU 1205...<br>E284 |
| <b>332-M16-12</b>       | 3 | 32             | 20 | 29     | 43 | 68  | M16    | 6.0  | 25   | ●            |                      |
| <b>233-M16-12</b>       | 2 | 33             | 21 | 29     | 43 | 68  | M16    | 6.0  | 25   | ●            |                      |
| <b>333-M16-12</b>       | 3 | 33             | 21 | 29     | 43 | 68  | M16    | 6.0  | 25   | ●            |                      |
| <b>340-M16-12</b>       | 3 | 40             | 28 | 29     | 43 | 68  | M16    | 6.0  | 25   | ●            |                      |
| <b>440-M16-12</b>       | 4 | 40             | 28 | 29     | 43 | 68  | M16    | 6.0  | 25   | ●            |                      |
| <b>TERNS 240-M16-16</b> | 2 | 40             | 24 | 29     | 43 | 68  | M16    | 8.0  | 25   | ●            | RNMU 1606...<br>E284 |
| <b>340-M16-16</b>       | 3 | 40             | 24 | 29     | 43 | 68  | M16    | 8.0  | 25   | ●            |                      |
|                         |   |                |    |        |    |     |        |      |      |              |                      |
|                         |   |                |    |        |    |     |        |      |      |              |                      |
|                         |   |                |    |        |    |     |        |      |      |              |                      |
|                         |   |                |    |        |    |     |        |      |      |              |                      |
|                         |   |                |    |        |    |     |        |      |      |              |                      |
|                         |   |                |    |        |    |     |        |      |      |              |                      |
|                         |   |                |    |        |    |     |        |      |      |              |                      |
|                         |   |                |    |        |    |     |        |      |      |              |                      |
|                         |   |                |    |        |    |     |        |      |      |              |                      |

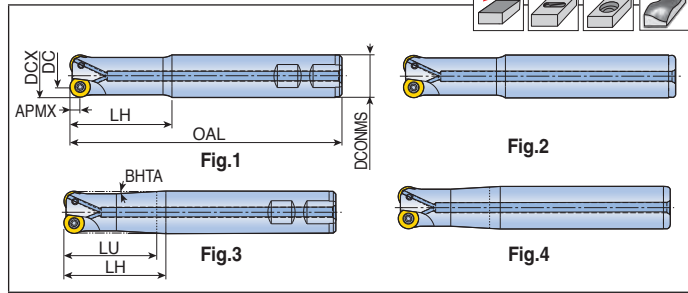
► Matched with T-FLEXTEC holder

## Spare parts

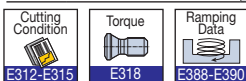
| Designation     | Screw         | Wrench |       |  |  |
|-----------------|---------------|--------|-------|--|--|
|                 |               |        |       |  |  |
| <b>TERNS-10</b> | TS 35085I/HG  | TD 15  | -     |  |  |
| <b>TERNS-12</b> | TS 40G110I    | -      | T-T15 |  |  |
| <b>TERNS-16</b> | TS 50A121I/HG | TD 20  | -     |  |  |
|                 |               |        |       |  |  |
|                 |               |        |       |  |  |







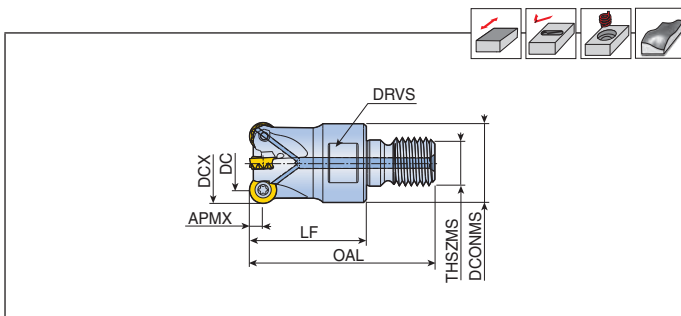
| Designation              |   | Dimension (mm) |    |        |     |    |    |      |      | Coolant hole | Fig. | Insert                       |
|--------------------------|---|----------------|----|--------|-----|----|----|------|------|--------------|------|------------------------------|
|                          |   | DCX            | DC | DCONMS | OAL | LU | LH | BHTA | APMX |              |      |                              |
| <b>TERY 216-W20-08-L</b> | 2 | 16             | 8  | 20     | 110 | 45 | 55 | 4.1° | 4.0  | ●            | 3    | RYM(H)X 0803...<br>E285-E286 |
| <b>217-16-08-L130</b>    | 2 | 17             | 9  | 16     | 130 | -  | 30 | -    | 4.0  | ●            | 2    |                              |
| <b>218-16-08-L150</b>    | 2 | 18             | 10 | 16     | 150 | -  | 30 | -    | 4.0  | ●            | 2    |                              |
| <b>320-W20-08</b>        | 3 | 20             | 12 | 20     | 150 | -  | 43 | -    | 4.0  | ●            | 1    |                              |
| <b>320-20-08-L110</b>    | 3 | 20             | 12 | 20     | 110 | -  | 60 | -    | 4.0  | ●            | 2    |                              |
| <b>321-20-08-L150</b>    | 3 | 21             | 13 | 20     | 150 | -  | 40 | -    | 4.0  | ●            | 2    |                              |
| <b>425-W25-08</b>        | 4 | 25             | 17 | 25     | 150 | -  | 43 | -    | 4.0  | ●            | 1    |                              |
| <b>426-25-08-L150</b>    | 4 | 26             | 18 | 25     | 150 | -  | 40 | -    | 4.0  | ●            | 2    |                              |
| <b>532-W32-08</b>        | 5 | 32             | 24 | 32     | 160 | -  | 60 | -    | 4.0  | ●            | 1    |                              |
| <b>TERY 220-W20-10</b>   | 2 | 20             | 10 | 20     | 160 | -  | 60 | -    | 5.0  | ●            | 1    | RYM(H)X 1004...<br>E285-E286 |
| <b>220-25-10-L</b>       | 2 | 20             | 10 | 25     | 250 | 60 | 80 | 3.5° | 5.0  | ●            | 4    |                              |
| <b>221-20-10-L200</b>    | 2 | 21             | 11 | 20     | 200 | -  | 30 | -    | 5.0  | ●            | 2    |                              |
| <b>225-32-10-L</b>       | 2 | 25             | 15 | 32     | 250 | 53 | 80 | 5.0° | 5.0  | ●            | 4    |                              |
| <b>225-W25-10</b>        | 2 | 25             | 15 | 25     | 160 | -  | 60 | -    | 5.0  | ●            | 1    |                              |
| <b>325-W25-10</b>        | 3 | 25             | 15 | 25     | 160 | -  | 60 | -    | 5.0  | ●            | 1    |                              |
| <b>226-25-10-L200</b>    | 2 | 26             | 16 | 25     | 200 | -  | 30 | -    | 5.0  | ●            | 2    |                              |
| <b>326-25-10-L200</b>    | 3 | 26             | 16 | 25     | 200 | -  | 60 | -    | 5.0  | ●            | 2    |                              |
| <b>432-W32-10</b>        | 4 | 32             | 22 | 32     | 160 | -  | 60 | -    | 5.0  | ●            | 1    |                              |
| <b>TERY 225-W25-12</b>   | 2 | 25             | 13 | 25     | 160 | -  | 60 | -    | 6.0  | ●            | 1    | RYM(H)X 1205...<br>E285-E286 |
| <b>226-25-12-L200</b>    | 2 | 26             | 14 | 25     | 200 | -  | 60 | -    | 6.0  | ●            | 2    |                              |
| <b>232-32-12-L</b>       | 2 | 32             | 20 | 32     | 250 | -  | 50 | -    | 6.0  | ●            | 2    |                              |
| <b>332-W32-12</b>        | 3 | 32             | 20 | 32     | 160 | -  | 64 | -    | 6.0  | ●            | 1    |                              |
| <b>332-W32-12-S</b>      | 3 | 32             | 20 | 32     | 105 | -  | 35 | -    | 6.0  | ●            | 1    |                              |
| <b>233-32-12-L250</b>    | 2 | 33             | 21 | 32     | 250 | -  | 40 | -    | 6.0  | ●            | 2    |                              |
| <b>333-32-12-L200</b>    | 3 | 33             | 21 | 32     | 200 | -  | 60 | -    | 6.0  | ●            | 2    |                              |
| <b>340-W32-12</b>        | 3 | 40             | 28 | 32     | 160 | -  | 50 | -    | 6.0  | ●            | 1    |                              |
| <b>340-W32-12-S</b>      | 3 | 40             | 28 | 32     | 105 | -  | 35 | -    | 6.0  | ●            | 1    |                              |
| <b>340-32-12-L250</b>    | 3 | 40             | 28 | 32     | 250 | -  | 50 | -    | 6.0  | ●            | 2    | RYM(H)X 1606...<br>E285-E286 |
| <b>440-W32-12</b>        | 4 | 40             | 28 | 32     | 150 | -  | 35 | -    | 6.0  | ●            | 1    |                              |
| <b>440-W32-12-S</b>      | 4 | 40             | 28 | 32     | 105 | -  | 35 | -    | 6.0  | ●            | 1    |                              |
| <b>TERY 240-W32-16</b>   | 2 | 40             | 24 | 32     | 160 | -  | 50 | -    | 8.0  | ●            | 1    | RYM(H)X 2007...<br>E285-E286 |
| <b>340-32-16-L250</b>    | 3 | 40             | 24 | 32     | 250 | -  | 50 | -    | 8.0  | ●            | 2    |                              |
| <b>TERY 350-32-20</b>    | 3 | 50             | 30 | 32     | 160 | -  | 50 | -    | 10.0 | ●            | 2    | RYM(H)X 2007...<br>E285-E286 |
| <b>350-40-20</b>         | 3 | 50             | 30 | 40     | 200 | -  | 60 | -    | 10.0 | ●            | 2    |                              |



# TERY-M-08/10



## Modular heads

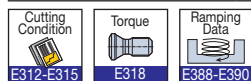


| Designation            |   | Dimension (mm) |    |        |    |      |        |      |      | Coolant hole | Insert                       |
|------------------------|---|----------------|----|--------|----|------|--------|------|------|--------------|------------------------------|
|                        |   | DCX            | DC | DCONMS | LF | OAL  | THSZMS | APMX | DRVS |              |                              |
| <b>TERY 216-M08-08</b> | 2 | 16             | 8  | 13     | 23 | 40.5 | M08    | 4.0  | 10   | ●            | RYM(H)X 0803...<br>E285-E286 |
| <b>218-M08-08</b>      | 2 | 18             | 10 | 13     | 23 | 40.5 | M08    | 4.0  | 10   | ●            |                              |
| <b>220-M10-08</b>      | 2 | 20             | 12 | 18     | 30 | 50   | M10    | 4.0  | 15   | ●            |                              |
| <b>320-M10-08</b>      | 3 | 20             | 12 | 18     | 30 | 50   | M10    | 4.0  | 15   | ●            |                              |
| <b>425-M12-08</b>      | 4 | 25             | 17 | 21     | 35 | 57   | M12    | 4.0  | 17   | ●            |                              |
| <b>530-M16-08</b>      | 5 | 30             | 22 | 29     | 43 | 68   | M16    | 4.0  | 25   | ●            |                              |
| <b>532-M16-08</b>      | 5 | 32             | 24 | 29     | 43 | 68   | M16    | 4.0  | 25   | ●            |                              |
| <b>540-M16-08</b>      | 5 | 40             | 32 | 29     | 43 | 68   | M16    | 4.0  | 25   | ●            |                              |
| <b>640-M16-08</b>      | 6 | 40             | 32 | 29     | 43 | 68   | M16    | 4.0  | 25   | ●            | RYM(H)X 1004...<br>E285-E286 |
| <b>TERY 220-M10-10</b> | 2 | 20             | 10 | 18     | 30 | 50   | M10    | 5.0  | 15   | ●            |                              |
| <b>225-M12-10</b>      | 2 | 25             | 15 | 21     | 35 | 57   | M12    | 5.0  | 17   | ●            |                              |
| <b>325-M12-10</b>      | 3 | 25             | 15 | 21     | 35 | 57   | M12    | 5.0  | 17   | ●            |                              |
| <b>430-M16-10</b>      | 4 | 30             | 20 | 29     | 43 | 68   | M16    | 5.0  | 25   | ●            |                              |
| <b>432-M16-10</b>      | 4 | 32             | 22 | 29     | 43 | 68   | M16    | 5.0  | 25   | ●            |                              |
| <b>435-M16-10</b>      | 4 | 35             | 25 | 29     | 43 | 68   | M16    | 5.0  | 25   | ●            |                              |
| <b>542-M16-10</b>      | 5 | 42             | 32 | 29     | 43 | 68   | M16    | 5.0  | 25   | ●            |                              |
| <b>642-M16-10</b>      | 6 | 42             | 32 | 29     | 43 | 68   | M16    | 5.0  | 25   | ●            |                              |
|                        |   |                |    |        |    |      |        |      |      |              |                              |
|                        |   |                |    |        |    |      |        |      |      |              |                              |
|                        |   |                |    |        |    |      |        |      |      |              |                              |

► Matched with T-FLEXTEC holder

## Spare parts

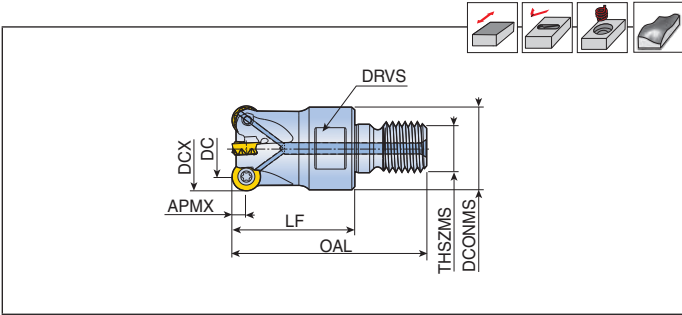
| Designation    | Screw                                   | Wrench |  |  |  |
|----------------|-----------------------------------------|--------|--|--|--|
|                |                                         |        |  |  |  |
| <b>TERY-08</b> | TS 30A060I/HG                           | TD 9   |  |  |  |
| <b>TERY-10</b> | TS 35070I/HG(UnderØ21),<br>TS 35085I/HG | TD 15  |  |  |  |
| <b>TERY-12</b> | TS 40093I                               | TD 15  |  |  |  |
| <b>TERY-16</b> | TS 50115I                               | TD 20  |  |  |  |



# TERY-M-12/16



## Modular heads



| Designation            |   | Dimension (mm) |    |        |    |     |        |      |      | Coolant hole | Insert                       |
|------------------------|---|----------------|----|--------|----|-----|--------|------|------|--------------|------------------------------|
|                        |   | DCX            | DC | DCONMS | LF | OAL | THSZMS | APMX | DRVS |              |                              |
| <b>TERY 225-M12-12</b> | 2 | 25             | 13 | 21     | 35 | 57  | M12    | 6.0  | 17   | ●            | RYM(H)X 1205...<br>E285-E286 |
| <b>232-M16-12</b>      | 2 | 32             | 20 | 29     | 43 | 68  | M16    | 6.0  | 25   | ●            |                              |
| <b>332-M16-12</b>      | 3 | 32             | 20 | 29     | 43 | 68  | M16    | 6.0  | 25   | ●            |                              |
| <b>335-M16-12</b>      | 3 | 35             | 23 | 29     | 43 | 68  | M16    | 6.0  | 25   | ●            |                              |
| <b>340-M16-12</b>      | 3 | 40             | 28 | 29     | 43 | 68  | M16    | 6.0  | 25   | ●            |                              |
| <b>440-M16-12</b>      | 4 | 40             | 28 | 29     | 43 | 68  | M16    | 6.0  | 25   | ●            |                              |
| <b>442-M16-12</b>      | 4 | 42             | 30 | 29     | 43 | 68  | M16    | 6.0  | 25   | ●            |                              |
| <b>TERY 232-M16-16</b> | 2 | 32             | 16 | 29     | 43 | 68  | M16    | 8.0  | 25   | ●            | RYM(H)X 1606...<br>E285-E286 |
| <b>240-M16-16</b>      | 2 | 40             | 24 | 29     | 43 | 68  | M16    | 8.0  | 25   | ●            |                              |
| <b>342-M16-16</b>      | 3 | 42             | 26 | 29     | 43 | 68  | M16    | 8.0  | 25   | ●            |                              |
|                        |   |                |    |        |    |     |        |      |      |              |                              |
|                        |   |                |    |        |    |     |        |      |      |              |                              |
|                        |   |                |    |        |    |     |        |      |      |              |                              |
|                        |   |                |    |        |    |     |        |      |      |              |                              |

► Matched with T-FLEXTEC holder

## Spare parts

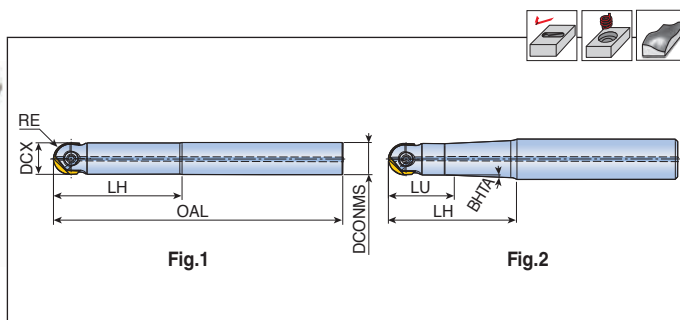
| Designation    | Screw     | Wrench |  |  |  |
|----------------|-----------|--------|--|--|--|
|                |           |        |  |  |  |
| <b>TERY-12</b> | TS 40093I | TD 15  |  |  |  |
| <b>TERY-16</b> | TS 50115I | TD 20  |  |  |  |
|                |           |        |  |  |  |
|                |           |        |  |  |  |

Cutting Condition  
E312-E315

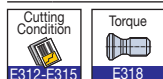
Torque  
E318

Ramping Data  
E388-E390

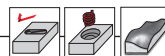
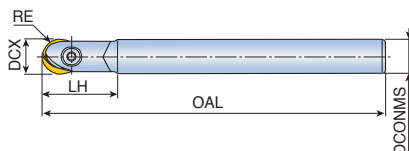
## End mills



| Designation        | Dimension (mm) |      |        |     |     |    |      | Coolant hole | Fig. | Insert                                                                                        |
|--------------------|----------------|------|--------|-----|-----|----|------|--------------|------|-----------------------------------------------------------------------------------------------|
|                    | DCX            | RE   | DCONMS | OAL | LH  | LU | BHTA |              |      |                                                                                               |
| <b>TNF 060-10M</b> | 6              | 3    | 10     | 80  | 30  | 15 | 7.5° | ●            | 2    | NFB 060...                                                                                    |
| <b>060-30-L80</b>  | 6              | 3    | 10     | 80  | 30  | -  | -    | ●            | 1    | NFR 060A...                                                                                   |
| <b>080-08S</b>     | 8              | 4    | 8      | 90  | 20  | -  | -    | ●            | 1    | NFB 080...                                                                                    |
| <b>080-12S</b>     | 8              | 4    | 12     | 100 | 20  | 10 | 9.5° | ●            | 2    | NFR 080A...                                                                                   |
| <b>080-12M</b>     | 8              | 4    | 12     | 130 | 50  | 10 | 3°   | ●            | 2    | NFCB 080...                                                                                   |
| <b>100-10S</b>     | 10             | 5    | 10     | 90  | 30  | -  | -    | ●            | 1    | NFB 100...                                                                                    |
| <b>100-12S</b>     | 10             | 5    | 12     | 110 | 25  | 15 | 5°   | ●            | 2    | NFR 100A...                                                                                   |
| <b>100-16M</b>     | 10             | 5    | 16     | 130 | 60  | 15 | 3.5° | ●            | 2    | NFR 110A...                                                                                   |
| <b>120-12S</b>     | 12             | 6    | 12     | 110 | 30  | -  | -    | ●            | 1    | NFCB 100...                                                                                   |
| <b>120-12M</b>     | 12             | 6    | 12     | 180 | 60  | -  | -    | ●            | 1    | NFB 120...                                                                                    |
| <b>120-16M</b>     | 12             | 6    | 16     | 140 | 60  | 25 | 2.4° | ●            | 2    | NFR 120A...                                                                                   |
| <b>120-20L</b>     | 12             | 6    | 20     | 180 | 80  | 40 | 5°   | ●            | 2    | NFL(C)B 120...                                                                                |
| <b>160-16M</b>     | 16             | 8    | 16     | 130 | 40  | -  | -    | ●            | 1    | NFB 160...                                                                                    |
| <b>160-16L</b>     | 16             | 8    | 16     | 200 | 100 | -  | -    | ●            | 1    | NFR 160A...                                                                                   |
| <b>160-20M</b>     | 16             | 8    | 20     | 160 | 60  | 25 | 2.5° | ●            | 2    | NFR 170A...                                                                                   |
| <b>160-25L</b>     | 16             | 8    | 25     | 220 | 100 | 55 | 5°   | ●            | 2    | NFL(C)B 160...                                                                                |
| <b>200-20S</b>     | 20             | 10   | 20     | 110 | 40  | -  | -    | ●            | 1    | NFB 200...                                                                                    |
| <b>200-20M</b>     | 20             | 10   | 20     | 150 | 50  | -  | -    | ●            | 1    | NFR 200A...                                                                                   |
| <b>200-20L</b>     | 20             | 10   | 20     | 220 | 70  | -  | -    | ●            | 1    | NFR 210A...                                                                                   |
| <b>200-25M</b>     | 20             | 10   | 25     | 180 | 80  | 40 | 2.5° | ●            | 2    | NFL(C)B 210...                                                                                |
| <b>200-25L</b>     | 20             | 10   | 25     | 220 | 110 | 45 | 1.5° | ●            | 2    |                                                                                               |
| <b>250-25S</b>     | 25             | 12.5 | 25     | 125 | 40  | -  | -    | ●            | 1    | NFB 250...                                                                                    |
| <b>250-25M</b>     | 25             | 12.5 | 25     | 170 | 70  | -  | -    | ●            | 1    | NFR 250A...                                                                                   |
| <b>250-32M</b>     | 25             | 12.5 | 32     | 200 | 90  | 32 | 3°   | ●            | 2    | NFR 260A...                                                                                   |
| <b>250-32L</b>     | 25             | 12.5 | 32     | 250 | 130 | 40 | 1.5° | ●            | 2    | NFL(C)B 250...                                                                                |
| <b>300-32S</b>     | 30             | 15   | 32     | 140 | 55  | -  | -    | ●            | 1    | NFB 300...                                                                                    |
| <b>300-32M</b>     | 30             | 15   | 32     | 190 | 75  | -  | -    | ●            | 1    | NFB 320...                                                                                    |
| <b>300-32L</b>     | 30             | 15   | 32     | 250 | 100 | 65 | 1°   | ●            | 2    | NFR 300A...                                                                                   |
| <b>300-32XL</b>    | 30             | 15   | 32     | 300 | 150 | -  | -    | ●            | 1    | NFR 320A...                                                                                   |
| <b>300-32-L220</b> | 30             | 15   | 32     | 220 | 100 | 55 | 1°   | ●            | 2    | NFL(C)B 300...                                                                                |
| <b>320-32L</b>     | 32             | 16   | 32     | 250 | 60  | -  | -    | ●            | 1    | NFB 320...                                                                                    |
|                    |                |      |        |     |     |    |      |              |      | NFR 320A...                                                                                   |
|                    |                |      |        |     |     |    |      |              |      |  E278-E281 |
|                    |                |      |        |     |     |    |      |              |      |                                                                                               |

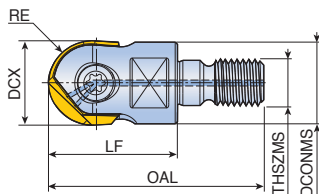
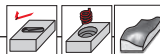


## End mills-carbide shank



| Designation              | Dimension (mm) |      |        |     |     | Insert         |
|--------------------------|----------------|------|--------|-----|-----|----------------|
|                          | DCX            | RE   | DCONMS | OAL | LH  |                |
| <b>TNF 060-06-CT-L60</b> | 6              | 3    | 6      | 60  | 15  | NFB 060...     |
| <b>060-06-CT-L80</b>     | 6              | 3    | 6      | 80  | 20  | NFR 060A...    |
| <b>060-06-CT-L92</b>     | 6              | 3    | 6      | 92  | 35  |                |
| <b>060-06-CT-L120</b>    | 6              | 3    | 6      | 120 | 65  |                |
| <b>060-06-CT-L140</b>    | 6              | 3    | 6      | 140 | 25  |                |
| <b>080-08-CT-L100</b>    | 8              | 4    | 8      | 100 | 30  | NFB 080...     |
| <b>080-10-CT-L140</b>    | 8              | 4    | 10     | 140 | 75  | NFR 080A...    |
| <b>080-08-CT-L160</b>    | 8              | 4    | 8      | 160 | 80  | NFCB 080...    |
| <b>100-10-CT-L100</b>    | 10             | 5    | 10     | 100 | 35  | NFB 100...     |
| <b>100-10-CT-L140</b>    | 10             | 5    | 10     | 140 | 75  | NFR 100A...    |
| <b>100-10-CT-L200</b>    | 10             | 5    | 10     | 200 | 70  | NFR 110A...    |
| <b>100-10-CT-L220</b>    | 10             | 5    | 10     | 220 | 140 | NFCB 110...    |
| <b>120-12-CT-L120</b>    | 12             | 6    | 12     | 120 | 50  | NFB 120...     |
| <b>120-12-CT-L160-S</b>  | 12             | 6    | 12     | 160 | 30  | NFR 120A...    |
| <b>120-12-CT-L160</b>    | 12             | 6    | 12     | 160 | 90  | NFR 130A...    |
| <b>120-12-CT-L200</b>    | 12             | 6    | 12     | 200 | 70  | NFL(C)B 120... |
| <b>120-12-CT-L220</b>    | 12             | 6    | 12     | 220 | 150 |                |
| <b>160-16-CT-L120</b>    | 16             | 8    | 16     | 120 | 60  | NFB 160...     |
| <b>160-16-CT-L160-S</b>  | 16             | 8    | 16     | 160 | 70  | NFR 160A...    |
| <b>160-16-CT-L160</b>    | 16             | 8    | 16     | 160 | 80  | NFR 170A...    |
| <b>160-16-CT-L200</b>    | 16             | 8    | 16     | 200 | 70  | NFL(C)B 160... |
| <b>160-16-CT-L220</b>    | 16             | 8    | 16     | 220 | 150 |                |
| <b>200-20-CT-L200</b>    | 20             | 10   | 20     | 200 | 70  | NFB 200...     |
| <b>200-20-CT-L110</b>    | 20             | 10   | 20     | 110 | 40  | NFR 200A...    |
| <b>200-20-CT-L220</b>    | 20             | 10   | 20     | 220 | 120 | NFR 210A...    |
| <b>200-20-CT-L300</b>    | 20             | 10   | 20     | 300 | 220 | NFL(C)B 200... |
| <b>250-25-CT-L200</b>    | 25             | 12.5 | 25     | 200 | 70  | NFB 250...     |
| <b>250-25-CT-L220-S</b>  | 25             | 12.5 | 25     | 220 | 80  | NFR 250A...    |
| <b>250-25-CT-L220</b>    | 25             | 12.5 | 25     | 220 | 120 | NFR 260A...    |
| <b>250-25-CT-L300</b>    | 25             | 12.5 | 25     | 300 | 220 | NFL(C)B 250... |
| <b>300-32-CT-L200</b>    | 30             | 15   | 32     | 200 | 70  | NFB 300...     |
| <b>300-32-CT-L250-S</b>  | 30             | 15   | 32     | 250 | 80  | NFB 320...     |
| <b>300-32-CT-L250</b>    | 30             | 15   | 32     | 250 | 150 | NFR 300A...    |
| <b>300-32-CT-L350-S</b>  | 30             | 15   | 32     | 350 | 80  | NFR 320A...    |
| <b>300-32-CT-L350</b>    | 30             | 15   | 32     | 350 | 230 | NFL(C)B 300... |
| <b>320-32-CT-L300</b>    | 32             | 16   | 32     | 300 | 220 | NFB 320...     |
|                          |                |      |        |     |     | NFR 320A...    |



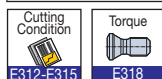


| Designation        | Dimension (mm) |      |        |      |    |        | Coolant hole | Insert                                                            |
|--------------------|----------------|------|--------|------|----|--------|--------------|-------------------------------------------------------------------|
|                    | DCX            | RE   | DCONMS | OAL  | LF | THSZMS |              |                                                                   |
| <b>TNF 100-M06</b> | 10             | 5    | 9.7    | 34.5 | 20 | M06    | ●            | NFB 100...<br>NFR 100A...<br>NFR 110A...<br>NFCB 100...           |
| <b>120-M06</b>     | 12             | 6    | 11.5   | 37.5 | 23 | M06    | ●            | NFB 120...<br>NFR 120A...                                         |
| <b>120-M08</b>     | 12             | 6    | 13     | 40.5 | 23 | M08    | ●            | NFR 130A...<br>NFL(C)B 120...                                     |
| <b>160-M08</b>     | 16             | 8    | 13     | 47.5 | 30 | M08    | ●            | NFB 160...<br>NFR 160A...<br>NFR 170A...<br>NFL(C)B 160...        |
| <b>200-M10</b>     | 20             | 10   | 19     | 50   | 30 | M10    | ●            | NFB 200...<br>NFR 200A...<br>NFR 210A...<br>NFL(C)B 200...        |
| <b>250-M12</b>     | 25             | 12.5 | 24     | 57   | 35 | M12    | ●            | NFB 250...<br>NFR 250A...                                         |
| <b>250-M16</b>     | 25             | 12.5 | 29     | 68   | 43 | M16    | ●            | NFR 260A...<br>NFL(C)B 250...                                     |
| <b>300-M16</b>     | 30             | 15   | 29     | 68   | 43 | M16    | ●            | NFB 300... NFB 320...<br>NFR 300A...NFR 320A...<br>NFL(C)B 300... |
| <b>320-M16</b>     | 32             | 16   | 29.5   | 68   | 43 | M16    | ●            | NFB 320...<br>NFR 320A...                                         |
|                    |                |      |        |      |    |        |              | E278-E281                                                         |

► Matched with T-FLEXTEC holder

## Spare parts

| Designation             | Screw      | Wrench |       |            | Wrench handle |  |
|-------------------------|------------|--------|-------|------------|---------------|--|
|                         |            |        |       |            |               |  |
| <b>TNF 060</b>          | TS 20F060A | TD 6   | -     | -          | -             |  |
| <b>TNF 080</b>          | TS 25F080A | TD 8   | -     | -          | -             |  |
| <b>TNF 100</b>          | TS 30F100A | TD 10  | -     | -          | -             |  |
| <b>TNF 120</b>          | TS 40F120A | TD 15  | -     | -          | -             |  |
| <b>TNF 160</b>          | TS 50F160A | -      | T-T20 | -          | -             |  |
| <b>TNF 200</b>          | TS 60F200A | -      | -     | BLD T25/M7 | SW6-T         |  |
| <b>TNF 250</b>          | TS 70F250A | -      | -     | BLD T25/M7 | SW6-T         |  |
| <b>TNF 300, TNF 320</b> | TS 80F300A | -      | T-T30 | -          | -             |  |



## End mills

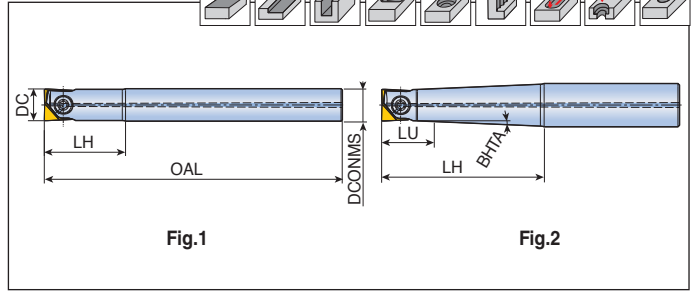
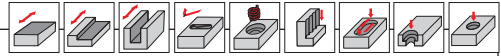


Fig.1

Fig.2

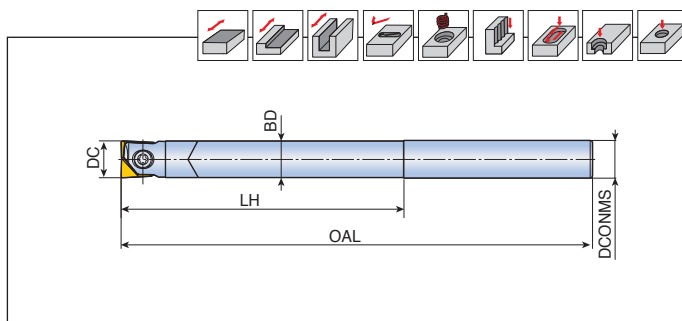
| Designation         | Dimension (mm) |        |     |     |    |      | Coolant hole | Fig. | Insert      |
|---------------------|----------------|--------|-----|-----|----|------|--------------|------|-------------|
|                     | DC             | DCONMS | OAL | LH  | LU | BHTA |              |      |             |
| <b>TNFR 060-10M</b> | 6              | 10     | 80  | 30  | 15 | 9°   | ●            | 2    | NFR 060A... |
| <b>080-12S</b>      | 8              | 12     | 100 | 22  | 10 | 9°   | ●            | 2    | NFR 080A... |
| <b>080-12M</b>      | 8              | 12     | 130 | 50  | 10 | 2.8° | ●            | 2    |             |
| <b>100-12S</b>      | 10             | 12     | 110 | 25  | 15 | 5°   | ●            | 2    | NFR 100A... |
| <b>100-16M</b>      | 10             | 16     | 150 | 50  | 15 | 3.5° | ●            | 2    | NFR 110A... |
| <b>120-12S</b>      | 12             | 12     | 110 | 30  | -  | -    | ●            | 1    | NFR 120A... |
| <b>120-16M</b>      | 12             | 16     | 160 | 60  | 18 | 2.5° | ●            | 2    | NFR 130A... |
| <b>160-16S</b>      | 16             | 16     | 130 | 50  | -  | -    | ●            | 1    | NFR 160A... |
| <b>160-16M</b>      | 16             | 16     | 170 | 70  | -  | -    | ●            | 1    | NFR 170A... |
| <b>160-16L</b>      | 16             | 16     | 200 | 100 | -  | -    | ●            | 1    |             |
| <b>200-20S</b>      | 20             | 20     | 140 | 60  | -  | -    | ●            | 1    | NFR 200A... |
| <b>200-20M</b>      | 20             | 20     | 180 | 80  | -  | -    | ●            | 1    | NFR 210A... |
| <b>200-20L</b>      | 20             | 20     | 250 | 120 | -  | -    | ●            | 1    |             |
| <b>250-25S</b>      | 25             | 25     | 150 | 70  | -  | -    | ●            | 1    | NFR 250A... |
| <b>250-25M</b>      | 25             | 25     | 200 | 100 | -  | -    | ●            | 1    | NFR 260A... |
| <b>250-25L</b>      | 25             | 25     | 250 | 120 | -  | -    | ●            | 1    |             |
| <b>300-32S</b>      | 30             | 32     | 140 | 55  | -  | -    | ●            | 1    | NFR 300A    |
| <b>300-32M</b>      | 30             | 32     | 190 | 75  | -  | -    | ●            | 1    | NFR 320A    |
| <b>300-32L</b>      | 30             | 32     | 250 | 100 | 65 | 1°   | ●            | 2    |             |
| <b>320-32L</b>      | 32             | 32     | 250 | 60  | -  | -    | ●            | 1    | NFR 320A    |
|                     |                |        |     |     |    |      |              |      | E280-E281   |

## Spare parts

| Designation               | Screw      | Wrench |       |            | Wrench handle |  |
|---------------------------|------------|--------|-------|------------|---------------|--|
|                           |            |        |       |            |               |  |
| <b>TNFR 060</b>           | TS 20F060A | TD 6   | -     | -          | -             |  |
| <b>TNFR 080</b>           | TS 25F080A | TD 8   | -     | -          | -             |  |
| <b>TNFR 100</b>           | TS 30F100A | TD 10  | -     | -          | -             |  |
| <b>TNFR 120</b>           | TS 40F120A | TD 15  | -     | -          | -             |  |
| <b>TNFR 160</b>           | TS 50F160A | -      | T-T20 | -          | -             |  |
| <b>TNFR 200</b>           | TS 60F200A | -      | -     | BLD T25/M7 | SW6-T         |  |
| <b>TNFR 250</b>           | TS 70F250A | -      | -     | BLD T25/M7 | SW6-T         |  |
| <b>TNFR 300, TNFR 320</b> | TS 80F300A | -      | T-T30 | -          | -             |  |



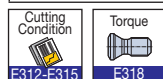
## End mills-carbide shank



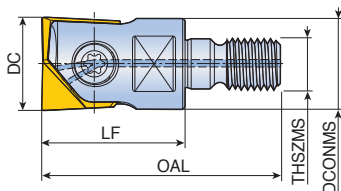
| Designation               | Dimension (mm) |        |      |     |     | Insert      |
|---------------------------|----------------|--------|------|-----|-----|-------------|
|                           | DC             | DCONMS | BD   | OAL | LH  |             |
| <b>TNFR 060-06-CT-L60</b> | 6              | 6      | 5.8  | 60  | 15  | NFR 060A... |
| <b>060-06-CT-L80</b>      | 6              | 6      | 5.8  | 80  | 20  |             |
| <b>080-08-CT-L140</b>     | 8              | 8      | 7.8  | 140 | 75  | NFR 080A... |
| <b>100-10-CT-L140</b>     | 10             | 10     | 9.7  | 140 | 75  | NFR 100A... |
|                           |                |        |      |     |     | NFR 110A... |
| <b>120-12-CT-L160</b>     | 12             | 12     | 11.7 | 160 | 95  | NFR 120A... |
|                           |                |        |      |     |     | NFR 130A... |
| <b>160-16-CT-L200</b>     | 16             | 16     | 15.5 | 200 | 120 | NFR 160A... |
|                           |                |        |      |     |     | NFR 170A... |
| <b>200-20-CT-L250</b>     | 20             | 20     | 19.5 | 250 | 160 | NFR 200A... |
|                           |                |        |      |     |     | NFR 210A... |
| <b>250-25-CT-L300</b>     | 25             | 25     | 24.5 | 300 | 200 | NFR 250A... |
|                           |                |        |      |     |     | NFR 260A... |
| <b>300-32-CT-L350</b>     | 30             | 32     | 29.5 | 350 | 230 | NFR 300A... |
|                           |                |        |      |     |     | NFR 320A... |
| <b>320-32-CT-L350</b>     | 32             | 32     | 31.5 | 350 | 230 | NFR 320A... |
|                           |                |        |      |     |     | E280-E281   |
|                           |                |        |      |     |     |             |
|                           |                |        |      |     |     |             |
|                           |                |        |      |     |     |             |
|                           |                |        |      |     |     |             |

## Spare parts

| Designation               | Screw      | Wrench |       |            | Wrench handle |  |
|---------------------------|------------|--------|-------|------------|---------------|--|
|                           |            |        |       |            |               |  |
| <b>TNFR 060</b>           | TS 20F060A | TD 6   | -     | -          | -             |  |
| <b>TNFR 080</b>           | TS 25F080A | TD 8   | -     | -          | -             |  |
| <b>TNFR 100</b>           | TS 30F100A | TD 10  | -     | -          | -             |  |
| <b>TNFR 120</b>           | TS 40F120A | TD 15  | -     | -          | -             |  |
| <b>TNFR 160</b>           | TS 50F160A | -      | T-T20 | -          | -             |  |
| <b>TNFR 200</b>           | TS 60F200A | -      | -     | BLD T25/M7 | SW6-T         |  |
| <b>TNFR 250</b>           | TS 70F250A | -      | -     | BLD T25/M7 | SW6-T         |  |
| <b>TNFR 300, TNFR 320</b> | TS 80F300A | -      | T-T30 | -          | -             |  |





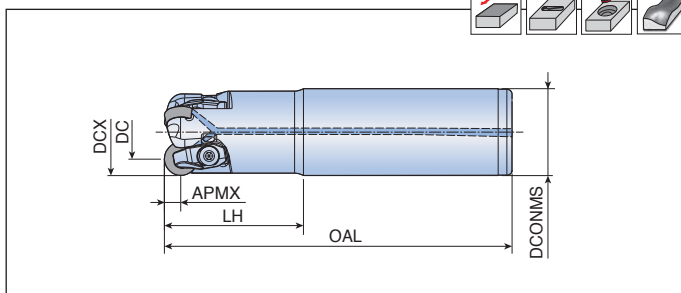
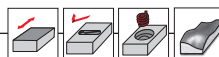
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► Matched with T-FLEXTEC holder

## Spare parts

| Designation               | Screw                                                                               | Wrench                                                                              |                                                                                     |                                                                                     | Wrench handle                                                                       |  |
|---------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                           |  |  |  |  |  |  |
| <b>TNFR 060</b>           | TS 20F060A                                                                          | TD 6                                                                                | -                                                                                   | -                                                                                   | -                                                                                   |  |
| <b>TNFR 080</b>           | TS 25F080A                                                                          | TD 8                                                                                | -                                                                                   | -                                                                                   | -                                                                                   |  |
| <b>TNFR 100</b>           | TS 30F100A                                                                          | TD 10                                                                               | -                                                                                   | -                                                                                   | -                                                                                   |  |
| <b>TNFR 120</b>           | TS 40F120A                                                                          | TD 15                                                                               | -                                                                                   | -                                                                                   | -                                                                                   |  |
| <b>TNFR 160</b>           | TS 50F160A                                                                          | -                                                                                   | T-T20                                                                               | -                                                                                   | -                                                                                   |  |
| <b>TNFR 200</b>           | TS 60F200A                                                                          | -                                                                                   | -                                                                                   | BLD T25/M7                                                                          | SW6-T                                                                               |  |
| <b>TNFR 250</b>           | TS 70F250A                                                                          | -                                                                                   | -                                                                                   | BLD T25/M7                                                                          | SW6-T                                                                               |  |
| <b>TNFR 300, TNFR 320</b> | TS 80F300A                                                                          | -                                                                                   | T-T30                                                                               | -                                                                                   | -                                                                                   |  |



[illegible]

## Spare parts

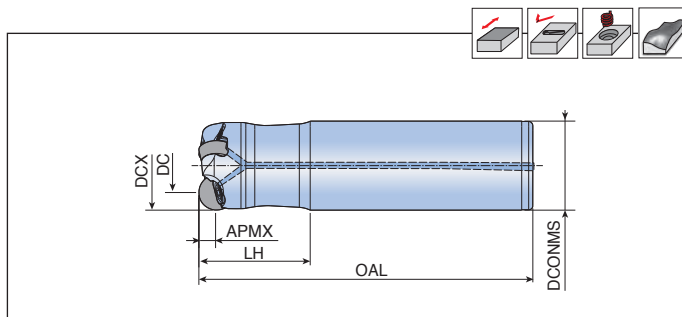
| Designation    | Clamp                                                                               | Screw                                                                               | Snap ring                                                                           | Wrench                                                                              |  |
|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                |  |  |  |  |  |
| <b>TERP-09</b> | CCL-3S-F                                                                            | CLS-35A120                                                                          | CSR 1.25                                                                            | L-W 2                                                                               |  |
|                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |



# TERP-12



## End mills

[illegible]

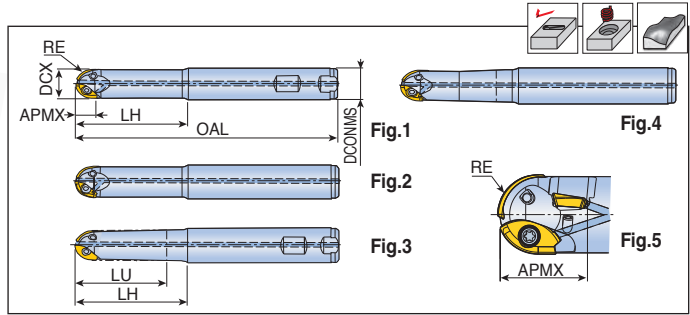
► <sup>(1)</sup> Use only air (Coolant is prohibited)

## Spare parts

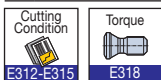
| Designation    | Clamp                                                                               | Screw                                                                               | Wrench                                                                              |  |  |
|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                |  |  |  |  |  |
| <b>TERP-12</b> | WFZ 6-C                                                                             | WS 6                                                                                | T-W 3                                                                               |  |  |
|                |                                                                                     |                                                                                     |                                                                                     |  |  |
|                |                                                                                     |                                                                                     |                                                                                     |  |  |
|                |                                                                                     |                                                                                     |                                                                                     |  |  |



## End mills



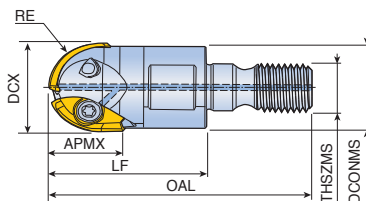
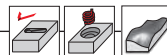
| Designation              | Dimension (mm) |      |        |     |      |       |      |   | Coolant hole | Fig.   | Insert |           |   |  |
|--------------------------|----------------|------|--------|-----|------|-------|------|---|--------------|--------|--------|-----------|---|--|
|                          | DCX            | RE   | DCONMS | OAL | LU   | LH    | APMX |   |              |        | Ball   | Periphery |   |  |
| <b>2F 16-11-W20-L120</b> | 16             | 8    | 20     | 120 | 35.5 | 60    | 11.8 | ● | 3            |        | 2      | -         | - |  |
| <b>16-11-20-L130</b>     | 16             | 8    | 20     | 130 | 45.9 | 60    | 11.8 | ● | 4            | 2FB160 | 2      | -         | - |  |
| <b>16-11-20-L200</b>     | 16             | 8    | 20     | 200 | 45.9 | 60    | 11.8 | ● | 4            |        | 2      | -         | - |  |
| <b>16-20-W20-L120-P</b>  | 16             | 8    | 20     | 120 | 41.8 | 60    | 20.5 | X | 5            | E248   | 2      | APKT 09T3 | 1 |  |
| <b>16-20-25-L200-P</b>   | 16             | 8    | 25     | 200 | 43.4 | 65    | 20.5 | X | 5            |        | 2      | E259      | 1 |  |
| <b>20-13-W25-L105</b>    | 20             | 10   | 25     | 105 | -    | 45    | 13.6 | ● | 1            |        | 2      | -         | - |  |
| <b>20-13-W25-L150</b>    | 20             | 10   | 25     | 150 | 45.7 | 65    | 13.6 | ● | 3            |        | 2      | -         | - |  |
| <b>20-13-20-L220</b>     | 20             | 10   | 20     | 220 | -    | 70    | 13.6 | ● | 2            | 2FB200 | 2      | -         | - |  |
| <b>20-13-25-L160</b>     | 20             | 10   | 25     | 160 | 58.4 | 75    | 13.6 | ● | 4            |        | 2      | -         | - |  |
| <b>20-13-25-L220</b>     | 20             | 10   | 25     | 220 | 65.7 | 85    | 13.6 | ● | 4            | E248   | 2      | -         | - |  |
| <b>20-22-25-L125-P</b>   | 20             | 10   | 25     | 125 | 45.7 | 65    | 22.3 | ● | 5            |        | 2      | APKT 09T3 | 1 |  |
| <b>20-22-25-L200-P</b>   | 20             | 10   | 25     | 200 | 74.3 | 90    | 22.3 | ● | 5            |        | 2      | E259      | 1 |  |
| <b>20-22-32-L250-P</b>   | 20             | 10   | 32     | 250 | 72.3 | 100   | 22.3 | ● | 5            |        | 2      | E259      | 1 |  |
| <b>25-17-W25-L150</b>    | 25             | 12.5 | 25     | 150 | -    | 60    | 17.7 | ● | 1            |        | 2      | -         | - |  |
| <b>25-17-32-L150</b>     | 25             | 12.5 | 32     | 150 | 55.7 | 75    | 17.7 | ● | 4            |        | 2      | -         | - |  |
| <b>25-17-32-L200</b>     | 25             | 12.5 | 32     | 200 | 61.6 | 85    | 17.7 | ● | 4            |        | 2      | -         | - |  |
| <b>25-17-32-L300</b>     | 25             | 12.5 | 32     | 300 | 80   | 120   | 17.7 | ● | 4            | 2FB250 | 2      | -         | - |  |
| <b>25-35-25-L200-P</b>   | 25             | 12.5 | 25     | 200 | -    | 87.5  | 35.1 | ● | 5            |        | 2      | -         | - |  |
| <b>25-35-32-L200-P</b>   | 25             | 12.5 | 32     | 200 | -    | 100   | 35.1 | ● | 5            | E248   | 2      | APKT 09T3 | 2 |  |
| <b>25-35-32-L250-P</b>   | 25             | 12.5 | 32     | 250 | -    | 110   | 35.1 | ● | 5            |        | 2      | E259      | 2 |  |
| <b>25-43-32-L300-P</b>   | 25             | 12.5 | 32     | 300 | -    | 120   | 43.7 | ● | 5            |        | 2      | -         | - |  |
| <b>30-20-W32-L180</b>    | 30             | 15   | 32     | 180 | -    | 86.1  | 20.0 | ● | 1            |        | 2      | -         | - |  |
| <b>30-20-30-L250</b>     | 30             | 15   | 30     | 250 | -    | 104.6 | 20.0 | ● | 2            |        | 2      | -         | - |  |
| <b>30-20-32-L200</b>     | 30             | 15   | 32     | 200 | -    | 86.1  | 20.0 | ● | 2            |        | 2      | -         | - |  |
| <b>30-20-32-L300</b>     | 30             | 15   | 32     | 300 | -    | 126.1 | 20.0 | ● | 2            | 2FB300 | 2      | -         | - |  |
| <b>30-43-32-L160-P</b>   | 30             | 15   | 32     | 160 | -    | 66    | 43.7 | ● | 5            |        | 2      | -         | - |  |
| <b>30-43-32-L200-P</b>   | 30             | 15   | 32     | 200 | -    | 85.6  | 43.7 | ● | 5            | E248   | 2      | APKT 1204 | 2 |  |
| <b>30-43-32-L250-P</b>   | 30             | 15   | 32     | 250 | -    | 125.6 | 43.7 | ● | 5            |        | 2      | E260      | 2 |  |
| <b>30-51-32-L300-P</b>   | 30             | 15   | 32     | 300 | -    | 146   | 55.3 | ● | 5            |        | 2      | -         | - |  |
| <b>32-21-W32-L200</b>    | 32             | 16   | 32     | 200 | -    | 100   | 21.4 | ● | 1            |        | 2      | -         | - |  |
| <b>32-21-32-L180</b>     | 32             | 16   | 32     | 180 | -    | 100   | 21.4 | ● | 2            |        | 2      | -         | - |  |
| <b>32-21-32-L300</b>     | 32             | 16   | 32     | 300 | -    | 130   | 21.4 | ● | 2            |        | 2      | -         | - |  |
| <b>32-44-32-L160-P</b>   | 32             | 16   | 32     | 160 | -    | 66.4  | 44.7 | ● | 5            | 2FB320 | 2      | -         | - |  |
| <b>32-44-32-L200-P</b>   | 32             | 16   | 32     | 200 | -    | 83.7  | 44.7 | ● | 5            |        | 2      | APKT 1204 | 2 |  |
| <b>32-44-32-L250-P</b>   | 32             | 16   | 32     | 250 | -    | 123.7 | 44.7 | ● | 5            | E248   | 2      | E260      | 2 |  |
| <b>32-44-32-L300-P</b>   | 32             | 16   | 32     | 300 | -    | 143.7 | 44.7 | ● | 5            |        | 2      | -         | - |  |



## 2F-M



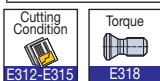
## Modular heads

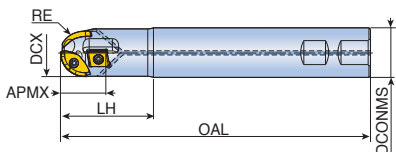
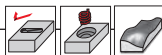
[illegible]

► Matched with T-FLEXTEC holder

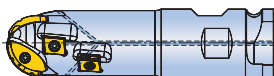
## Spare parts

| Designation             | Screw                                                                               |               | Wrench                                                                              |           |  |
|-------------------------|-------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|-----------|--|
|                         |  |               |  |           |  |
|                         | Ball                                                                                | Periphery     | Ball                                                                                | Periphery |  |
| <b>2FB160/APKT 09T3</b> | TS 25064I                                                                           | TS 25055I/HG  | TD 8                                                                                | TD 8      |  |
| <b>2FB200/APKT 09T3</b> | TS 30085I/HG                                                                        | TS 25055I/HG  | TD 9                                                                                | TD 8      |  |
| <b>2FB250/APKT 09T3</b> | TS 35085I/HG                                                                        | TS 25055I/HG  | TD 15                                                                               | TD 8      |  |
| <b>2FB300/APKT 1204</b> | TS 40A100I                                                                          | TS 35A088I/HG | TD 15                                                                               | TD 10P    |  |
| <b>2FB320/APKT 1204</b> | TS 40A115I                                                                          | TS 35A088I/HG | TD 15                                                                               | TD 10P    |  |





**Fig.1**



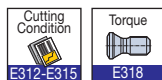
**Fig.2**

[illegible]

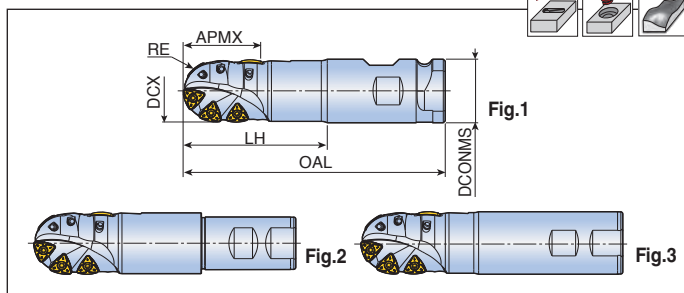
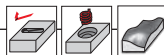
- ▶ When machining over 'APMX', please calculate  $Z=1$
- ▶ Coolant through type

## Spare parts

| Designation  | Screw                                                                               | Wrench                                                                              |                                                                                     |  |  |
|--------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|              |  |  |  |  |  |
| <b>3F 32</b> | TS 40093I                                                                           | TD 15                                                                               | -                                                                                   |  |  |
| <b>3F 50</b> | TS 50115I                                                                           | -                                                                                   | T-T20                                                                               |  |  |
|              |                                                                                     |                                                                                     |                                                                                     |  |  |
|              |                                                                                     |                                                                                     |                                                                                     |  |  |



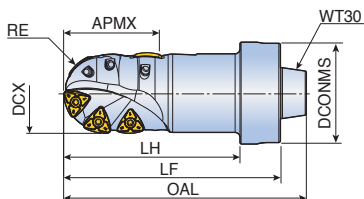
## End mills

[illegible]

| Designation   | Screw                                                                               | Wrench                                                                              |  |  |  |
|---------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|               |  |  |  |  |  |
| <b>TDB50X</b> | TS50B106I/HG                                                                        | T-T20                                                                               |  |  |  |
|               |                                                                                     |                                                                                     |  |  |  |
|               |                                                                                     |                                                                                     |  |  |  |
|               |                                                                                     |                                                                                     |  |  |  |

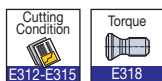


# CHASE 2 BALL



## Spare parts

| Designation      | Screw                                                                               | Wrench                                                                              |  |  |  |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                  |  |  |  |  |  |
| <b>TDB50X-WT</b> | TS50B106I/HG                                                                        | T-T20                                                                               |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |
|                  |                                                                                     |                                                                                     |  |  |  |





## High feed end mills



**Fig.2**

**Fig.3**

- ▶ THFN-CT is carbide shank end mill

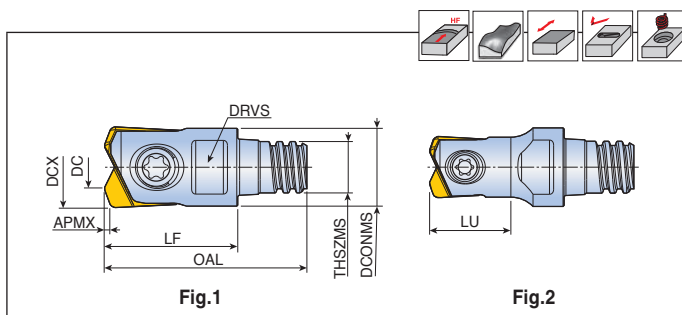
| Designation     | Screw                                                                               | Wrench                                                                              |                                                                                     | Wrench handle                                                                       |  |
|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                 |  |  |  |  |  |
| <b>THFN 060</b> | TS 20F060A                                                                          | TD 6                                                                                | -                                                                                   | -                                                                                   |  |
| <b>THFN 080</b> | TS 25F080A                                                                          | -                                                                                   | TBLD T08-W4                                                                         | THND 4W                                                                             |  |
|                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |



## THFN-S



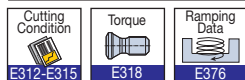
## High feed modular heads

[illegible]

► Matched with MAXI-RUSH holder

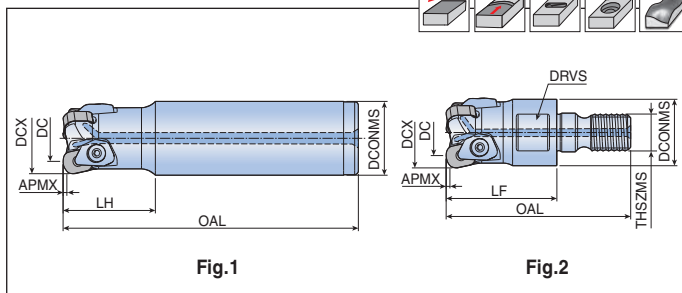
## Spare parts

| Designation     | Screw                                                                               | Wrench                                                                              |                                                                                     | Wrench handle                                                                       |  |
|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                 |  |  |  |  |  |
| <b>THFN 060</b> | TS 20F060A                                                                          | TD 6                                                                                | -                                                                                   | -                                                                                   |  |
| <b>THFN 080</b> | TS 25F080A                                                                          | -                                                                                   | TBLD T08-W4                                                                         | THND 4W                                                                             |  |
|                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |



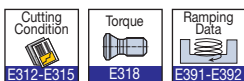


**CERAMICSPEED**  
HIGHPERF & EXOTIC MATERIALS

[illegible]

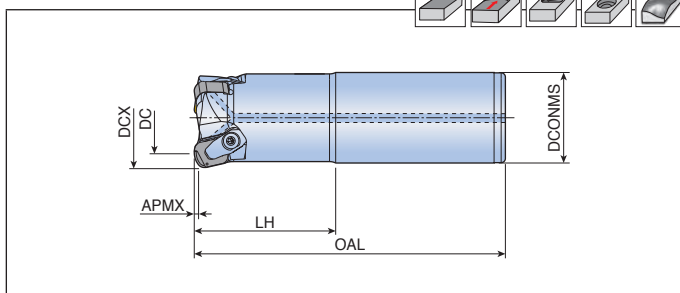
- ▶ Matched with T-FLEXTEC holder(Fig.2)
- ▶ <sup>(1)</sup> Use only air (coolant is prohibited)

| Designation      | Clamp                                                                               | Screw                                                                               | Snap ring                                                                           | Wrench                                                                              |  |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                  |  |  |  |  |  |
| <b>TEBN-06CH</b> | CCL-2S                                                                              | CLS-25A080                                                                          | CSR M2.5                                                                            | L-W 1.5                                                                             |  |
|                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |



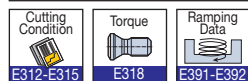


**CERAMICSPEED**  
HARDWARE & SPORTS MATERIALS

[illegible]

## Spare parts

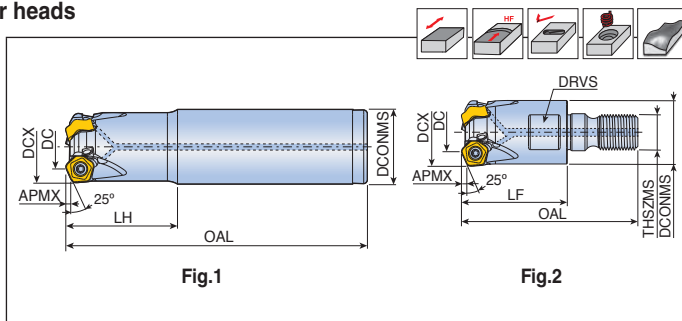
| Designation      | Clamp                                                                               | Screw                                                                               | Snap ring                                                                           | Wrench                                                                              |  |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                  |  |  |  |  |  |
| <b>TEBN-09CH</b> | CCL-3S                                                                              | CLS-35A120/HG                                                                       | CSR 1.25                                                                            | L-W 2                                                                               |  |
|                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |



**TEPT-05/10**



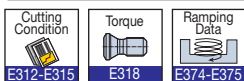
## High feed end mills & modular heads

[illegible]

► Matched with T-FLEXTEC holder(Fig.2)

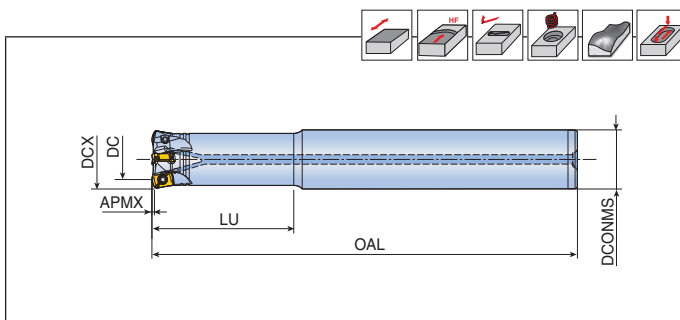
## Spare parts

| Designation    | Screw                                                                               | Wrench                                                                              |                                                                                     | Wrench handle                                                                       |  |
|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                |  |  |  |  |  |
| <b>TEPT-05</b> | TS 25D060/HG-P                                                                      | TD 7P                                                                               | -                                                                                   | -                                                                                   |  |
| <b>TEPT-10</b> | TS 50D130/HG-P                                                                      | -                                                                                   | TBLD T20P-W6                                                                        | THND 6W                                                                             |  |
|                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |



# TEBLV-06

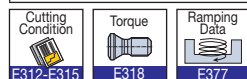
## End mills



| Designation                 |   | Dimension (mm) |      |        |     |    |      | Coolant hole | Insert               |
|-----------------------------|---|----------------|------|--------|-----|----|------|--------------|----------------------|
|                             |   | DCX            | DC   | DCONMS | OAL | LU | APMX |              |                      |
| <b>TEBLV 216-15-06-L150</b> | 2 | 16             | 9.1  | 15     | 150 | 40 | 0.7  | ●            | BLMV 0603...<br>E270 |
| <b>216-16-06-L100</b>       | 2 | 16             | 9.1  | 16     | 100 | 30 | 0.7  | ●            |                      |
| <b>216-16-06-L150</b>       | 2 | 16             | 9.1  | 16     | 150 | 40 | 0.7  | ●            |                      |
| <b>217-16-06-L100</b>       | 2 | 17             | 10.1 | 16     | 100 | 30 | 0.7  | ●            |                      |
| <b>217-16-06-L150</b>       | 2 | 17             | 10.1 | 16     | 150 | 40 | 0.7  | ●            |                      |
| <b>217-16-06-L200</b>       | 2 | 17             | 10.1 | 16     | 200 | 20 | 0.7  | ●            |                      |
| <b>218-16-06-L150</b>       | 2 | 18             | 11.2 | 16     | 150 | 25 | 0.7  | ●            |                      |
| <b>220-20-06-L200</b>       | 2 | 20             | 12   | 20     | 200 | 80 | 1.0  | ●            |                      |
| <b>320-19-06-L180</b>       | 3 | 20             | 12   | 19     | 180 | 80 | 1.0  | ●            |                      |
| <b>320-20-06-L130</b>       | 3 | 20             | 12   | 20     | 130 | 50 | 1.0  | ●            |                      |
| <b>320-20-06-L160</b>       | 3 | 20             | 12   | 20     | 160 | 80 | 1.0  | ●            |                      |
| <b>420-20-06-L130</b>       | 4 | 20             | 12   | 20     | 130 | 50 | 1.0  | ●            |                      |
| <b>321-20-06-L150</b>       | 3 | 21             | 13   | 20     | 150 | 20 | 1.0  | ●            |                      |
| <b>321-20-06-L200</b>       | 3 | 21             | 13   | 20     | 200 | 20 | 1.0  | ●            |                      |
| <b>321-20-06-L250</b>       | 3 | 21             | 13   | 20     | 250 | 20 | 1.0  | ●            |                      |
| <b>325-25-06-L220</b>       | 3 | 25             | 17   | 25     | 220 | 50 | 1.0  | ●            |                      |
| <b>425-24-06-L180</b>       | 4 | 25             | 17   | 24     | 180 | 60 | 1.0  | ●            |                      |
| <b>425-25-06-L140</b>       | 4 | 25             | 17   | 25     | 140 | 60 | 1.0  | ●            |                      |
| <b>425-25-06-L180</b>       | 4 | 25             | 17   | 25     | 180 | 60 | 1.0  | ●            |                      |
| <b>425-25-06-L250</b>       | 4 | 25             | 17   | 25     | 250 | 40 | 1.0  | ●            |                      |
| <b>525-25-06-L140</b>       | 5 | 25             | 17   | 25     | 140 | 60 | 1.0  | ●            |                      |
| <b>326-25-06-L200</b>       | 3 | 26             | 18   | 25     | 200 | 30 | 1.0  | ●            |                      |

## Spare parts

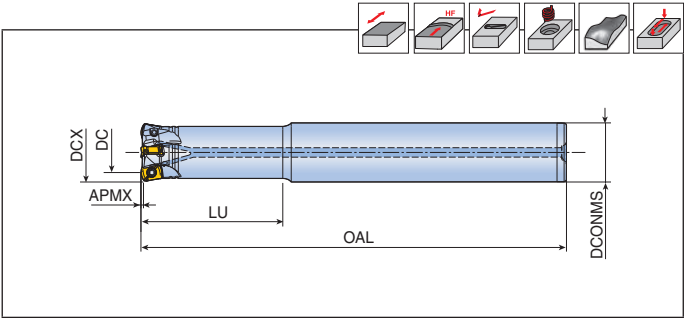
| Designation     | Screw          | Wrench |  |  |  |
|-----------------|----------------|--------|--|--|--|
|                 |                |        |  |  |  |
| <b>TEBLV-06</b> | TS 25064I/HG-P | TD 8P  |  |  |  |
|                 |                |        |  |  |  |
|                 |                |        |  |  |  |
|                 |                |        |  |  |  |



# TEBLV-06



End mills



| Designation          |   | Dimension (mm) |    |        |     |     |      | Coolant hole | Insert               |
|----------------------|---|----------------|----|--------|-----|-----|------|--------------|----------------------|
|                      |   | DCX            | DC | DCONMS | OAL | LU  | APMX |              |                      |
| TEBLV 326-25-06-L250 | 3 | 26             | 18 | 25     | 250 | 30  | 1.0  | ●            | BLMV 0603...<br>E270 |
| 426-25-06-L150       | 4 | 26             | 18 | 25     | 150 | 30  | 1.0  | ●            |                      |
| 426-25-06-L200       | 4 | 26             | 18 | 25     | 200 | 30  | 1.0  | ●            |                      |
| 426-25-06-L250       | 4 | 26             | 18 | 25     | 250 | 30  | 1.0  | ●            |                      |
| 530-32-06-L150       | 5 | 30             | 22 | 32     | 150 | 70  | 1.0  | ●            |                      |
| 530-32-06-L200       | 5 | 30             | 22 | 32     | 200 | 120 | 1.0  | ●            |                      |
| 432-32-06-L150       | 4 | 32             | 24 | 32     | 150 | 70  | 1.0  | ●            |                      |
| 532-32-06-L150       | 5 | 32             | 24 | 32     | 150 | 70  | 1.0  | ●            |                      |
| 532-32-06-L200       | 5 | 32             | 24 | 32     | 200 | 120 | 1.0  | ●            |                      |
| 433-32-06-L220       | 4 | 33             | 25 | 32     | 220 | 40  | 1.0  | ●            |                      |
| 433-32-06-L300       | 4 | 33             | 25 | 32     | 300 | 50  | 1.0  | ●            |                      |
| 533-32-06-L150       | 5 | 33             | 25 | 32     | 150 | 30  | 1.0  | ●            |                      |
| 533-32-06-L200       | 5 | 33             | 25 | 32     | 200 | 40  | 1.0  | ●            |                      |
| 533-32-06-L250       | 5 | 33             | 25 | 32     | 250 | 40  | 1.0  | ●            |                      |
| 435-32-06-L200       | 4 | 35             | 27 | 32     | 200 | 50  | 1.0  | ●            |                      |
| 435-32-06-L300       | 4 | 35             | 27 | 32     | 300 | 50  | 1.0  | ●            |                      |
| 535-32-06-L200       | 5 | 35             | 27 | 32     | 200 | 50  | 1.0  | ●            |                      |
| 535-32-06-L300       | 5 | 35             | 27 | 32     | 300 | 50  | 1.0  | ●            |                      |
| 540-32-06-L220       | 5 | 40             | 32 | 32     | 220 | 40  | 1.0  | ●            |                      |
| 640-32-06-L150       | 6 | 40             | 32 | 32     | 150 | 40  | 1.0  | ●            |                      |
| 640-32-06-L220       | 6 | 40             | 32 | 32     | 220 | 40  | 1.0  | ●            |                      |
| 640-32-06-L250       | 6 | 40             | 32 | 32     | 250 | 40  | 1.0  | ●            |                      |

## Spare parts

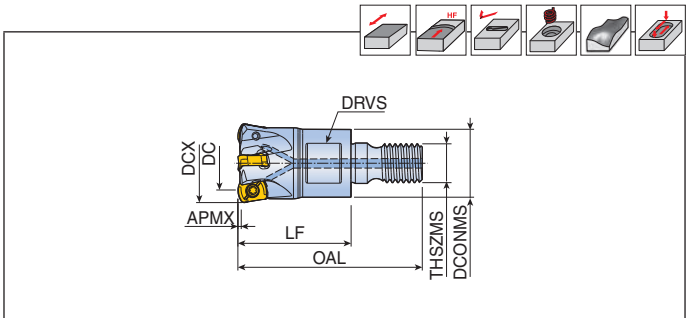
| Designation | Screw          | Wrench |  |  |  |
|-------------|----------------|--------|--|--|--|
|             |                |        |  |  |  |
| TEBLV-06    | TS 25064I/HG-P | TD 8P  |  |  |  |
|             |                |        |  |  |  |
|             |                |        |  |  |  |
|             |                |        |  |  |  |



# TEBLV-M-06



## Modular heads



| Designation |  | Dimension (mm) |    |        |    |     |        |      |      |     | Coolant hole | Insert                                                                                                  |
|-------------|-----------------------------------------------------------------------------------|----------------|----|--------|----|-----|--------|------|------|-----|--------------|---------------------------------------------------------------------------------------------------------|
|             |                                                                                   | DCX            | DC | DCONMS | LF | OAL | THSZMS | DRVS | APMX |     |              |                                                                                                         |
| TEBLV       | 216-M08-06                                                                        | 2              | 16 | 9.1    | 13 | 25  | 42.5   | M08  | 10   | 0.7 | ●            | BLMV 0603...<br> E270 |
|             | 217-M08-06                                                                        | 2              | 17 | 10.1   | 13 | 25  | 42.5   | M08  | 10   | 0.7 | ●            |                                                                                                         |
|             | 218-M08-06                                                                        | 2              | 18 | 11.2   | 13 | 25  | 42.5   | M08  | 10   | 0.7 | ●            |                                                                                                         |
|             | 220-M10-06                                                                        | 2              | 20 | 12     | 18 | 30  | 50     | M10  | 15   | 1.0 | ●            |                                                                                                         |
|             | 320-M10-06                                                                        | 3              | 20 | 12     | 18 | 30  | 50     | M10  | 15   | 1.0 | ●            |                                                                                                         |
|             | 321-M10-06                                                                        | 3              | 21 | 13     | 18 | 30  | 50     | M10  | 15   | 1.0 | ●            |                                                                                                         |
|             | 322-M10-06                                                                        | 3              | 22 | 14     | 18 | 30  | 50     | M10  | 15   | 1.0 | ●            |                                                                                                         |
|             | 325-M12-06                                                                        | 3              | 25 | 17     | 21 | 35  | 57     | M12  | 17   | 1.0 | ●            |                                                                                                         |
|             | 425-M12-06                                                                        | 4              | 25 | 17     | 21 | 35  | 57     | M12  | 17   | 1.0 | ●            |                                                                                                         |
|             | 326-M12-06                                                                        | 3              | 26 | 18     | 21 | 35  | 57     | M12  | 17   | 1.0 | ●            |                                                                                                         |
|             | 426-M12-06                                                                        | 4              | 26 | 18     | 21 | 35  | 57     | M12  | 17   | 1.0 | ●            |                                                                                                         |
|             | 530-M16-06                                                                        | 5              | 30 | 22     | 29 | 40  | 65     | M16  | 25   | 1.0 | ●            |                                                                                                         |
|             | 432-M16-06                                                                        | 4              | 32 | 24     | 29 | 40  | 65     | M16  | 25   | 1.0 | ●            |                                                                                                         |
|             | 532-M16-06                                                                        | 5              | 32 | 24     | 29 | 40  | 65     | M16  | 25   | 1.0 | ●            |                                                                                                         |
|             | 433-M16-06                                                                        | 4              | 33 | 25     | 29 | 40  | 65     | M16  | 25   | 1.0 | ●            |                                                                                                         |
|             | 533-M16-06                                                                        | 5              | 33 | 25     | 29 | 40  | 65     | M16  | 25   | 1.0 | ●            |                                                                                                         |
|             | 435-M16-06                                                                        | 4              | 35 | 27     | 29 | 43  | 68     | M16  | 25   | 1.0 | ●            |                                                                                                         |
|             | 535-M16-06                                                                        | 5              | 35 | 27     | 29 | 43  | 68     | M16  | 25   | 1.0 | ●            |                                                                                                         |
|             | 640-M16-06                                                                        | 6              | 40 | 32     | 29 | 43  | 68     | M16  | 25   | 1.0 | ●            |                                                                                                         |
|             | 542-M16-06                                                                        | 5              | 42 | 34     | 29 | 43  | 68     | M16  | 25   | 1.0 | ●            |                                                                                                         |
|             | 642-M16-06                                                                        | 6              | 42 | 34     | 29 | 43  | 68     | M16  | 25   | 1.0 | ●            |                                                                                                         |

► Matched with T-FLEXTEC holder

## Spare parts

| Designation       | Screw          | Wrench |  |  |  |
|-------------------|----------------|--------|--|--|--|
|                   |                |        |  |  |  |
| <b>TEBLV-M-06</b> | TS 25064I/HG-P | TD 8P  |  |  |  |
|                   |                |        |  |  |  |
|                   |                |        |  |  |  |
|                   |                |        |  |  |  |

Cutting Condition  
E312-E315

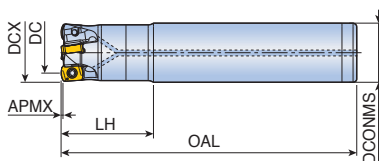
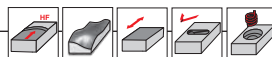
Torque  
E318

Ramping Data  
E377



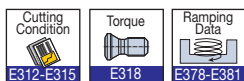
# TEBL-04

## High feed end mills

[illegible]

## Spare parts

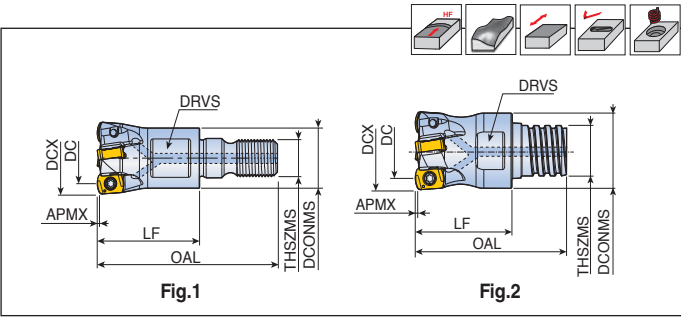
| Designation    | Screw                                                                               | Wrench                                                                              |  |  |  |
|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                |  |  |  |  |  |
| <b>TEBL-04</b> | TS 18041I/HG                                                                        | T 6P                                                                                |  |  |  |
|                |                                                                                     |                                                                                     |  |  |  |
|                |                                                                                     |                                                                                     |  |  |  |
|                |                                                                                     |                                                                                     |  |  |  |
|                |                                                                                     |                                                                                     |  |  |  |



# TEBL-M(S)-04



High feed modular heads

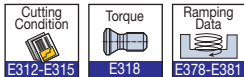


| Designation            |   | Dimension (mm) |      |        |    |      |        |      |      | Coolant hole | Fig. | Insert               |
|------------------------|---|----------------|------|--------|----|------|--------|------|------|--------------|------|----------------------|
|                        |   | DCX            | DC   | DCONMS | LF | OAL  | THSZMS | APMX | DRVS |              |      |                      |
| <b>TEBL 210-M06-04</b> | 2 | 10             | 5.7  | 9.7    | 17 | 31.5 | M06    | 0.5  | 8    | ●            | 1    | BLMP 0402...<br>E268 |
| <b>211-M06-04</b>      | 2 | 11             | 6.6  | 9.7    | 17 | 31.5 | M06    | 0.5  | 8    | ●            | 1    |                      |
| <b>312-M06-04</b>      | 3 | 12             | 7.6  | 11     | 17 | 31.5 | M06    | 0.5  | 8    | ●            | 1    |                      |
| <b>313-M06-04</b>      | 3 | 13             | 8.6  | 11     | 17 | 31.5 | M06    | 0.5  | 8    | ●            | 1    |                      |
| <b>416-M08-04</b>      | 4 | 16             | 11.6 | 13     | 23 | 40.5 | M08    | 0.5  | 10   | ●            | 1    |                      |
| <b>417-M08-04</b>      | 4 | 17             | 12.6 | 13     | 23 | 40.5 | M08    | 0.5  | 10   | ●            | 1    |                      |
| <b>520-M10-04</b>      | 5 | 20             | 15.5 | 18     | 23 | 43   | M10    | 0.5  | 15   | ●            | 1    |                      |
| <b>725-M12-04</b>      | 7 | 25             | 20.6 | 21     | 27 | 49   | M12    | 0.5  | 17   | ●            | 1    |                      |
| <b>832-M16-04</b>      | 8 | 32             | 27.5 | 29     | 27 | 52   | M16    | 0.5  | 25   | ●            | 1    |                      |
| <b>TEBL 210-S06-04</b> | 2 | 10             | 5.6  | 9.6    | 15 | 21.3 | S06    | 0.5  | 8    | ●            | 2    |                      |
| <b>312-S08-04</b>      | 3 | 12             | 7.6  | 11.5   | 16 | 23.5 | S08    | 0.5  | 10   | ●            | 2    |                      |
| <b>416-S10-04</b>      | 4 | 16             | 11.6 | 15.2   | 20 | 31.3 | S10    | 0.5  | 13   | ●            | 2    |                      |
|                        |   |                |      |        |    |      |        |      |      |              |      |                      |
|                        |   |                |      |        |    |      |        |      |      |              |      |                      |
|                        |   |                |      |        |    |      |        |      |      |              |      |                      |
|                        |   |                |      |        |    |      |        |      |      |              |      |                      |
|                        |   |                |      |        |    |      |        |      |      |              |      |                      |
|                        |   |                |      |        |    |      |        |      |      |              |      |                      |
|                        |   |                |      |        |    |      |        |      |      |              |      |                      |
|                        |   |                |      |        |    |      |        |      |      |              |      |                      |
|                        |   |                |      |        |    |      |        |      |      |              |      |                      |
|                        |   |                |      |        |    |      |        |      |      |              |      |                      |

► Matched with T-FLEXTEC holder(Fig.1) & MAXI-RUSH holder(Fig.2)

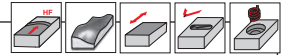
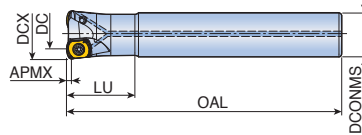
## Spare parts

| Designation    | Screw        | Wrench |  |  |  |
|----------------|--------------|--------|--|--|--|
|                |              |        |  |  |  |
| <b>TEBL-04</b> | TS 18041I/HG | T 6P   |  |  |  |
|                |              |        |  |  |  |
|                |              |        |  |  |  |
|                |              |        |  |  |  |
|                |              |        |  |  |  |

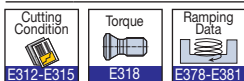


# TEBL-06

High feed end mills



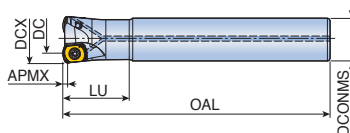
| Designation                |   | Dimension (mm) |      |        |     |     |      | Coolant hole | Insert               |
|----------------------------|---|----------------|------|--------|-----|-----|------|--------------|----------------------|
|                            |   | DCX            | DC   | DCONMS | OAL | LU  | APMX |              |                      |
| <b>TEBL 216-15-06-L150</b> | 2 | 16             | 9.4  | 15     | 150 | 40  | 0.7  | ●            | BLMP 0603...<br>E268 |
| <b>216-16-06</b>           | 2 | 16             | 9.4  | 16     | 150 | 40  | 0.7  | ●            |                      |
| <b>216-16-06-S</b>         | 2 | 16             | 9.4  | 16     | 100 | 30  | 0.7  | ●            |                      |
| <b>217-16-06</b>           | 2 | 17             | 10.1 | 16     | 150 | 40  | 0.7  | ●            |                      |
| <b>217-16-06-S</b>         | 2 | 17             | 10.1 | 16     | 100 | 30  | 0.7  | ●            |                      |
| <b>217-16-06-L200</b>      | 2 | 17             | 10.1 | 16     | 200 | 20  | 0.7  | ●            |                      |
| <b>218-16-06</b>           | 2 | 18             | 11.1 | 16     | 150 | 25  | 0.7  | ●            |                      |
| <b>220-20-06-L200</b>      | 2 | 20             | 12.4 | 20     | 200 | 80  | 1.0  | ●            |                      |
| <b>320-19-06-L180</b>      | 3 | 20             | 12.4 | 19     | 180 | 80  | 1.0  | ●            |                      |
| <b>320-20-06</b>           | 3 | 20             | 12.4 | 20     | 160 | 80  | 1.0  | ●            |                      |
| <b>320-20-06-S</b>         | 3 | 20             | 12.4 | 20     | 130 | 50  | 1.0  | ●            |                      |
| <b>420-20-06-S</b>         | 4 | 20             | 12.4 | 20     | 130 | 50  | 1.0  | ●            |                      |
| <b>321-20-06-S</b>         | 3 | 21             | 13.4 | 20     | 150 | 20  | 1.0  | ●            |                      |
| <b>321-20-06-L200</b>      | 3 | 21             | 13.4 | 20     | 200 | 20  | 1.0  | ●            |                      |
| <b>325-25-06-L220</b>      | 3 | 25             | 17.3 | 25     | 220 | 50  | 1.0  | ●            |                      |
| <b>425-24-06-L180</b>      | 4 | 25             | 17.3 | 24     | 180 | 60  | 1.0  | ●            |                      |
| <b>425-25-06</b>           | 4 | 25             | 17.3 | 25     | 180 | 60  | 1.0  | ●            |                      |
| <b>425-25-06-S</b>         | 4 | 25             | 17.3 | 25     | 140 | 60  | 1.0  | ●            |                      |
| <b>525-25-06-S</b>         | 5 | 25             | 17.3 | 25     | 140 | 60  | 1.0  | ●            |                      |
| <b>425-25-06-L250</b>      | 4 | 25             | 17.3 | 25     | 250 | 40  | 1.0  | ●            |                      |
| <b>326-25-06-L200</b>      | 3 | 26             | 18.3 | 25     | 200 | 30  | 1.0  | ●            |                      |
| <b>326-25-06-L250</b>      | 3 | 26             | 18.3 | 25     | 250 | 30  | 1.0  | ●            |                      |
| <b>426-25-06-S</b>         | 4 | 26             | 18.3 | 25     | 150 | 30  | 1.0  | ●            |                      |
| <b>426-25-06-L200</b>      | 4 | 26             | 18.3 | 25     | 200 | 30  | 1.0  | ●            |                      |
| <b>426-25-06-L250</b>      | 4 | 26             | 18.3 | 25     | 250 | 30  | 1.0  | ●            |                      |
| <b>530-32-06-S</b>         | 5 | 30             | 22.3 | 32     | 150 | 70  | 1.0  | ●            |                      |
| <b>530-32-06-L200</b>      | 5 | 30             | 22.3 | 32     | 200 | 120 | 1.0  | ●            |                      |
| <b>432-32-06-S</b>         | 4 | 32             | 24.3 | 32     | 150 | 70  | 1.0  | ●            |                      |
| <b>532-32-06-S</b>         | 5 | 32             | 24.3 | 32     | 150 | 70  | 1.0  | ●            |                      |
| <b>532-32-06-L200</b>      | 5 | 32             | 24.3 | 32     | 200 | 120 | 1.0  | ●            |                      |
| <b>433-32-06-L220</b>      | 4 | 33             | 25.3 | 32     | 220 | 40  | 1.0  | ●            |                      |
| <b>433-32-06-L300</b>      | 4 | 33             | 25.3 | 32     | 300 | 50  | 1.0  | ●            |                      |
| <b>533-32-06-S</b>         | 5 | 33             | 25.3 | 32     | 150 | 30  | 1.0  | ●            |                      |
| <b>533-32-06-L200</b>      | 5 | 33             | 25.3 | 32     | 200 | 40  | 1.0  | ●            |                      |
| <b>533-32-06-L250</b>      | 5 | 33             | 25.3 | 32     | 250 | 40  | 1.0  | ●            |                      |





The diagram shows five sequential steps of the HF process:

- HF:** A rectangular substrate with a red arrow pointing to a central rectangular area.
- Etching:** The substrate is shown with a wavy, irregular surface, indicating the removal of material.
- Red Arrow:** A red arrow points to the top surface of the substrate, which now has a flat, rectangular area.
- Red Arrow:** A red arrow points to the top surface of the substrate, which now has a rectangular area with a central rectangular hole.
- Red Arrow:** A red arrow points to the top surface of the substrate, which now has a rectangular area with a central rectangular hole and a small rectangular feature on the right side.

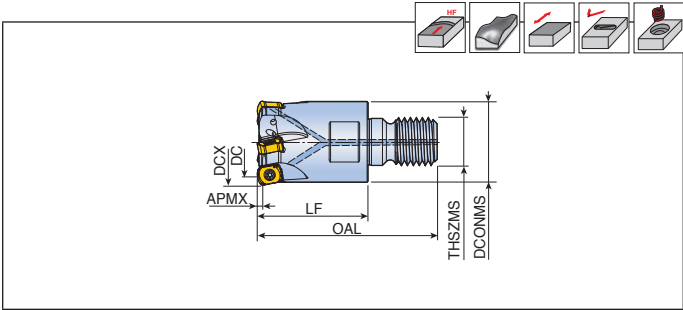
[illegible]

| Designation    | Screw                                                                               | Wrench                                                                              |  |  |  |
|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                |  |  |  |  |  |
| <b>TEBL-06</b> | TS 25064I/HG-P                                                                      | TD 8P                                                                               |  |  |  |
|                |                                                                                     |                                                                                     |  |  |  |
|                |                                                                                     |                                                                                     |  |  |  |
|                |                                                                                     |                                                                                     |  |  |  |



TEBL-M-06

High feed modular heads



| Designation     |  | Dimension (mm) |      |        |    |      |        |      | Coolant hole | Insert                                                                                                                    |
|-----------------|-----------------------------------------------------------------------------------|----------------|------|--------|----|------|--------|------|--------------|---------------------------------------------------------------------------------------------------------------------------|
|                 |                                                                                   | DCX            | DC   | DCONMS | LF | OAL  | THSZMS | APMX |              |                                                                                                                           |
| TEBL 216-M08-06 | 2                                                                                 | 16             | 9.4  | 13     | 25 | 42.5 | M08    | 0.7  | ●            | <div>BLMP 0603...</div> <div> E268</div> |
| 217-M08-06      | 2                                                                                 | 17             | 10.1 | 13     | 25 | 42.5 | M08    | 0.7  | ●            |                                                                                                                           |
| 218-M08-06      | 2                                                                                 | 18             | 11.1 | 13     | 25 | 42.5 | M08    | 0.7  | ●            |                                                                                                                           |
| 220-M10-06      | 2                                                                                 | 20             | 12.4 | 18     | 30 | 50   | M10    | 1.0  | ●            |                                                                                                                           |
| 320-M10-06      | 3                                                                                 | 20             | 12.4 | 18     | 30 | 50   | M10    | 1.0  | ●            |                                                                                                                           |
| 321-M10-06      | 3                                                                                 | 21             | 13.4 | 18     | 30 | 50   | M10    | 1.0  | ●            |                                                                                                                           |
| 322-M10-06      | 3                                                                                 | 22             | 14.4 | 18     | 30 | 50   | M10    | 1.0  | ●            |                                                                                                                           |
| 325-M12-06      | 3                                                                                 | 25             | 17.3 | 21     | 35 | 57   | M12    | 1.0  | ●            |                                                                                                                           |
| 425-M12-06      | 4                                                                                 | 25             | 17.3 | 21     | 35 | 57   | M12    | 1.0  | ●            |                                                                                                                           |
| 326-M12-06      | 3                                                                                 | 26             | 18.3 | 21     | 35 | 57   | M12    | 1.0  | ●            |                                                                                                                           |
| 426-M12-06      | 4                                                                                 | 26             | 18.3 | 21     | 35 | 57   | M12    | 1.0  | ●            |                                                                                                                           |
| 530-M16-06      | 5                                                                                 | 30             | 22.3 | 29     | 40 | 65   | M16    | 1.0  | ●            |                                                                                                                           |
| 432-M16-06      | 4                                                                                 | 32             | 24.3 | 29     | 40 | 65   | M16    | 1.0  | ●            |                                                                                                                           |
| 532-M16-06      | 5                                                                                 | 32             | 24.3 | 29     | 40 | 65   | M16    | 1.0  | ●            |                                                                                                                           |
| 433-M16-06      | 4                                                                                 | 33             | 25.3 | 29     | 40 | 65   | M16    | 1.0  | ●            |                                                                                                                           |
| 533-M16-06      | 5                                                                                 | 33             | 25.3 | 29     | 40 | 65   | M16    | 1.0  | ●            |                                                                                                                           |
| 435-M16-06      | 4                                                                                 | 35             | 27.3 | 29     | 43 | 68   | M16    | 1.0  | ●            |                                                                                                                           |
| 535-M16-06      | 5                                                                                 | 35             | 27.3 | 29     | 43 | 68   | M16    | 1.0  | ●            |                                                                                                                           |
| 640-M16-06      | 6                                                                                 | 40             | 32.2 | 29     | 43 | 68   | M16    | 1.0  | ●            |                                                                                                                           |
| 542-M16-06      | 5                                                                                 | 42             | 34.2 | 29     | 43 | 68   | M16    | 1.0  | ●            |                                                                                                                           |
| 642-M16-06      | 6                                                                                 | 42             | 34.2 | 29     | 43 | 68   | M16    | 1.0  | ●            |                                                                                                                           |

► Matched with T-FLEXTEC holder

Spare parts

| Designation | Screw          | Wrench |  |  |  |
|-------------|----------------|--------|--|--|--|
|             |                |        |  |  |  |
| TEBL-06     | TS 250641/HG-P | TD 8P  |  |  |  |
|             |                |        |  |  |  |
|             |                |        |  |  |  |
|             |                |        |  |  |  |

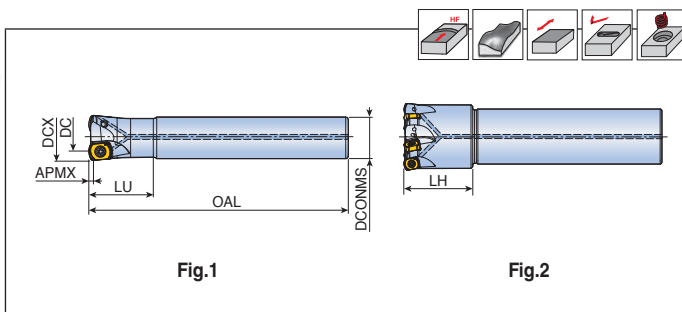
Cutting Condition  
E312-E315

Torque  
E318

Ramping Data  
E378-E381

# TEBL-09

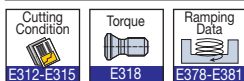
## High feed end mills



| Designation                |   | Dimension (mm) |      |        |     |     |    |      | Coolant hole | Fig. | Insert               |
|----------------------------|---|----------------|------|--------|-----|-----|----|------|--------------|------|----------------------|
|                            |   | DCX            | DC   | DCONMS | OAL | LU  | LH | APMX |              |      |                      |
| <b>TEBL 225-25-09-L150</b> | 2 | 25             | 14.7 | 25     | 150 | 70  | -  | 1.5  | ●            | 1    | BLMP 0904...<br>E268 |
| <b>225-25-09-L200</b>      | 2 | 25             | 14.7 | 25     | 200 | 100 | -  | 1.5  | ●            | 1    |                      |
| <b>325-25-09-L150</b>      | 3 | 25             | 14.7 | 25     | 150 | 70  | -  | 1.5  | ●            | 1    |                      |
| <b>325-25-09-L200</b>      | 3 | 25             | 14.7 | 25     | 200 | 110 | -  | 1.5  | ●            | 1    |                      |
| <b>326-25-09-L150</b>      | 3 | 26             | 15.7 | 25     | 150 | 30  | -  | 1.5  | ●            | 1    |                      |
| <b>326-25-09-L220</b>      | 3 | 26             | 15.7 | 25     | 220 | 30  | -  | 1.5  | ●            | 1    |                      |
| <b>330-32-09-L160</b>      | 3 | 30             | 19.6 | 32     | 160 | 70  | -  | 1.5  | ●            | 1    |                      |
| <b>330-32-09-L220</b>      | 3 | 30             | 19.6 | 32     | 220 | 120 | -  | 1.5  | ●            | 1    |                      |
| <b>332-32-09-L160</b>      | 3 | 32             | 21.6 | 32     | 160 | 70  | -  | 1.5  | ●            | 1    |                      |
| <b>332-32-09-L220</b>      | 3 | 32             | 21.6 | 32     | 220 | 120 | -  | 1.5  | ●            | 1    |                      |
| <b>432-32-09-L160</b>      | 4 | 32             | 21.6 | 32     | 160 | 70  | -  | 1.5  | ●            | 1    |                      |
| <b>432-32-09-L220</b>      | 4 | 32             | 21.6 | 32     | 220 | 120 | -  | 1.5  | ●            | 1    |                      |
| <b>433-32-09-L180</b>      | 4 | 33             | 22.6 | 32     | 180 | 30  | -  | 1.5  | ●            | 1    |                      |
| <b>433-32-09-L250</b>      | 4 | 33             | 22.6 | 32     | 250 | 30  | -  | 1.5  | ●            | 1    |                      |
| <b>440-32-09-L180</b>      | 4 | 40             | 29.6 | 32     | 180 | -   | 40 | 1.5  | ●            | 2    |                      |
| <b>440-32-09-L250</b>      | 4 | 40             | 29.6 | 32     | 250 | -   | 40 | 1.5  | ●            | 2    |                      |
| <b>540-32-09-L180</b>      | 5 | 40             | 29.6 | 32     | 180 | -   | 40 | 1.5  | ●            | 2    |                      |
| <b>540-32-09-L250</b>      | 5 | 40             | 29.6 | 32     | 250 | -   | 40 | 1.5  | ●            | 2    |                      |
|                            |   |                |      |        |     |     |    |      |              |      |                      |
|                            |   |                |      |        |     |     |    |      |              |      |                      |

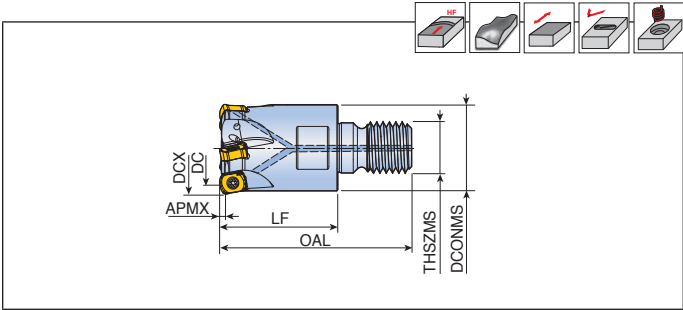
## Spare parts

| Designation    | Screw        | Wrench |  |  |  |
|----------------|--------------|--------|--|--|--|
|                |              |        |  |  |  |
| <b>TEBL-09</b> | TS 35A088/HG | TD 10P |  |  |  |
|                |              |        |  |  |  |
|                |              |        |  |  |  |
|                |              |        |  |  |  |



TEBL-M-09

High feed modular heads



| Designation     |   | Dimension (mm) |      |        |    |     |        |      | Coolant hole | Insert               |
|-----------------|---|----------------|------|--------|----|-----|--------|------|--------------|----------------------|
|                 |   | DCX            | DC   | DCONMS | LF | OAL | THSZMS | APMX |              |                      |
| TEBL 225-M12-09 | 2 | 25             | 14.7 | 21     | 35 | 57  | M12    | 1.5  | ●            | BLMP 0904...<br>E268 |
| 325-M12-09      | 3 | 25             | 14.7 | 21     | 35 | 57  | M12    | 1.5  | ●            |                      |
| 326-M12-09      | 3 | 26             | 15.7 | 21     | 35 | 57  | M12    | 1.5  | ●            |                      |
| 330-M16-09      | 3 | 30             | 19.6 | 29     | 43 | 68  | M16    | 1.5  | ●            |                      |
| 332-M16-09      | 3 | 32             | 21.6 | 29     | 43 | 68  | M16    | 1.5  | ●            |                      |
| 432-M16-09      | 4 | 32             | 21.6 | 29     | 43 | 68  | M16    | 1.5  | ●            |                      |
| 433-M16-09      | 4 | 33             | 22.6 | 29     | 43 | 68  | M16    | 1.5  | ●            |                      |
| 335-M16-09      | 3 | 35             | 24.6 | 29     | 43 | 68  | M16    | 1.5  | ●            |                      |
| 435-M16-09      | 4 | 35             | 24.6 | 29     | 43 | 68  | M16    | 1.5  | ●            |                      |
| 440-M16-09      | 4 | 40             | 29.6 | 29     | 43 | 68  | M16    | 1.5  | ●            |                      |
| 540-M16-09      | 5 | 40             | 29.6 | 29     | 43 | 68  | M16    | 1.5  | ●            |                      |
| 542-M16-09      | 5 | 42             | 31.6 | 29     | 43 | 68  | M16    | 1.5  | ●            |                      |
|                 |   |                |      |        |    |     |        |      |              |                      |
|                 |   |                |      |        |    |     |        |      |              |                      |
|                 |   |                |      |        |    |     |        |      |              |                      |
|                 |   |                |      |        |    |     |        |      |              |                      |
|                 |   |                |      |        |    |     |        |      |              |                      |

► Matched with T-FLEXTEC holder

Spare parts

| Designation | Screw         | Wrench |  |  |  |
|-------------|---------------|--------|--|--|--|
|             |               |        |  |  |  |
| TEBL-09     | TS 35A0881/HG | TD 10P |  |  |  |
|             |               |        |  |  |  |
|             |               |        |  |  |  |
|             |               |        |  |  |  |

Cutting Condition

E312-E315

Torque

E318

Ramping Data

E378-E381

# TEBL-11



High feed end mills & modular heads

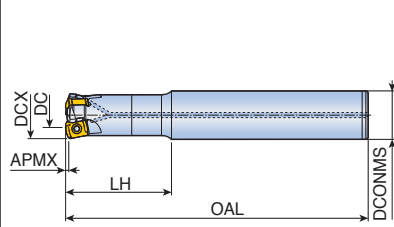


Fig.1

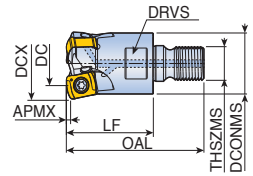
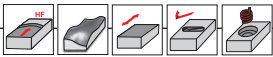


Fig.2

| Designation                |  | Dimension (mm) |      |        |     |        |    |    |      |      |   | Coolant hole | Fig.                                                                               | Insert |
|----------------------------|-----------------------------------------------------------------------------------|----------------|------|--------|-----|--------|----|----|------|------|---|--------------|------------------------------------------------------------------------------------|--------|
|                            |                                                                                   | DCX            | DC   | DCONMS | OAL | THSZMS | LH | LF | APMX | DRVS |   |              |                                                                                    |        |
| <b>TEBL 230-32-11-L150</b> | 2                                                                                 | 30             | 14.7 | 32     | 150 | -      | 70 | -  | 2.0  | -    | ● | 1            |  |        |
| <b>232-32-11-L150</b>      | 2                                                                                 | 32             | 16.6 | 32     | 150 | -      | 70 | -  | 2.0  | -    | ● | 1            |                                                                                    |        |
| <b>232-32-11-L200</b>      | 2                                                                                 | 32             | 16.6 | 32     | 200 | -      | 70 | -  | 2.0  | -    | ● | 1            |                                                                                    |        |
| <b>332-32-11-L200</b>      | 3                                                                                 | 32             | 16.6 | 32     | 200 | -      | 70 | -  | 2.0  | -    | ● | 1            |                                                                                    |        |
| <b>233-32-11-L200</b>      | 2                                                                                 | 33             | 17.6 | 32     | 200 | -      | 40 | -  | 2.0  | -    | ● | 1            |                                                                                    |        |
| <b>233-32-11-L250</b>      | 2                                                                                 | 33             | 17.6 | 32     | 250 | -      | 50 | -  | 2.0  | -    | ● | 1            |                                                                                    |        |
| <b>333-32-11-L250</b>      | 3                                                                                 | 33             | 17.6 | 32     | 250 | -      | 50 | -  | 2.0  | -    | ● | 1            |                                                                                    |        |
| <b>335-32-11-L200</b>      | 3                                                                                 | 35             | 19.5 | 32     | 200 | -      | 40 | -  | 2.0  | -    | ● | 1            |                                                                                    |        |
| <b>340-32-11-L150</b>      | 3                                                                                 | 40             | 24.4 | 32     | 150 | -      | 40 | -  | 2.0  | -    | ● | 1            |                                                                                    |        |
| <b>340-32-11-L200</b>      | 3                                                                                 | 40             | 24.4 | 32     | 200 | -      | 40 | -  | 2.0  | -    | ● | 1            |                                                                                    |        |
| <b>440-32-11-L200</b>      | 4                                                                                 | 40             | 24.4 | 32     | 200 | -      | 40 | -  | 2.0  | -    | ● | 1            |                                                                                    |        |
| <b>TEBL 230-M16-11</b>     | 2                                                                                 | 30             | 14.7 | 29     | 68  | M16    | -  | 43 | 2.0  | 25   | ● | 2            |                                                                                    |        |
| <b>232-M16-11</b>          | 2                                                                                 | 32             | 16.6 | 29     | 68  | M16    | -  | 43 | 2.0  | 25   | ● | 2            |                                                                                    |        |
| <b>233-M16-11</b>          | 2                                                                                 | 33             | 17.6 | 29     | 68  | M16    | -  | 43 | 2.0  | 25   | ● | 2            |                                                                                    |        |
| <b>335-M16-11</b>          | 3                                                                                 | 35             | 19.5 | 29     | 68  | M16    | -  | 43 | 2.0  | 25   | ● | 2            |                                                                                    |        |
| <b>340-M16-11</b>          | 3                                                                                 | 40             | 24.4 | 29     | 68  | M16    | -  | 43 | 2.0  | 25   | ● | 2            |                                                                                    |        |
| <b>342-M16-11</b>          | 3                                                                                 | 42             | 26.4 | 29     | 68  | M16    | -  | 43 | 2.0  | 25   | ● | 2            |                                                                                    |        |
|                            |                                                                                   |                |      |        |     |        |    |    |      |      |   |              |                                                                                    |        |
|                            |                                                                                   |                |      |        |     |        |    |    |      |      |   |              |                                                                                    |        |
|                            |                                                                                   |                |      |        |     |        |    |    |      |      |   |              |                                                                                    |        |
|                            |                                                                                   |                |      |        |     |        |    |    |      |      |   |              |                                                                                    |        |

► Matched with T-FLEXTEC holder(Fig.2)

## Spare parts

| Designation    | Screw         | Wrench      | Wrench handle |  |  |
|----------------|---------------|-------------|---------------|--|--|
|                |               |             |               |  |  |
| <b>TEBL-11</b> | TS 50A1211/HG | TBLD T20-W6 | THND 6W       |  |  |
|                |               |             |               |  |  |
|                |               |             |               |  |  |
|                |               |             |               |  |  |

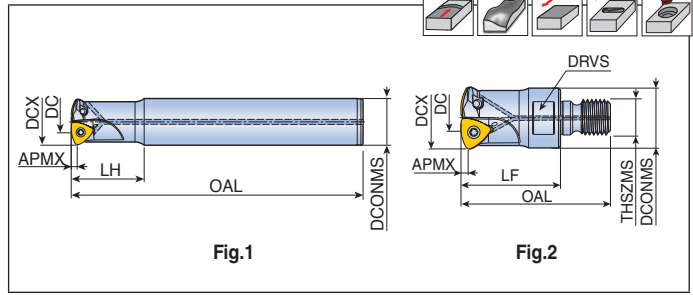
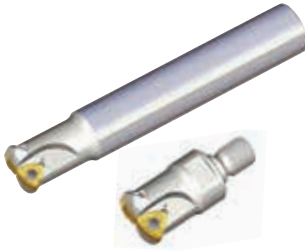




# TEBL-13



## High feed end mills & Modular heads

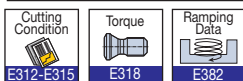


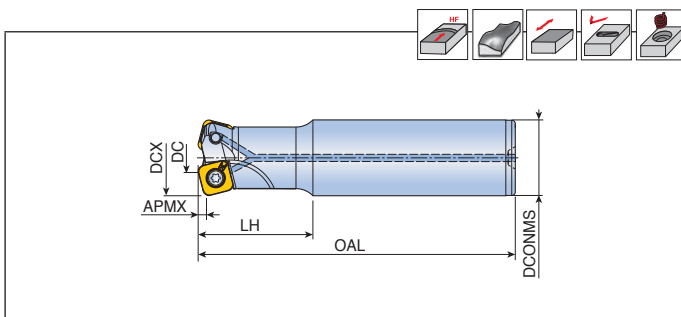
| Designation                |  | Dimension (mm) |      |        |     |        |     |    |      |      |   | Coolant hole | Fig.                                                                                                   | Insert |
|----------------------------|-----------------------------------------------------------------------------------|----------------|------|--------|-----|--------|-----|----|------|------|---|--------------|--------------------------------------------------------------------------------------------------------|--------|
|                            |                                                                                   | DCX            | DC   | DCONMS | OAL | THSZMS | LH  | LF | APMX | DRVS |   |              |                                                                                                        |        |
| <b>TEBL 232-32-13-L150</b> | 2                                                                                 | 32             | 12.9 | 32     | 150 | -      | 50  | -  | 2.0  | -    | ● | 1            | BLMP 1306...<br> E269 |        |
| <b>232-32-13-L200</b>      | 2                                                                                 | 32             | 12.9 | 32     | 200 | -      | 80  | -  | 2.0  | -    | ● | 1            |                                                                                                        |        |
| <b>232-32-13-L</b>         | 2                                                                                 | 32             | 12.9 | 32     | 200 | -      | 120 | -  | 2.0  | -    | ● | 1            |                                                                                                        |        |
| <b>233-32-13-L200</b>      | 2                                                                                 | 33             | 14.3 | 32     | 200 | -      | 50  | -  | 2.0  | -    | ● | 1            |                                                                                                        |        |
| <b>233-32-13-L250</b>      | 2                                                                                 | 33             | 14.3 | 32     | 250 | -      | 50  | -  | 2.0  | -    | ● | 1            |                                                                                                        |        |
| <b>235-32-13-L200</b>      | 2                                                                                 | 35             | 16.1 | 32     | 200 | -      | 30  | -  | 2.0  | -    | ● | 1            |                                                                                                        |        |
| <b>240-42-13-XL</b>        | 2                                                                                 | 40             | 20.7 | 42     | 300 | -      | 120 | -  | 2.0  | -    | ● | 1            |                                                                                                        |        |
| <b>340-32-13-L150</b>      | 3                                                                                 | 40             | 20.7 | 32     | 150 | -      | 40  | -  | 2.0  | -    | ● | 1            |                                                                                                        |        |
| <b>340-32-13-L200</b>      | 3                                                                                 | 40             | 20.7 | 32     | 200 | -      | 70  | -  | 2.0  | -    | ● | 1            |                                                                                                        |        |
| <b>340-42-13-S</b>         | 3                                                                                 | 40             | 20.7 | 42     | 150 | -      | 70  | -  | 2.0  | -    | ● | 1            |                                                                                                        |        |
| <b>TEBL 232-M16-13</b>     | 2                                                                                 | 32             | 12.9 | 30     | 75  | M16    | -   | 50 | 2.0  | 25   | ● | 2            |                                                                                                        |        |
| <b>233-M16-13</b>          | 2                                                                                 | 33             | 14.3 | 30     | 75  | M16    | -   | 50 | 2.0  | 25   | ● | 2            |                                                                                                        |        |
| <b>235-M16-13</b>          | 2                                                                                 | 35             | 16.1 | 30     | 75  | M16    | -   | 50 | 2.0  | 25   | ● | 2            |                                                                                                        |        |
| <b>340-M16-13</b>          | 3                                                                                 | 40             | 20.7 | 30     | 75  | M16    | -   | 50 | 2.0  | 25   | ● | 2            |                                                                                                        |        |
| <b>342-M16-13</b>          | 3                                                                                 | 42             | 22.6 | 30     | 75  | M16    | -   | 50 | 2.0  | 25   | ● | 2            |                                                                                                        |        |
|                            |                                                                                   |                |      |        |     |        |     |    |      |      |   |              |                                                                                                        |        |
|                            |                                                                                   |                |      |        |     |        |     |    |      |      |   |              |                                                                                                        |        |
|                            |                                                                                   |                |      |        |     |        |     |    |      |      |   |              |                                                                                                        |        |
|                            |                                                                                   |                |      |        |     |        |     |    |      |      |   |              |                                                                                                        |        |
|                            |                                                                                   |                |      |        |     |        |     |    |      |      |   |              |                                                                                                        |        |

► Matched with T-FLEXTEC holder(Fig.2)

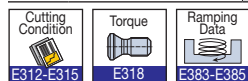
## Spare parts

| Designation    | Screw        | Wrench |  |  |  |
|----------------|--------------|--------|--|--|--|
|                |              |        |  |  |  |
| <b>TEBL-13</b> | TS50B106I/HG | T-T20  |  |  |  |
|                |              |        |  |  |  |
|                |              |        |  |  |  |
|                |              |        |  |  |  |

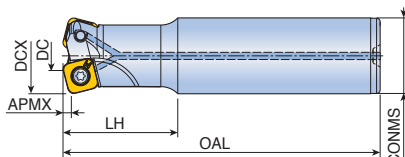
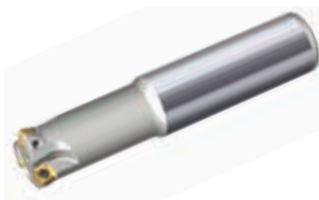
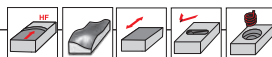




| Designation                |   | Dimension (mm) |      |        |     |    |      | Coolant hole | Insert               |
|----------------------------|---|----------------|------|--------|-----|----|------|--------------|----------------------|
|                            |   | DCX            | DC   | DCONMS | OAL | LH | APMX |              |                      |
| <b>TESB 216-16-06-L150</b> | 2 | 16             | 5.9  | 16     | 150 | 40 | 1.0  | ●            | SBMT 0603...<br>E287 |
| <b>217-16-06-L200</b>      | 2 | 17             | 6.8  | 16     | 200 | 20 | 1.0  | ●            |                      |
| <b>320-20-06-L160</b>      | 3 | 20             | 9.8  | 20     | 160 | 50 | 1.0  | ●            |                      |
| <b>420-20-06-L130</b>      | 4 | 20             | 9.8  | 20     | 130 | 50 | 1.0  | ●            |                      |
| <b>321-20-06-L200</b>      | 3 | 21             | 10.7 | 20     | 200 | 20 | 1.0  | ●            |                      |
| <b>425-25-06-L180</b>      | 4 | 25             | 14.8 | 25     | 180 | 60 | 1.0  | ●            |                      |
| <b>525-25-06-L140</b>      | 5 | 25             | 14.8 | 25     | 140 | 60 | 1.0  | ●            |                      |
| <b>532-32-06-L200</b>      | 5 | 32             | 21.8 | 32     | 200 | 80 | 1.0  | ●            | SBMT 0904...<br>E287 |
| <b>TESB 225-25-09-L150</b> | 2 | 25             | 10.8 | 25     | 150 | 70 | 1.2  | ●            |                      |
| <b>225-25-09-L200</b>      | 2 | 25             | 10.8 | 25     | 200 | 70 | 1.2  | ●            |                      |
| <b>325-25-09-L150</b>      | 3 | 25             | 10.8 | 25     | 150 | 70 | 1.2  | ●            |                      |
| <b>325-25-09-L200</b>      | 3 | 25             | 10.8 | 25     | 200 | 70 | 1.2  | ●            |                      |
| <b>226-25-09-L200</b>      | 2 | 26             | 11.7 | 25     | 200 | 30 | 1.2  | ●            |                      |
| <b>226-25-09-L250</b>      | 2 | 26             | 11.7 | 25     | 250 | 30 | 1.2  | ●            |                      |
| <b>326-25-09-L150</b>      | 3 | 26             | 11.7 | 25     | 150 | 30 | 1.2  | ●            |                      |
| <b>326-25-09-L200</b>      | 3 | 26             | 11.7 | 25     | 200 | 30 | 1.2  | ●            |                      |
| <b>326-25-09-L250</b>      | 3 | 26             | 11.7 | 25     | 250 | 30 | 1.2  | ●            |                      |
| <b>330-32-09-L200</b>      | 3 | 30             | 15.5 | 32     | 200 | 70 | 1.2  | ●            |                      |
| <b>332-32-09-L160</b>      | 3 | 32             | 17.4 | 32     | 160 | 70 | 1.2  | ●            |                      |
| <b>332-32-09-L200</b>      | 3 | 32             | 17.4 | 32     | 200 | 70 | 1.2  | ●            |                      |
| <b>332-32-09-L300</b>      | 3 | 32             | 17.4 | 32     | 300 | 70 | 1.2  | ●            |                      |
| <b>432-32-09-L160</b>      | 4 | 32             | 17.4 | 32     | 160 | 70 | 1.2  | ●            |                      |
| <b>432-32-09-L220</b>      | 4 | 32             | 17.4 | 32     | 220 | 70 | 1.2  | ●            |                      |
| <b>233-32-09-L250</b>      | 2 | 33             | 18.4 | 32     | 250 | 30 | 1.2  | ●            |                      |
| <b>333-32-09-L250</b>      | 3 | 33             | 18.4 | 32     | 250 | 30 | 1.2  | ●            |                      |
| <b>333-32-09-L300</b>      | 3 | 33             | 18.4 | 32     | 300 | 30 | 1.2  | ●            |                      |
| <b>433-32-09-L180</b>      | 4 | 33             | 18.4 | 32     | 180 | 30 | 1.2  | ●            |                      |
| <b>433-32-09-L250</b>      | 4 | 33             | 18.4 | 32     | 250 | 30 | 1.2  | ●            |                      |
| <b>335-32-09-L250</b>      | 3 | 35             | 20.4 | 32     | 250 | 30 | 1.2  | ●            |                      |
| <b>440-32-09-L250</b>      | 4 | 40             | 25.4 | 32     | 250 | 40 | 1.2  | ●            |                      |
| <b>440-32-09-L300</b>      | 4 | 40             | 25.4 | 32     | 300 | 40 | 1.2  | ●            |                      |
| <b>540-32-09-L180</b>      | 5 | 40             | 25.4 | 32     | 180 | 40 | 1.2  | ●            |                      |
| <b>540-32-09-L250</b>      | 5 | 40             | 25.4 | 32     | 250 | 40 | 1.2  | ●            |                      |
|                            |   |                |      |        |     |    |      |              |                      |
|                            |   |                |      |        |     |    |      |              |                      |



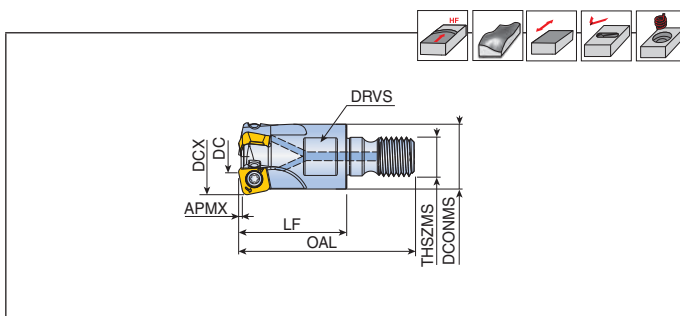
## High feed end mills

[illegible]

| Designation    | Screw                                                                               | Wrench                                                                              |                                                                                     |  |  |
|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                |  |  |  |  |  |
| <b>TESB-06</b> | TS 250648/HG-P                                                                      | TD 8P                                                                               | -                                                                                   |  |  |
| <b>TESB-09</b> | TS 35A088/HG                                                                        | TD 10P                                                                              | -                                                                                   |  |  |
| <b>TESB-13</b> | TS 50115I                                                                           | -                                                                                   | T-T20                                                                               |  |  |
|                |                                                                                     |                                                                                     |                                                                                     |  |  |



## High feed modular heads

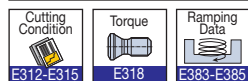


| Designation            |   | Dimension (mm) |      |        |    |      |        |      |      | Coolant hole | Insert       |
|------------------------|---|----------------|------|--------|----|------|--------|------|------|--------------|--------------|
|                        |   | DCX            | DC   | DCONMS | LF | OAL  | THSZMS | APMX | DRVS |              |              |
| <b>TESB 216-M08-06</b> | 2 | 16             | 5.9  | 13     | 25 | 42.5 | M08    | 1.0  | 10   | ●            | SBMT 0603... |
| <b>320-M10-06</b>      | 3 | 20             | 9.8  | 18     | 30 | 50   | M10    | 1.0  | 15   | ●            | E287         |
| <b>425-M12-06</b>      | 4 | 25             | 14.8 | 21     | 35 | 57   | M12    | 1.0  | 17   | ●            |              |
| <b>532-M16-06</b>      | 5 | 32             | 21.8 | 29     | 40 | 65   | M16    | 1.0  | 25   | ●            |              |
| <b>TESB 225-M12-09</b> | 2 | 25             | 10.8 | 21     | 35 | 57   | M12    | 1.2  | 17   | ●            | SBMT 0904... |
| <b>325-M12-09</b>      | 3 | 25             | 10.8 | 21     | 35 | 57   | M12    | 1.2  | 17   | ●            | E287         |
| <b>332-M16-09</b>      | 3 | 32             | 17.4 | 29     | 43 | 68   | M16    | 1.2  | 25   | ●            |              |
| <b>432-M16-09</b>      | 4 | 32             | 17.4 | 29     | 43 | 68   | M16    | 1.2  | 25   | ●            |              |
| <b>435-M16-09</b>      | 4 | 35             | 20.4 | 29     | 43 | 68   | M16    | 1.2  | 25   | ●            |              |
| <b>440-M16-09</b>      | 4 | 40             | 25.4 | 29     | 43 | 68   | M16    | 1.2  | 25   | ●            |              |
| <b>540-M16-09</b>      | 5 | 40             | 25.4 | 29     | 43 | 68   | M16    | 1.2  | 25   | ●            |              |
| <b>542-M16-09</b>      | 5 | 42             | 27.4 | 29     | 43 | 68   | M16    | 1.2  | 25   | ●            |              |
| <b>TESB 232-M16-13</b> | 2 | 32             | 11.6 | 29     | 50 | 75   | M16    | 2.0  | 25   | ●            | SBMT 1306... |
| <b>233-M16-13</b>      | 2 | 33             | 12.6 | 29     | 50 | 75   | M16    | 2.0  | 25   | ●            | E287         |
| <b>340-M16-13</b>      | 3 | 40             | 19.5 | 29     | 50 | 75   | M16    | 2.0  | 25   | ●            |              |
| <b>342-M16-13</b>      | 3 | 42             | 21.5 | 29     | 50 | 75   | M16    | 2.0  | 25   | ●            |              |
|                        |   |                |      |        |    |      |        |      |      |              |              |
|                        |   |                |      |        |    |      |        |      |      |              |              |
|                        |   |                |      |        |    |      |        |      |      |              |              |
|                        |   |                |      |        |    |      |        |      |      |              |              |
|                        |   |                |      |        |    |      |        |      |      |              |              |

► Matched with T-FLEXTEC holder

## Spare parts

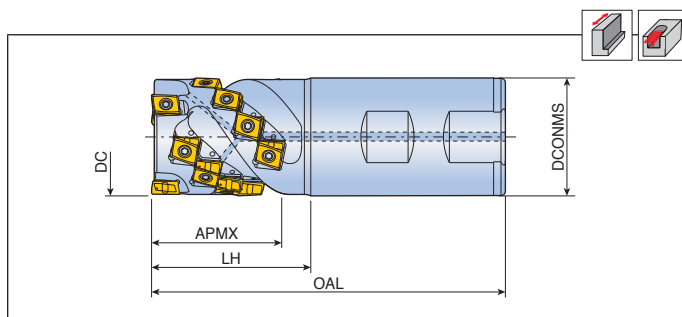
| Designation    | Screw           | Wrench |       |  |  |
|----------------|-----------------|--------|-------|--|--|
|                |                 |        |       |  |  |
| <b>TESB-06</b> | TS 250648I/HG-P | TD 8P  | -     |  |  |
| <b>TESB-09</b> | TS 35A088I/HG   | TD 10P | -     |  |  |
| <b>TESB-13</b> | TS 50115I       | -      | T-T20 |  |  |
|                |                 |        |       |  |  |
|                |                 |        |       |  |  |



**4T-TEF-05/09**



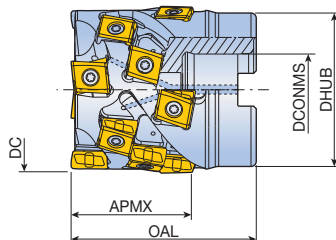
### Extended flute cutters

[illegible]

## Spare parts

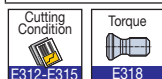
| Designation      | Screw                                                                               | Wrench                                                                              |                                                                                     | Wrench handle                                                                       |  |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                  |  |  |  |  |  |
| <b>4T-TEF-05</b> | TS 18049/HG-P                                                                       | TD 6P                                                                               | -                                                                                   | -                                                                                   |  |
| <b>4T-TEF-09</b> | TS 30D082-P                                                                         | -                                                                                   | TBLD T08P-W4                                                                        | THND 4W                                                                             |  |
|                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |



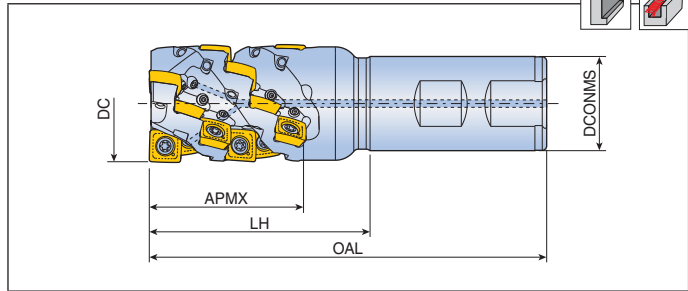


► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

| Designation      | Screw                                                                               | Wrench                                                                              | Wrench handle                                                                       |  |  |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                  |  |  |  |  |  |
| <b>4T-TES-14</b> | TS 40G110I                                                                          | TBLD T15-W6                                                                         | SW6-T                                                                               |  |  |
|                  |                                                                                     |                                                                                     |                                                                                     |  |  |
|                  |                                                                                     |                                                                                     |                                                                                     |  |  |
|                  |                                                                                     |                                                                                     |                                                                                     |  |  |

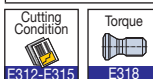


**CHASE VQUAD**  
DO IT YOUR WAY. IN ANYTIME ANYWHERE.

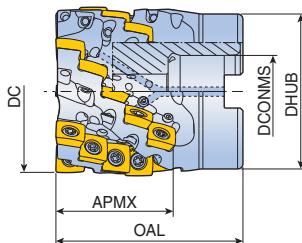


## Spare parts

| Designation              | Screw                                                                               | Wrench                                                                              | Wrench handle                                                                       | Coolant Nozzle                                                                      |  |
|--------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                          |  |  |  |  |  |
| <b>4S-TEF-09V</b> (-Ø32) | TS 35A070I/HG                                                                       | TBLD T10-W6                                                                         | THND 6W                                                                             | -                                                                                   |  |
| <b>4S-TEF-09V</b> (Ø40)  | TS 35A070I/HG                                                                       | TBLD T10-W6                                                                         | THND 6W                                                                             | SS 3003-06C                                                                         |  |
| <b>4S-TEF-11V</b>        | TS 40093I/HG                                                                        | TBLD T15-W6                                                                         | THND 6W                                                                             | SS 3003-06C                                                                         |  |
|                          |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                          |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |



**CHASE VQUAD**



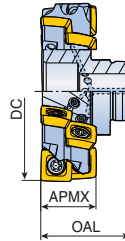
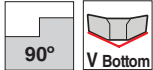
► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

| Designation       | Screw                                                                               | Wrench                                                                              | Wrench handle                                                                       | Coolant Nozzle                                                                      |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                   |  |  |  |  |  |
| <b>4S-TES-09V</b> | TS 35A070I/HG                                                                       | TBLD T10P-W6                                                                        | SW6-T                                                                               | SS 3003-06C                                                                         |  |
| <b>4S-TES-11V</b> | TS 40093I/HG                                                                        | TBLD T15-W6                                                                         | SW6-T                                                                               | SS 3003-06C                                                                         |  |
|                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |





**CHASE VQUAD**  
DO IT YOURSELF & SAVE BIG

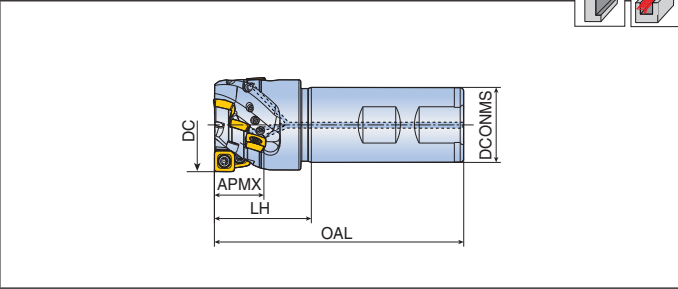
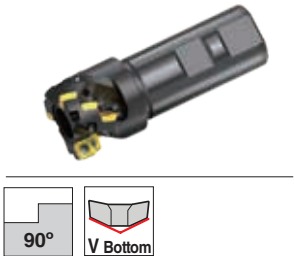
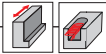


- Base unit ordered seperately

| Designation       | Screw                                                                               | Wrench                                                                              | Wrench handle                                                                       | Coolant Nozzle                                                                      |  |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                   |  |  |  |  |  |
| <b>4S-TFP-09V</b> | TS 35A070I/HG                                                                       | TBLD T10P-W6                                                                        | SW6-T                                                                               | SS 3003-06C                                                                         |  |
| <b>4S-TFP-11V</b> | TS 40093I/HG                                                                        | TBLD T15-W6                                                                         | SW6-T                                                                               | SS 3003-06C                                                                         |  |
|                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
|                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |



## Base unit extended flute cutter



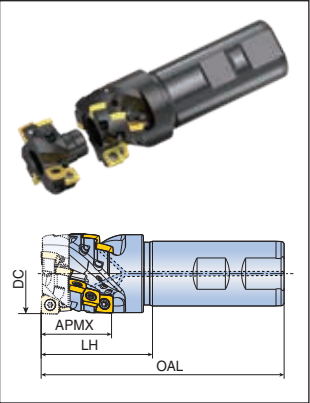
| Designation               |  | No. of insert | Dimension (mm) |        |       |      |      | Coolant hole |  Kg | Mounting bolt | Insert                                                                                                 |
|---------------------------|-----------------------------------------------------------------------------------|---------------|----------------|--------|-------|------|------|--------------|--------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------|
|                           |                                                                                   |               | DC             | DCONMS | OAL   | LH   | APMX |              |                                                                                      |               |                                                                                                        |
| 4S-TEF-D40B-21-W32-09V-3F | 3                                                                                 | 9             | 40             | 32     | 106.4 | 41.4 | 21   | •            | 0.6                                                                                  | SH M8X45-C    | SVKT 0938...<br> E299 |
|                           |                                                                                   |               |                |        |       |      |      |              |                                                                                      |               |                                                                                                        |
|                           |                                                                                   |               |                |        |       |      |      |              |                                                                                      |               |                                                                                                        |
|                           |                                                                                   |               |                |        |       |      |      |              |                                                                                      |               |                                                                                                        |
|                           |                                                                                   |               |                |        |       |      |      |              |                                                                                      |               |                                                                                                        |
|                           |                                                                                   |               |                |        |       |      |      |              |                                                                                      |               |                                                                                                        |

- Front head ordered separately
- Note: For bottom facing, both the front head and base unit must be connected.

## Spare parts

| Designation | Screw                                                                             | Wrench                                                                            | Wrench handle                                                                     | Coolant Nozzle                                                                    |  |
|-------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|
|             |  |  |  |  |  |
| 4S-TEF-09V  | TS 35A070I/HG                                                                     | TBLD T10P-W6                                                                      | SW6-T                                                                             | SS 3003-06C                                                                       |  |
|             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |

## Assembly

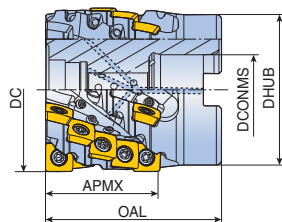
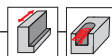


| Designation                    |  | No. of insert | Dimension (mm) |     |    |      |
|--------------------------------|-------------------------------------------------------------------------------------|---------------|----------------|-----|----|------|
|                                |                                                                                     |               | DC             | OAL | LH | APMX |
| Head 4S-TFP-D40-14-09V-3F      | 3                                                                                   | 15            | 40             | 120 | 55 | 34   |
| Base 4S-TEF-D40B-21-W32-09V-3F |                                                                                     |               |                |     |    |      |
|                                |                                                                                     |               |                |     |    |      |
|                                |                                                                                     |               |                |     |    |      |
|                                |                                                                                     |               |                |     |    |      |
|                                |                                                                                     |               |                |     |    |      |
|                                |                                                                                     |               |                |     |    |      |
|                                |                                                                                     |               |                |     |    |      |
|                                |                                                                                     |               |                |     |    |      |



# 4S-TES-B-09V/11V

## Base units for extended flute cutter



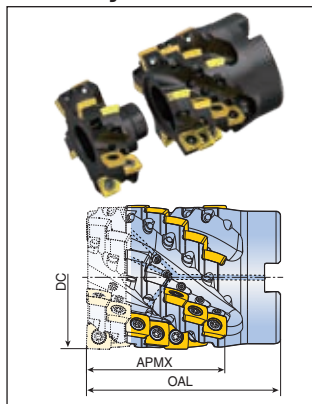
| Designation                      |  | No. of<br>insert | Dimension (mm) |        |      |      |      |   | Coolant<br>hole | Arbor<br>style |  Mounting<br>bolt | Insert                                                                                 |
|----------------------------------|-----------------------------------------------------------------------------------|------------------|----------------|--------|------|------|------|---|-----------------|----------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|                                  |                                                                                   |                  | DC             | DCONMS | DHUB | OAL  | APMX |   |                 |                |                                                                                                    |                                                                                        |
| <b>4S-TES-D40B-20-16R-09V-3F</b> | 3                                                                                 | 9                | 40             | 16     | 38   | 41.4 | 20   | ● | A               | 0.2            | SH M8X45-C                                                                                         | SVKT                                                                                   |
| <b>D50B-27-22R-09V-5F</b>        | 5                                                                                 | 20               | 50             | 22     | 45   | 49.4 | 27   | ● | A               | 0.4            | LH M10X60-C                                                                                        | 0938...                                                                                |
| <b>D63B-34-27R-09V-6F</b>        | 6                                                                                 | 30               | 63             | 27     | 58   | 56.4 | 34   | ● | A               | 0.7            | LH M12X70-C                                                                                        |  E299 |
| <b>4S-TES-D50B-34-22R-11V-4F</b> | 4                                                                                 | 16               | 50             | 22     | 45   | 57.8 | 34   | ● | A               | 0.5            | SH M10X60-C                                                                                        | SVK(H)T                                                                                |
| <b>D63B-43-27R-11V-5F</b>        | 5                                                                                 | 25               | 63             | 27     | 58   | 67.8 | 43   | ● | A               | 1.0            | SH M12X70-C                                                                                        | 1145...                                                                                |
| <b>D80B-59-32R-11V-6F</b>        | 6                                                                                 | 42               | 80             | 32     | 76   | 82.8 | 59   | ● | A               | 2.0            | LH M16X80-C                                                                                        |  E299 |
|                                  |                                                                                   |                  |                |        |      |      |      |   |                 |                |                                                                                                    |                                                                                        |

- ▶ Front head ordered separately
- ▶ Note: For bottom facing, both the front head and base unit must be connected.

## Spare parts

| Designation         | Screw         | Wrench       | Wrench handle | Coolant Nozzle |  |
|---------------------|---------------|--------------|---------------|----------------|--|
| <b>4S-TES-B-09V</b> | TS 35A070I/HG | TBLD T10P-W6 | SW6-T         | SS 3003-06C    |  |
| <b>4S-TES-B-11V</b> | TS 40093I/HG  | TBLD T15-W6  | SW6-T         | SS 3003-06C    |  |

## Assembly



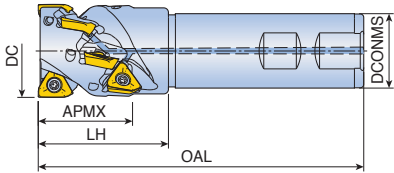
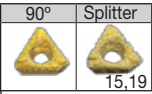
| Designation                           |   | No. of insert | Dimension (mm) |     |      |
|---------------------------------------|---|---------------|----------------|-----|------|
|                                       |   |               | DC             | OAL | APMX |
| Head <b>4S-TFP-D40-14-09V-3F</b>      | 3 | 15            | 40             | 55  | 34   |
| Base <b>4S-TES-D40B-20-16R-09V-3F</b> |   |               |                |     |      |
| Head <b>4S-TFP-D50-14-09V-5F</b>      | 5 | 30            | 50             | 63  | 41   |
| Base <b>4S-TES-D50B-27-22R-09V-5F</b> |   |               |                |     |      |
| Head <b>4S-TFP-D63-14-09V-6F</b>      | 6 | 42            | 63             | 70  | 48   |
| Base <b>4S-TES-D63B-34-27R-09V-6F</b> |   |               |                |     |      |
| Head <b>4S-TFP-D50-18-11V-4F</b>      | 4 | 24            | 50             | 75  | 52   |
| Base <b>4S-TES-D50B-34-22R-11V-4F</b> |   |               |                |     |      |
| Head <b>4S-TFP-D63-18-11V-5F</b>      | 5 | 35            | 63             | 85  | 60   |
| Base <b>4S-TES-D63B-43-27R-11V-5F</b> |   |               |                |     |      |
| Head <b>4S-TFP-D80-18-11V-6F</b>      | 6 | 54            | 80             | 100 | 76   |
| Base <b>4S-TES-D80B-59-32R-11V-6F</b> |   |               |                |     |      |



# 3P TEF-06/10/15/19



## Extended flute cutters



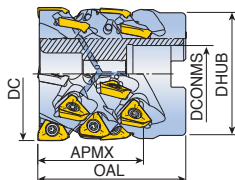
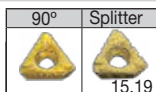
| Designation                                            |  | No. of insert | Dimension (mm) |        |     |    |      |   | Coolant hole                                                                                | Insert |
|--------------------------------------------------------|-----------------------------------------------------------------------------------|---------------|----------------|--------|-----|----|------|---|---------------------------------------------------------------------------------------------|--------|
|                                                        |                                                                                   |               | DC             | DCONMS | OAL | LH | APMX |   |                                                                                             |        |
| 3P TEF D20-20-W20-06<br>D25-24-W25-06<br>D32-32-W32-06 | 2                                                                                 | 10            | 20             | 20     | 85  | 33 | 20   | x | 3PK(H)T 0603...                                                                             |        |
|                                                        | 3                                                                                 | 18            | 25             | 25     | 95  | 39 | 24   | ● |                                                                                             |        |
|                                                        | 4                                                                                 | 32            | 32             | 32     | 105 | 43 | 32   | ● |                                                                                             |        |
| 3P TEF D32-42-W32-10<br>D40-42-W32-10                  | 2                                                                                 | 14            | 32             | 32     | 120 | 56 | 42   | ● | 3PK(H)T 1004...                                                                             |        |
|                                                        | 3                                                                                 | 21            | 40             | 32     | 130 | 56 | 42   | ● |                                                                                             |        |
| 3P TEF D40-40-W32-15                                   | 2                                                                                 | 8             | 40             | 32     | 140 | 56 | 40   | ● | 3PK(H)T 1505...                                                                             |        |
| 3P TEF D50-55-W40-19                                   | 2                                                                                 | 8             | 50             | 40     | 150 | 75 | 55   | ● | 3PK(H)T 1906...                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |  E250-E251 |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
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|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
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|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
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|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
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|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
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|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
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|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
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|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
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|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
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|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
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|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
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|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
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|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
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|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
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|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |
|                                                        |                                                                                   |               |                |        |     |    |      |   |                                                                                             |        |

## Spare parts

| Designation | Screw          | Wrench |       |  |  |
|-------------|----------------|--------|-------|--|--|
|             |                |        |       |  |  |
| 3P TEF-06   | TS 20043I/HG-P | TD 6P  | -     |  |  |
| 3P TEF-10   | TS 25C065I/HG  | TD 8   | -     |  |  |
| 3P TEF-15   | TS 40B100I     | TD 15  | -     |  |  |
| 3P TEF-19   | TS 45120I      | -      | T-T20 |  |  |
|             |                |        |       |  |  |



**MILL RUSH**

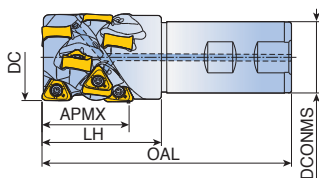
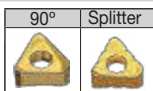
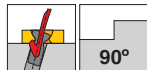


► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

| Designation      | Screw                                                                               | Wrench                                                                              |                                                                                     |  |  |
|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                  |  |  |  |  |  |
| <b>3P TES-10</b> | TS 25C065I/HG                                                                       | TD 8                                                                                | -                                                                                   |  |  |
| <b>3P TES-15</b> | TS 40B100I                                                                          | TD 15                                                                               | -                                                                                   |  |  |
| <b>3P TES-19</b> | TS 45I20I                                                                           | -                                                                                   | T-T20                                                                               |  |  |
|                  |                                                                                     |                                                                                     |                                                                                     |  |  |

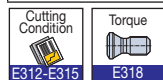


### Extended flute cutters



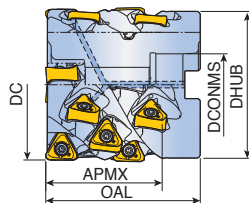
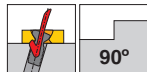
## Spare parts

| Designation     | Screw                                                                               | Wrench                                                                              |  |  |  |
|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                 |  |  |  |  |  |
| <b>TEF-TN18</b> | TS 40B100I                                                                          | T-T15                                                                               |  |  |  |
|                 |                                                                                     |                                                                                     |  |  |  |
|                 |                                                                                     |                                                                                     |  |  |  |
|                 |                                                                                     |                                                                                     |  |  |  |



# MILL 2 RUSH

| 90°                                                                               | Splitter                                                                          |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |  |



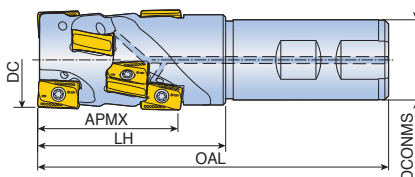
## Spare parts

| Designation     | Screw                                                                               | Wrench                                                                              |  |  |  |
|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                 |  |  |  |  |  |
| <b>TES-TN18</b> | TS 40B100I                                                                          | T-T15                                                                               |  |  |  |
|                 |                                                                                     |                                                                                     |  |  |  |
|                 |                                                                                     |                                                                                     |  |  |  |
|                 |                                                                                     |                                                                                     |  |  |  |



**CHASE2MILL**

| 90°                                                                               | Splitter                                                                          |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |  |



## Spare parts

| Designation     | Screw                                                                               | Wrench                                                                              |                                                                                     |  |  |
|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                 |  |  |  |  |  |
| <b>TEF-AN11</b> | TS 35A088I/HG                                                                       | TD 10P                                                                              | -                                                                                   |  |  |
| <b>TEF-AN16</b> | TS 40120I/HG                                                                        | -                                                                                   | T-T15                                                                               |  |  |
|                 |                                                                                     |                                                                                     |                                                                                     |  |  |
|                 |                                                                                     |                                                                                     |                                                                                     |  |  |

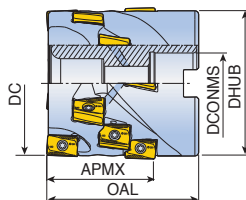




# TES-AN11/16



## Extended flute cutters



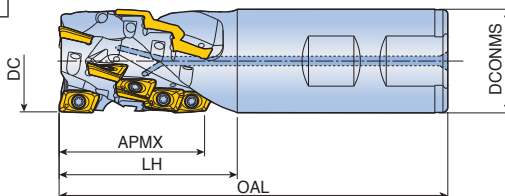
| Designation                |  | No. of insert | Dimension (mm) |        |      |      |      |    | Coolant hole  | Kg  | Mounting bolt | Insert                                                                                                    |
|----------------------------|-----------------------------------------------------------------------------------|---------------|----------------|--------|------|------|------|----|------------------------------------------------------------------------------------------------|-----|---------------|-----------------------------------------------------------------------------------------------------------|
|                            |                                                                                   |               | DC             | DCONMS | DHUB | OAL  | APMX |    |                                                                                                |     |               |                                                                                                           |
| <b>TES D50-40-22R-AN11</b> |                                                                                   | 3             | 12             | 50     | 22   | 45   | 60   | 40 | ●                                                                                              | 0.6 | SH M10x40     | ANM(H)X 1106...<br> E258 |
| <b>D50-40-22R-AN11-4F</b>  |                                                                                   | 4             | 16             | 50     | 22   | 45   | 60   | 40 | ●                                                                                              | 0.6 | SH M10x40     |                                                                                                           |
| <b>D63-60-27R-AN11</b>     |                                                                                   | 4             | 24             | 63     | 27   | 60   | 80   | 60 | ●                                                                                              | 1.3 | SH M12x60     |                                                                                                           |
| <b>D80-60-32R-AN11-4F</b>  |                                                                                   | 4             | 24             | 80     | 32   | 76   | 80   | 60 | ●                                                                                              | 2.2 | SH M16x60     |                                                                                                           |
| <b>D80-60-32R-AN11</b>     |                                                                                   | 5             | 30             | 80     | 32   | 76   | 80   | 60 | ●                                                                                              | 2.3 | SH M16x60     |                                                                                                           |
| <b>D80-60-32R-AN11-6F</b>  |                                                                                   | 6             | 36             | 80     | 32   | 76   | 80   | 60 | ●                                                                                              | 2.4 | SH M16x60     |                                                                                                           |
| <b>TES D50-42-22R-AN16</b> |                                                                                   | 2             | 6              | 50     | 22   | 47   | 65   | 42 | ●                                                                                              | 0.7 | SH M10x40     | ANM(H)X 1607...<br> E258 |
| <b>D63-42-27R-AN16</b>     |                                                                                   | 3             | 9              | 63     | 27   | 60.5 | 70   | 42 | ●                                                                                              | 1.1 | SH M12x50     |                                                                                                           |
| <b>D63-42-27R-AN16-4F</b>  |                                                                                   | 4             | 12             | 63     | 27   | 60.5 | 70   | 42 | ●                                                                                              | 1.0 | SH M12x50     |                                                                                                           |
| <b>D63-56-27R-AN16-2F</b>  |                                                                                   | 2             | 8              | 63     | 27   | 60.5 | 80   | 56 | ●                                                                                              | 1.2 | SH M12x50     |                                                                                                           |
| <b>D63-56-27R-AN16</b>     |                                                                                   | 3             | 12             | 63     | 27   | 60.5 | 80   | 56 | ●                                                                                              | 1.3 | SH M12x50     |                                                                                                           |
| <b>D63-56-27R-AN16-4F</b>  |                                                                                   | 4             | 16             | 63     | 27   | 60.5 | 80   | 56 | ●                                                                                              | 1.2 | SH M12x50     |                                                                                                           |
| <b>D80-56-32R-AN16</b>     |                                                                                   | 4             | 16             | 80     | 32   | 76.5 | 80   | 56 | ●                                                                                              | 2.2 | SH M16x50     |                                                                                                           |
| <b>D100-69-40R-AN16-4F</b> |                                                                                   | 4             | 20             | 100    | 40   | 96.4 | 100  | 69 | ●                                                                                              | 4.1 | SH M20x60     |                                                                                                           |
| <b>D100-69-40R-AN16</b>    |                                                                                   | 5             | 25             | 100    | 40   | 96.4 | 100  | 69 | ●                                                                                              | 4.5 | SH M20x60     |                                                                                                           |
| <b>D100-69-40R-AN16-6F</b> |                                                                                   | 6             | 30             | 100    | 40   | 96.4 | 100  | 69 | ●                                                                                              | 4.0 | SH M20x60     |                                                                                                           |
|                            |                                                                                   |               |                |        |      |      |      |    |                                                                                                |     |               |                                                                                                           |
|                            |                                                                                   |               |                |        |      |      |      |    |                                                                                                |     |               |                                                                                                           |
|                            |                                                                                   |               |                |        |      |      |      |    |                                                                                                |     |               |                                                                                                           |
|                            |                                                                                   |               |                |        |      |      |      |    |                                                                                                |     |               |                                                                                                           |
|                            |                                                                                   |               |                |        |      |      |      |    |                                                                                                |     |               |                                                                                                           |

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

| Designation     | Screw         | Wrench |       |  |  |
|-----------------|---------------|--------|-------|--|--|
|                 |               |        |       |  |  |
| <b>TES-AN11</b> | TS 35A088I/HG | TD 10P | -     |  |  |
| <b>TES-AN16</b> | TS 40120I/HG  | -      | T-T15 |  |  |
|                 |               |        |       |  |  |
|                 |               |        |       |  |  |
|                 |               |        |       |  |  |

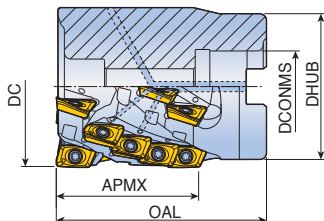




## Spare parts

| Designation     | Screw                                                                               | Wrench                                                                              |  |  |  |
|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                 |  |  |  |  |  |
| <b>TEF-AV10</b> | TS 30B062/HG-P                                                                      | TD 8P                                                                               |  |  |  |
|                 |                                                                                     |                                                                                     |  |  |  |
|                 |                                                                                     |                                                                                     |  |  |  |
|                 |                                                                                     |                                                                                     |  |  |  |
|                 |                                                                                     |                                                                                     |  |  |  |



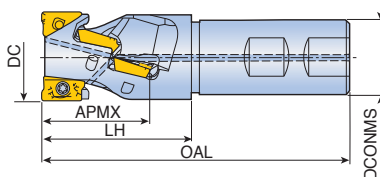
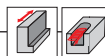
[illegible]

## Spare parts

| Designation     | Screw                                                                               | Wrench                                                                              |  |  |  |
|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                 |  |  |  |  |  |
| <b>TES-AV10</b> | TS 30B062/HG-P                                                                      | TD 8P                                                                               |  |  |  |
|                 |                                                                                     |                                                                                     |  |  |  |
|                 |                                                                                     |                                                                                     |  |  |  |
|                 |                                                                                     |                                                                                     |  |  |  |

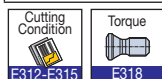


### Extended flute cutters

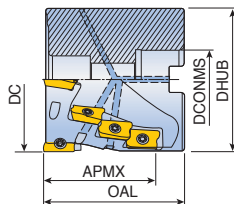
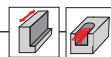


## Spare parts

| Designation            | Screw                                                                               | Wrench                                                                              |  |  |  |
|------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                        |  |  |  |  |  |
| <b>TEF-AX06</b>        | TS 18041 I/HG                                                                       | TD 6P                                                                               |  |  |  |
| <b>2S-TEF-AP09</b>     | TS 25055I/HG                                                                        | TD 8                                                                                |  |  |  |
| <b>TEF-AP12 (Ø25)</b>  | TS 35A070I/HG                                                                       | TD 10P                                                                              |  |  |  |
| <b>TEF-AP12 (Ø32-)</b> | TS 35A088I/HG                                                                       | TD 10P                                                                              |  |  |  |
| <b>TEF-AP17</b>        | TS 40093I/HG                                                                        | TD 15                                                                               |  |  |  |



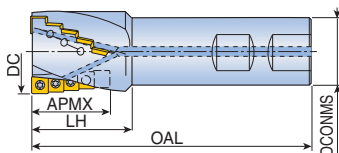
### Extended flute cutters

[illegible]

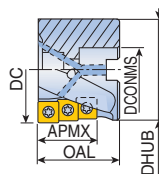
## Spare parts

| Designation     | Screw                                                                               | Wrench                                                                              |                                                                                     |  |  |
|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                 |  |  |  |  |  |
| <b>TES-AP12</b> | TS 35A088I/HG                                                                       | TD 10P                                                                              | -                                                                                   |  |  |
| <b>TES-AP17</b> | TS 40093I/HG                                                                        | -                                                                                   | T-T15                                                                               |  |  |
|                 |                                                                                     |                                                                                     |                                                                                     |  |  |
|                 |                                                                                     |                                                                                     |                                                                                     |  |  |





**Fig.1**



**Fig.2**

[illegible]

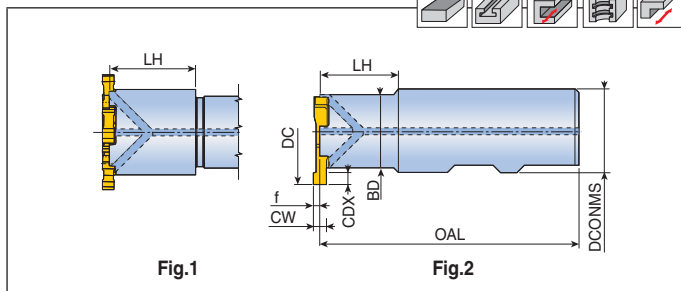
► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

| Designation               | Screw                                                                               | Wrench                                                                              |                                                                                     |  |  |
|---------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                           |  |  |  |  |  |
| <b>TEF-SP09</b> (Ø32)     | TS 35088I                                                                           | TD 10                                                                               | -                                                                                   |  |  |
| <b>TEF-SP11</b> (Ø40-Ø50) | TS 40093I                                                                           | TD 15                                                                               | -                                                                                   |  |  |
| <b>TES-SP11</b> (Ø50-Ø63) | TS 40093I                                                                           | TD 15                                                                               | -                                                                                   |  |  |
| <b>TES-SP14</b> (Ø80)     | TS 50A121I/HG                                                                       | -                                                                                   | T-T20                                                                               |  |  |
|                           |                                                                                     |                                                                                     |                                                                                     |  |  |



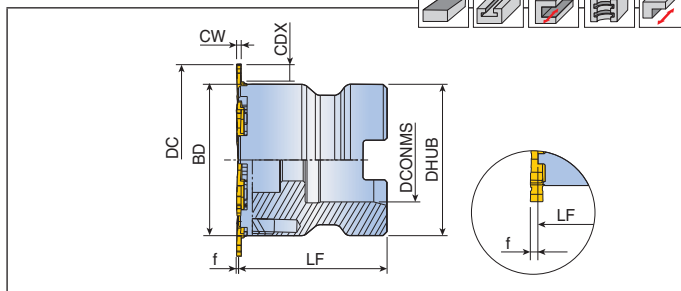
**TOP SLOT**

[illegible]

## Spare parts

| Designation                  | Screw                                                                               | Wrench                                                                              | Wrench handle                                                                       |  |  |
|------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                              |  |  |  |  |  |
| <b>TSM D32-W25-3Z-TS16</b>   | TS 40097I-N3.5                                                                      | BLD T15/S7                                                                          | SW6-T                                                                               |  |  |
| <b>TSM D32-W25-3Z-B-TS16</b> | TS 40097I                                                                           | BLD T15/S7                                                                          | SW6-T                                                                               |  |  |
| <b>TSM D40-W25-4Z-TS16</b>   | TS 40097I-N3.5                                                                      | BLD T15/S7                                                                          | SW6-T                                                                               |  |  |
| <b>TSM D40-W25-4Z-B-TS16</b> | TS 40097I                                                                           | BLD T15/S7                                                                          | SW6-T                                                                               |  |  |
| <b>TSM D50-W32-6Z-TS16</b>   | TS 40097I-N3.5                                                                      | BLD T15/S7                                                                          | SW6-T                                                                               |  |  |



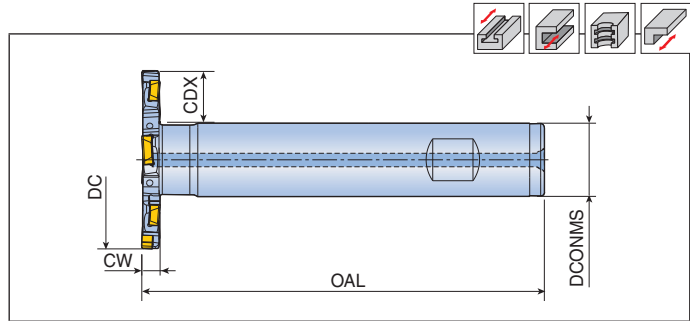
[illegible] E304

| Designation                   | Screw                                                                               | Wrench                                                                              | Wrench handle                                                                       |  |  |
|-------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                               |  |  |  |  |  |
| <b>TSM D50-22R-6Z-TS16</b>    | TS 40097I-N3.5                                                                      | BLD T15/S7                                                                          | SW6-T                                                                               |  |  |
| <b>TSM D50-22R-6Z-B-TS16</b>  | TS 40097I                                                                           | BLD T15/S7                                                                          | SW6-T                                                                               |  |  |
| <b>TSM D63-22R-8Z-TS16</b>    | TS 40097I-N3.5                                                                      | BLD T15/S7                                                                          | SW6-T                                                                               |  |  |
| <b>TSM D63-22R-8Z-B-TS16</b>  | TS 40097I                                                                           | BLD T15/S7                                                                          | SW6-T                                                                               |  |  |
| <b>TSM D80-27R-11Z-TS16</b>   | TS 40097I-N3.5                                                                      | BLD T15/S7                                                                          | SW6-T                                                                               |  |  |
| <b>TSM D80-27R-11Z-B-TS16</b> | TS 40097I                                                                           | BLD T15/S7                                                                          | SW6-T                                                                               |  |  |





## Slotting cutters: End mills



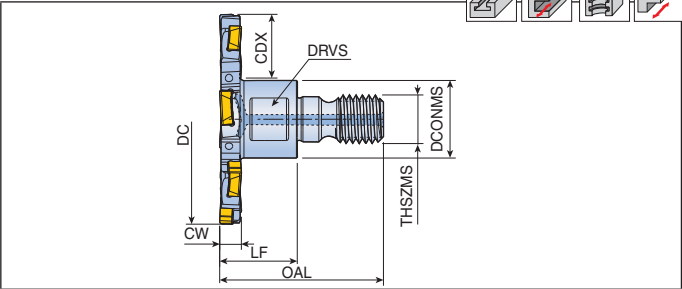
| Designation                | CW<br>(mm) |     | Dimension (mm) |        |     |      | Coolant<br>hole | Insert              |
|----------------------------|------------|-----|----------------|--------|-----|------|-----------------|---------------------|
|                            |            |     | DC             | DCONMS | OAL | CDX  |                 |                     |
| <b>TSM D25-03-W12-SL18</b> | 3          | 1+1 | 25             | 12     | 90  | 6.5  | ●               | SLOT 018...<br>E290 |
| <b>D32-03-W16-SL18</b>     | 3          | 2+2 | 32             | 16     | 90  | 8.0  | ●               |                     |
| <b>D40-03-W16-SL18</b>     | 3          | 3+3 | 40             | 16     | 105 | 12.0 | ●               |                     |
| <b>D50-03-W20-SL18</b>     | 3          | 4+4 | 50             | 20     | 110 | 15.0 | ●               |                     |
| <b>D63-03-W20-SL18</b>     | 3          | 5+5 | 63             | 20     | 110 | 21.5 | ●               |                     |
| <b>TSM D25-04-W12-SL23</b> | 4          | 1+1 | 25             | 12     | 90  | 6.5  | ●               | SLOT 023...<br>E290 |
| <b>D32-04-W16-SL23</b>     | 4          | 2+2 | 32             | 16     | 90  | 8.0  | ●               |                     |
| <b>D40-04-W16-SL23</b>     | 4          | 3+3 | 40             | 16     | 105 | 12.0 | ●               |                     |
| <b>D50-04-W20-SL23</b>     | 4          | 4+4 | 50             | 20     | 110 | 15.0 | ●               |                     |
| <b>D63-04-W20-SL23</b>     | 4          | 5+5 | 63             | 20     | 110 | 21.5 | ●               |                     |
| <b>TSM D25-05-W12-SL28</b> | 5          | 1+1 | 25             | 12     | 90  | 6.5  | ●               | SLOT 028...<br>E290 |
| <b>D32-05-W16-SL28</b>     | 5          | 2+2 | 32             | 16     | 90  | 8.0  | ●               |                     |
| <b>D40-05-W16-SL28</b>     | 5          | 3+3 | 40             | 16     | 105 | 12.0 | ●               |                     |
| <b>D50-05-W20-SL28</b>     | 5          | 4+4 | 50             | 20     | 110 | 15.0 | ●               |                     |
| <b>D63-05-W20-SL28</b>     | 5          | 5+5 | 63             | 20     | 110 | 21.5 | ●               |                     |
| <b>TSM D25-06-W12-SL33</b> | 6          | 1+1 | 25             | 12     | 90  | 6.5  | ●               | SLOT 033...<br>E290 |
| <b>D32-06-W16-SL33</b>     | 6          | 2+2 | 32             | 16     | 90  | 8.0  | ●               |                     |
| <b>D40-06-W16-SL33</b>     | 6          | 3+3 | 40             | 16     | 105 | 12.0 | ●               |                     |
| <b>D50-06-W20-SL33</b>     | 6          | 4+4 | 50             | 20     | 110 | 15.0 | ●               |                     |
| <b>D63-06-W20-SL33</b>     | 6          | 5+5 | 63             | 20     | 110 | 21.5 | ●               |                     |

## Spare parts

| Designation        | Screw         | Wrench |       |  |  |
|--------------------|---------------|--------|-------|--|--|
|                    |               |        |       |  |  |
| <b>TSM-03-SL18</b> | TS 25B024I/HG | TD 7P  | L-T7P |  |  |
| <b>TSM-04-SL23</b> | TS 25B031I/HG | TD 7P  | L-T7P |  |  |
| <b>TSM-05-SL28</b> | TS 25B042I/HG | TD 7P  | L-T7P |  |  |
| <b>TSM-06-SL33</b> | TS 25B053I/HG | TD 7P  | L-T7P |  |  |



Slotting cutters: modular heads



| Designation                | CW<br>(mm)             |  | Dimension (mm) |        |    |      |        |     |      |    | Coolant<br>hole                                                                                       | Insert |
|----------------------------|------------------------|-----------------------------------------------------------------------------------|----------------|--------|----|------|--------|-----|------|----|-------------------------------------------------------------------------------------------------------|--------|
|                            |                        |                                                                                   | DC             | DCONMS | LF | OAL  | THSZMS | CDX | DRVS |    |                                                                                                       |        |
| <b>TSM D25-03-M08-SL18</b> | 3                      | 1+1                                                                               | 25             | 13     | 18 | 35.5 | M08    | 6   | 10   | ●  | SLOT 018...<br> E290 |        |
|                            | <b>D32-03-M08-SL18</b> | 3                                                                                 | 2+2            | 32     | 13 | 18   | 35.5   | M08 | 9    | 10 |                                                                                                       | ●      |
|                            | <b>D40-03-M08-SL18</b> | 3                                                                                 | 3+3            | 40     | 13 | 18   | 35.5   | M08 | 13   | 10 |                                                                                                       | ●      |
|                            | <b>D50-03-M10-SL18</b> | 3                                                                                 | 4+4            | 50     | 18 | 18   | 38     | M10 | 15   | 15 |                                                                                                       | ●      |
|                            | <b>D63-03-M10-SL18</b> | 3                                                                                 | 5+5            | 63     | 18 | 18   | 38     | M10 | 22   | 15 |                                                                                                       | ●      |
| <b>TSM D25-04-M08-SL23</b> | 4                      | 1+1                                                                               | 25             | 13     | 18 | 35.5 | M08    | 6   | 10   | ●  | SLOT 023...<br> E290 |        |
|                            | <b>D32-04-M08-SL23</b> | 4                                                                                 | 2+2            | 32     | 13 | 18   | 35.5   | M08 | 9    | 10 |                                                                                                       | ●      |
|                            | <b>D40-04-M08-SL23</b> | 4                                                                                 | 3+3            | 40     | 13 | 18   | 35.5   | M08 | 13   | 10 |                                                                                                       | ●      |
|                            | <b>D50-04-M10-SL23</b> | 4                                                                                 | 4+4            | 50     | 18 | 18   | 38     | M10 | 15   | 15 |                                                                                                       | ●      |
|                            | <b>D63-04-M10-SL23</b> | 4                                                                                 | 5+5            | 63     | 18 | 18   | 38     | M10 | 22   | 15 |                                                                                                       | ●      |
| <b>TSM D25-05-M08-SL28</b> | 5                      | 1+1                                                                               | 25             | 13     | 18 | 35.5 | M08    | 6   | 10   | ●  | SLOT 028...<br> E290 |        |
|                            | <b>D32-05-M08-SL28</b> | 5                                                                                 | 2+2            | 32     | 13 | 18   | 35.5   | M08 | 9    | 10 |                                                                                                       | ●      |
|                            | <b>D40-05-M08-SL28</b> | 5                                                                                 | 3+3            | 40     | 13 | 18   | 35.5   | M08 | 13   | 10 |                                                                                                       | ●      |
|                            | <b>D50-05-M10-SL28</b> | 5                                                                                 | 4+4            | 50     | 18 | 18   | 38     | M10 | 15   | 15 |                                                                                                       | ●      |
|                            | <b>D63-05-M10-SL28</b> | 5                                                                                 | 5+5            | 63     | 18 | 18   | 38     | M10 | 22   | 15 |                                                                                                       | ●      |
| <b>TSM D25-06-M08-SL33</b> | 6                      | 1+1                                                                               | 25             | 13     | 18 | 35.5 | M08    | 6   | 10   | ●  | SLOT 033...<br> E290 |        |
|                            | <b>D32-06-M08-SL33</b> | 6                                                                                 | 2+2            | 32     | 13 | 18   | 35.5   | M08 | 9    | 10 |                                                                                                       | ●      |
|                            | <b>D40-06-M08-SL33</b> | 6                                                                                 | 3+3            | 40     | 13 | 18   | 35.5   | M08 | 13   | 10 |                                                                                                       | ●      |
|                            | <b>D50-06-M10-SL33</b> | 6                                                                                 | 4+4            | 50     | 18 | 18   | 38     | M10 | 15   | 15 |                                                                                                       | ●      |
|                            | <b>D63-06-M10-SL33</b> | 6                                                                                 | 5+5            | 63     | 18 | 18   | 38     | M10 | 22   | 15 |                                                                                                       | ●      |
|                            |                        |                                                                                   |                |        |    |      |        |     |      |    |                                                                                                       |        |

► Matched with T-FLEXTEC holder

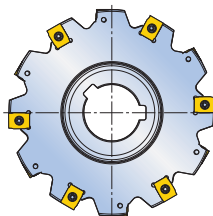
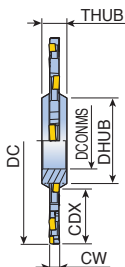
Spare parts

| Designation        | Screw         | Wrench |       |  |  |
|--------------------|---------------|--------|-------|--|--|
|                    |               |        |       |  |  |
| <b>TSM-03-SL18</b> | TS 25B024I/HG | TD 7P  | L-T7P |  |  |
| <b>TSM-04-SL23</b> | TS 25B031I/HG | TD 7P  | L-T7P |  |  |
| <b>TSM-05-SL28</b> | TS 25B042I/HG | TD 7P  | L-T7P |  |  |
| <b>TSM-06-SL33</b> | TS 25B053I/HG | TD 7P  | L-T7P |  |  |
|                    |               |        |       |  |  |

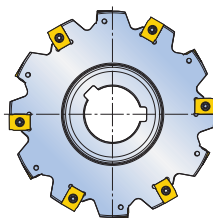
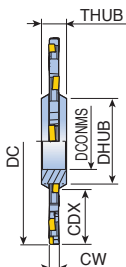
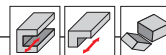
Cutting Condition  
E312-E315

Torque  
E318

**TOP SLOT**

[illegible]

## Slotting cutters: Fixed pocket disk type



| Designation                  | CW<br>(mm) |       | Dimension (mm) |        |      |     |      | Kg  | Insert              |
|------------------------------|------------|-------|----------------|--------|------|-----|------|-----|---------------------|
|                              |            |       | DC             | DCONMS | DHUB | OAL | CDX  |     |                     |
| <b>TSM 080FD-08-22N-Z043</b> | 8          | 4+4   | 80             | 22     | 34   | 12  | 20.5 | 0.2 | ZNHT 043...<br>E308 |
| <b>100FD-08-27N-Z043</b>     | 8          | 5+5   | 100            | 27     | 41   | 12  | 27.0 | 0.3 |                     |
| <b>125FD-08-40N-Z043</b>     | 8          | 6+6   | 125            | 40     | 55   | 12  | 32.5 | 0.5 |                     |
| <b>160FD-08-40N-Z043</b>     | 8          | 8+8   | 160            | 40     | 55   | 12  | 50.0 | 0.9 |                     |
| <b>200FD-08-50N-Z043</b>     | 8          | 9+9   | 200            | 50     | 69   | 12  | 63.0 | 1.4 |                     |
| <b>250FD-08-50N-Z043</b>     | 8          | 12+12 | 250            | 50     | 69   | 12  | 88.0 | 2.3 | ZNHT 048...<br>E308 |
| <b>TSM 100FD-09-27N-Z048</b> | 9          | 5+5   | 100            | 27     | 41   | 12  | 27.5 | 0.4 |                     |
| <b>125FD-09-40N-Z048</b>     | 9          | 6+6   | 125            | 40     | 55   | 12  | 33.0 | 0.6 |                     |
| <b>160FD-09-40N-Z048</b>     | 9          | 8+8   | 160            | 40     | 55   | 12  | 50.5 | 1.0 |                     |
| <b>200FD-09-50N-Z048</b>     | 9          | 9+9   | 200            | 50     | 69   | 12  | 63.5 | 1.6 |                     |
| <b>250FD-09-50N-Z048</b>     | 9          | 12+12 | 250            | 50     | 69   | 12  | 88.5 | 2.6 | ZNHT 053...<br>E308 |
| <b>TSM 100FD-10-27N-Z053</b> | 10         | 5+5   | 100            | 27     | 41   | 12  | 28.0 | 0.4 |                     |
| <b>125FD-10-40N-Z053</b>     | 10         | 6+6   | 125            | 40     | 55   | 12  | 33.5 | 0.6 |                     |
| <b>160FD-10-40N-Z053</b>     | 10         | 8+8   | 160            | 40     | 55   | 12  | 51.0 | 1.3 |                     |
| <b>200FD-10-50N-Z053</b>     | 10         | 9+9   | 200            | 50     | 69   | 12  | 64.0 | 2.0 |                     |
| <b>250FD-10-50N-Z053</b>     | 10         | 12+12 | 250            | 50     | 69   | 12  | 89.0 | 3.2 |                     |
|                              |            |       |                |        |      |     |      |     |                     |
|                              |            |       |                |        |      |     |      |     |                     |
|                              |            |       |                |        |      |     |      |     |                     |
|                              |            |       |                |        |      |     |      |     |                     |
|                              |            |       |                |        |      |     |      |     |                     |

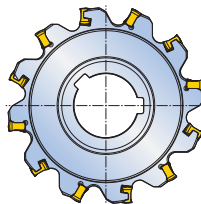
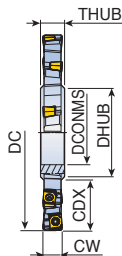
► Arbor: SCA, SEMC

## Spare parts

| Designation     | Screw         |  | Wrench |       | Designation     | Screw       |  | Wrench |       |
|-----------------|---------------|--|--------|-------|-----------------|-------------|--|--------|-------|
|                 |               |  |        |       |                 |             |  |        |       |
| <b>TSM-Z018</b> | TS 25B024I/HG |  | TD 7P  | L-T7P | <b>TSM-Z038</b> | TS 40K0535I |  | T-T15  | L-T15 |
| <b>TSM-Z023</b> | TS 25B031I/HG |  | TD 7P  | L-T7P | <b>TSM-Z043</b> | TS 40K065I  |  | T-T15  | L-T15 |
| <b>TSM-Z028</b> | TS 25B042I/HG |  | TD 7P  | L-T7P | <b>TSM-Z048</b> | TS 40K075I  |  | T-T15  | L-T15 |
| <b>TSM-Z033</b> | TS 25B053I/HG |  | TD 7P  | L-T7P | <b>TSM-Z053</b> | TS 40K085I  |  | T-T15  | L-T15 |
|                 |               |  |        |       |                 |             |  |        |       |



**TOP SLOT**

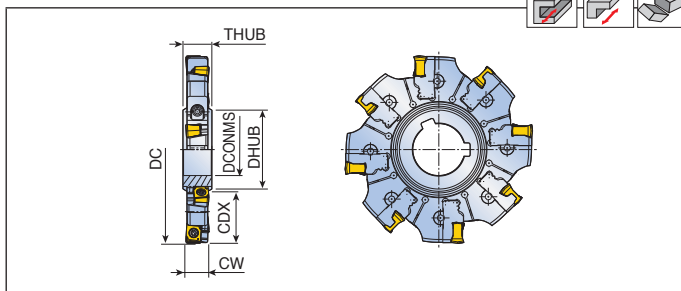


► Arbor: SCA, SEMC

| Designation        | Screw                                                                               | Wrench                                                                              |                                                                                     |  |  |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|                    |  |  |  |  |  |
| <b>TSM FD-ZN08</b> | TS 30085/HG                                                                         | TD 9                                                                                | -                                                                                   |  |  |
| <b>TSM FD-ZN11</b> | TS 40120/HG                                                                         | -                                                                                   | T-T15                                                                               |  |  |
|                    |                                                                                     |                                                                                     |                                                                                     |  |  |
|                    |                                                                                     |                                                                                     |                                                                                     |  |  |

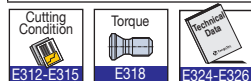


**TOP SLOT**

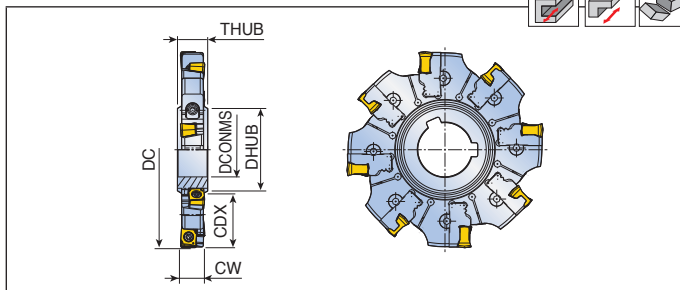


- ▶ Width of cut is set at the smallest unless a specific width is requested
- ▶ Arbor: SCA, SEMC

| Designation            | Right cartridge                                                                     | Left cartridge                                                                      | Wedge                                                                               | Adjust screw                                                                        | Insert screw                                                                        |
|------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                        |  |  |  |  |  |
| <b>TSM FD-S/W-ZN08</b> | TCT-SR-ZN08<br>TCT-WR-ZN08                                                          | TCT-SL-ZN08<br>TCT-WL-ZN08                                                          | WFZ 5                                                                               | SA M8-6.0                                                                           | TS 30085I/HG                                                                        |
|                        | Wedge screw                                                                         | Wrench                                                                              | L-Wrench                                                                            | Wedge Wrench                                                                        |                                                                                     |
|                        |  |  |  |  |                                                                                     |
|                        | WS 5                                                                                | TD 9                                                                                | L-W 3                                                                               | F-W 2.5                                                                             |                                                                                     |

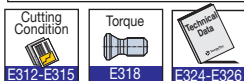


**TOP SLOT**

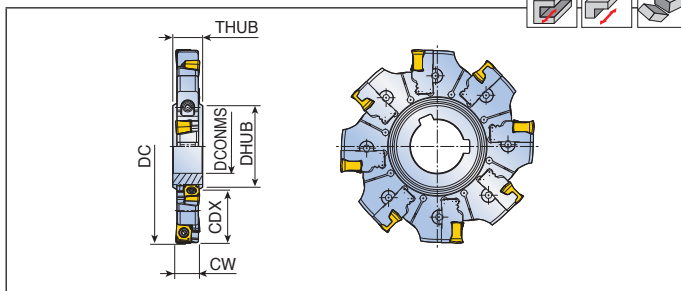
[illegible]

- ▶ Width of cut is set at the smallest unless a specific width is requested
- ▶ Arbor: SCA, SEMC

| Designation            | Right cartridge                                                                     | Left cartridge                                                                      | Wedge                                                                               | Adjust screw                                                                        | Insert screw                                                                        |
|------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                        |  |  |  |  |  |
| <b>TSM FD-S/W-ZN11</b> | TCT-SR-ZN11<br>TCT-WR-ZN11                                                          | TCT-SL-ZN11<br>TCT-WL-ZN11                                                          | WFZ 6                                                                               | SA M8-9.0                                                                           | TS 40120I/HG                                                                        |
|                        | Wedge screw                                                                         | Wrench                                                                              | L-Wrench                                                                            | Wedge Wrench                                                                        |                                                                                     |
|                        |  |  |  |  |                                                                                     |
|                        | WS 6                                                                                | T-T15                                                                               | L-W 4                                                                               | T-W 3                                                                               |                                                                                     |

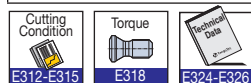


**TOP SLOT**



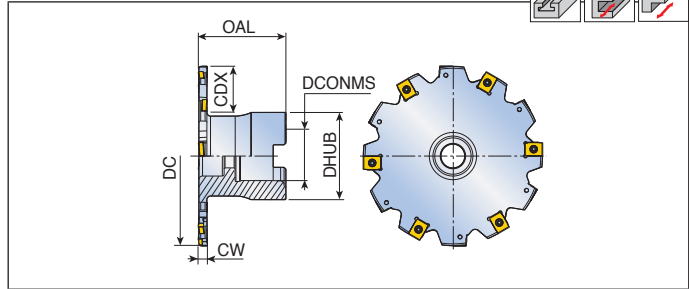
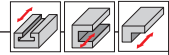
- ▶ Width of cut is set at the smallest unless a specific width is requested
- ▶ Arbor: SCA, SEMC

| Designation            | Right cartridge                                                                     | Left cartridge                                                                      | Wedge                                                                               | Adjust screw                                                                        | Insert screw                                                                        |
|------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                        |  |  |  |  |  |
| <b>TSM FD-S/W-ZN14</b> | TCT-SR-ZN14                                                                         | TCT-SL-ZN14                                                                         | WFZ 6                                                                               | SA M8-9.0                                                                           | TS 40120I/HG                                                                        |
|                        | Wedge screw                                                                         | Wrench                                                                              | L-Wrench                                                                            | Wedge Wrench                                                                        |                                                                                     |
|                        |  |  |  |  |                                                                                     |
|                        | WS 6                                                                                | T-T15                                                                               | L-W 4                                                                               | T-W 3                                                                               |                                                                                     |





## Slotting cutters: Fixed pocket flange type



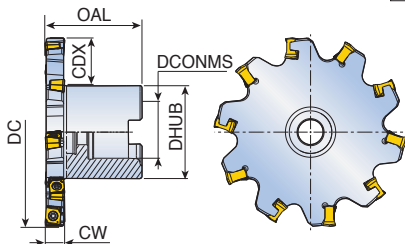
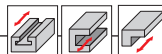
| Designation                  | CW<br>(mm) |  | Dimension (mm) |        |      |     |      | Arbor<br>style |  Kg | Mounting<br>bolt | Insert                                                                                             |
|------------------------------|------------|-----------------------------------------------------------------------------------|----------------|--------|------|-----|------|----------------|--------------------------------------------------------------------------------------|------------------|----------------------------------------------------------------------------------------------------|
|                              |            |                                                                                   | DC             | DCONMS | DHUB | OAL | CDX  |                |                                                                                      |                  |                                                                                                    |
| <b>TSM 080FF-03-22R-Z018</b> | 3          | 5+5                                                                               | 80             | 22     | 40   | 50  | 20.0 | A              | 0.4                                                                                  | SH M10x35        | ZNHT 018...                                                                                        |
| <b>100FF-03-27R-Z018</b>     | 3          | 6+6                                                                               | 100            | 27     | 48   | 50  | 26.0 | A              | 0.6                                                                                  | SH M12x35        |                                                                                                    |
| <b>080FF-04-22R-Z023</b>     | 4          | 5+5                                                                               | 80             | 22     | 40   | 50  | 20.0 | A              | 0.4                                                                                  | SH M10x35        |                                                                                                    |
| <b>100FF-04-27R-Z023</b>     | 4          | 6+6                                                                               | 100            | 27     | 48   | 50  | 26.0 | A              | 0.6                                                                                  | SH M12x35        | ZNHT 023...                                                                                        |
| <b>080FF-05-22R-Z028</b>     | 5          | 5+5                                                                               | 80             | 22     | 40   | 50  | 20.0 | A              | 0.5                                                                                  | SH M10x35        |                                                                                                    |
| <b>100FF-05-27R-Z028</b>     | 5          | 6+6                                                                               | 100            | 27     | 48   | 50  | 26.0 | A              | 0.7                                                                                  | SH M12x35        |                                                                                                    |
| <b>080FF-06-22R-Z033</b>     | 6          | 5+5                                                                               | 80             | 22     | 40   | 50  | 20.0 | A              | 0.5                                                                                  | SH M10x35        | ZNHT 033...<br>  |
| <b>100FF-06-27R-Z033</b>     | 6          | 6+6                                                                               | 100            | 27     | 48   | 50  | 26.0 | A              | 0.7                                                                                  | SH M12x35        |                                                                                                    |
| <b>125FF-06-40R-Z033</b>     | 6          | 7+7                                                                               | 125            | 40     | 70   | 50  | 25.0 | B              | 1.1                                                                                  | -                |                                                                                                    |
| <b>160FF-06-40R-Z033</b>     | 6          | 9+9                                                                               | 160            | 40     | 70   | 50  | 43.0 | B              | 1.4                                                                                  | -                | ZNHT 038...<br>  |
| <b>080FF-07-22R-Z038</b>     | 7          | 4+4                                                                               | 80             | 22     | 40   | 50  | 20.0 | A              | 0.5                                                                                  | SH M10x40        |                                                                                                    |
| <b>100FF-07-27R-Z038</b>     | 7          | 5+5                                                                               | 100            | 27     | 48   | 50  | 25.5 | A              | 0.7                                                                                  | SH M12x35        |                                                                                                    |
| <b>125FF-07-40R-Z038</b>     | 7          | 6+6                                                                               | 125            | 40     | 70   | 50  | 24.5 | B              | 1.1                                                                                  | -                | ZNHT 043...<br>  |
| <b>160FF-07-40R-Z038</b>     | 7          | 8+8                                                                               | 160            | 40     | 70   | 50  | 42.0 | B              | 1.4                                                                                  | -                |                                                                                                    |
| <b>080FF-08-22R-Z043</b>     | 8          | 4+4                                                                               | 80             | 22     | 40   | 50  | 20.0 | A              | 0.5                                                                                  | SH M10x35        |                                                                                                    |
| <b>100FF-08-27R-Z043</b>     | 8          | 5+5                                                                               | 100            | 27     | 48   | 50  | 25.5 | A              | 0.8                                                                                  | SH M12x35        | ZNHT 048...<br> |
| <b>125FF-08-40R-Z043</b>     | 8          | 6+6                                                                               | 125            | 40     | 70   | 50  | 24.5 | B              | 1.2                                                                                  | -                |                                                                                                    |
| <b>160FF-08-40R-Z043</b>     | 8          | 8+8                                                                               | 160            | 40     | 70   | 50  | 42.0 | B              | 1.5                                                                                  | -                |                                                                                                    |
| <b>100FF-09-27R-Z048</b>     | 9          | 5+5                                                                               | 100            | 27     | 48   | 50  | 26.0 | A              | 0.7                                                                                  | SH M12x35        | ZNHT 053..<br> |
| <b>125FF-09-40R-Z048</b>     | 9          | 6+6                                                                               | 125            | 40     | 70   | 50  | 24.5 | B              | 1.2                                                                                  | -                |                                                                                                    |
| <b>160FF-09-40R-Z048</b>     | 9          | 8+8                                                                               | 160            | 40     | 70   | 50  | 42.0 | B              | 1.6                                                                                  | -                |                                                                                                    |
| <b>100FF-10-27R-Z053</b>     | 10         | 5+5                                                                               | 100            | 27     | 48   | 50  | 26.0 | A              | 0.8                                                                                  | SH M12x35        | ZNHT 053..<br> |
| <b>125FF-10-40R-Z053</b>     | 10         | 6+6                                                                               | 125            | 40     | 70   | 50  | 24.5 | B              | 1.4                                                                                  | -                |                                                                                                    |
| <b>160FF-10-40R-Z053</b>     | 10         | 8+8                                                                               | 160            | 40     | 70   | 50  | 42.0 | B              | 1.7                                                                                  | -                |                                                                                                    |

## Spare parts

| Designation     | Screw         |       |       | Designation     | Wrench      |       |       |
|-----------------|---------------|-------|-------|-----------------|-------------|-------|-------|
|                 |               |       |       |                 |             |       |       |
| <b>TSM-Z018</b> | TS 25B024I/HG | TD 7P | L-T7P | <b>TSM-Z038</b> | TS 40K0535I | T-T15 | L-T15 |
| <b>TSM-Z023</b> | TS 25B031I/HG | TD 7P | L-T7P | <b>TSM-Z043</b> | TS 40K065I  | T-T15 | L-T15 |
| <b>TSM-Z028</b> | TS 25B042I/HG | TD 7P | L-T7P | <b>TSM-Z048</b> | TS 40K075I  | T-T15 | L-T15 |
| <b>TSM-Z033</b> | TS 25B053I/HG | TD 7P | L-T7P | <b>TSM-Z053</b> | TS 40K085I  | T-T15 | L-T15 |



## Slotting cutters: Fixed pocket flange type



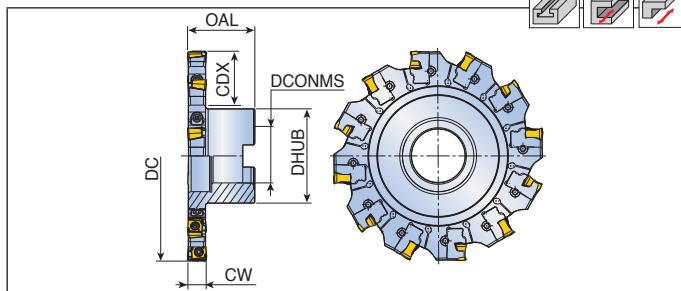
| Designation                  | CW<br>(mm) |  | Dimension (mm) |        |      |     |     | Arbor<br>style |  Kg | Mounting<br>bolt | Insert                                                                                                |
|------------------------------|------------|-----------------------------------------------------------------------------------|----------------|--------|------|-----|-----|----------------|--------------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------|
|                              |            |                                                                                   | DC             | DCONMS | DHUB | OAL | CDX |                |                                                                                      |                  |                                                                                                       |
| <b>TSM 063FF-10-22R-ZN08</b> | 10.0       | 3+3                                                                               | 63             | 22     | 40   | 50  | 15  | A              | 0.4                                                                                  | SH M10x35        | ZNHU 080...<br> E309 |
| <b>080FF-10-22R-ZN08</b>     | 10.0       | 4+4                                                                               | 80             | 22     | 40   | 50  | 24  | A              | 0.5                                                                                  | SH M10x35        |                                                                                                       |
| <b>100FF-10-27R-ZN08</b>     | 10.0       | 5+5                                                                               | 100            | 27     | 48   | 50  | 26  | A              | 0.8                                                                                  | SH M12x35        |                                                                                                       |
| <b>125FF-10-32R-ZN08</b>     | 10.0       | 6+6                                                                               | 125            | 32     | 58   | 50  | 34  | B              | 1.1                                                                                  | -                |                                                                                                       |
| <b>063FF-12-22R-ZN08</b>     | 12.0       | 3+3                                                                               | 63             | 22     | 40   | 50  | 15  | A              | 0.4                                                                                  | SH M10x35        |                                                                                                       |
| <b>080FF-12-22R-ZN08</b>     | 12.0       | 4+4                                                                               | 80             | 22     | 40   | 50  | 24  | A              | 0.5                                                                                  | SH M10x35        |                                                                                                       |
| <b>100FF-12-27R-ZN08</b>     | 12.0       | 5+5                                                                               | 100            | 27     | 48   | 50  | 26  | A              | 0.9                                                                                  | SH M12x35        |                                                                                                       |
| <b>125FF-12-32R-ZN08</b>     | 12.0       | 6+6                                                                               | 125            | 32     | 58   | 50  | 34  | B              | 1.2                                                                                  | -                |                                                                                                       |
| <b>TSM 063FF-14-22R-ZN11</b> | 14.0       | 3+3                                                                               | 63             | 22     | 40   | 50  | 15  | A              | 0.4                                                                                  | SH M10x35        | ZNHU 110...<br> E309 |
| <b>080FF-14-22R-ZN11</b>     | 14.0       | 4+4                                                                               | 80             | 22     | 40   | 50  | 24  | A              | 0.5                                                                                  | SH M10x35        |                                                                                                       |
| <b>100FF-14-27R-ZN11</b>     | 14.0       | 5+5                                                                               | 100            | 27     | 48   | 50  | 26  | A              | 1.0                                                                                  | SH M12x35        |                                                                                                       |
| <b>125FF-14-32R-ZN11</b>     | 14.0       | 6+6                                                                               | 125            | 32     | 58   | 50  | 34  | B              | 1.3                                                                                  | -                |                                                                                                       |
| <b>160FF-14-40R-ZN11</b>     | 14.0       | 6+6                                                                               | 160            | 40     | 70   | 50  | 43  | B              | 2.5                                                                                  | -                |                                                                                                       |
| <b>080FF-17-22R-ZN11</b>     | 17.0       | 4+4                                                                               | 80             | 22     | 40   | 50  | 24  | A              | 0.6                                                                                  | SH M10x35        |                                                                                                       |
| <b>100FF-17-27R-ZN11</b>     | 17.0       | 5+5                                                                               | 100            | 27     | 48   | 50  | 26  | A              | 1.0                                                                                  | SH M12x35        |                                                                                                       |
| <b>125FF-17-32R-ZN11</b>     | 17.0       | 6+6                                                                               | 125            | 32     | 58   | 50  | 34  | B              | 1.5                                                                                  | -                |                                                                                                       |
| <b>080FF-20-22R-ZN11</b>     | 20.0       | 4+4                                                                               | 80             | 22     | 40   | 50  | 24  | A              | 0.7                                                                                  | SH M10x35        |                                                                                                       |
| <b>100FF-20-27R-ZN11</b>     | 20.0       | 5+5                                                                               | 100            | 27     | 48   | 50  | 26  | A              | 1.1                                                                                  | SH M12x35        |                                                                                                       |
| <b>125FF-20-32R-ZN11</b>     | 20.0       | 6+6                                                                               | 125            | 32     | 58   | 50  | 34  | B              | 1.6                                                                                  | -                |                                                                                                       |
|                              |            |                                                                                   |                |        |      |     |     |                |                                                                                      |                  |                                                                                                       |

## Spare parts

| Designation        | Screw        | Wrench |       |  |  |
|--------------------|--------------|--------|-------|--|--|
|                    |              |        |       |  |  |
| <b>TSM FF-ZN08</b> | TS 30085I/HG | TD 9   | -     |  |  |
| <b>TSM FF-ZN11</b> | TS 40120I/HG | -      | T-T15 |  |  |
|                    |              |        |       |  |  |
|                    |              |        |       |  |  |



**TOP SLOT**

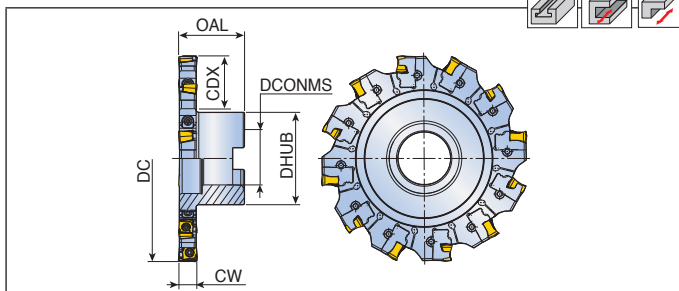
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## Spare parts

| Designation            | Right cartridge                                                                     | Left cartridge                                                                      | Wedge                                                                               | Adjust screw                                                                        | Insert screw                                                                        |
|------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                        |  |  |  |  |  |
| <b>TSM FF-S/W-ZN08</b> | TCT-SR-ZN08<br>TCT-WR-ZN08                                                          | TCT-SL-ZN08<br>TCT-WL-ZN08                                                          | WFZ 5                                                                               | SA M8-6.0                                                                           | TS 30085I/HG                                                                        |
|                        | Wedge screw                                                                         | Wrench                                                                              | L-Wrench                                                                            | Wedge Wrench                                                                        |                                                                                     |
|                        |  |  |  |  |                                                                                     |
|                        | WS 5                                                                                | TD 9                                                                                | L-W 3                                                                               | F-W 2.5                                                                             |                                                                                     |
|                        |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



**TOP SLOT**

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## Spare parts

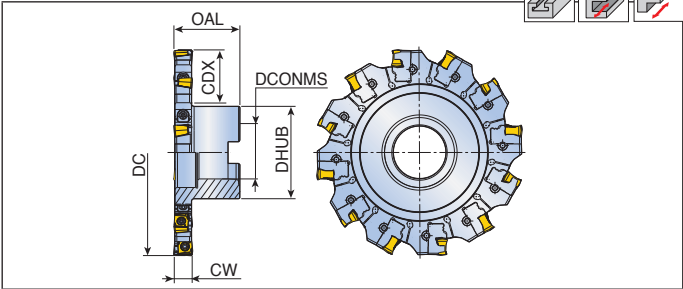
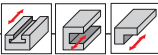
| Designation            | Right cartridge                                                                     | Left cartridge                                                                      | Wedge                                                                               | Adjust screw                                                                        | Insert screw                                                                        |
|------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                        |  |  |  |  |  |
| <b>TSM FD-S/W-ZN11</b> | TCT-SR-ZN11<br>TCT-WR-ZN11                                                          | TCT-SL-ZN11<br>TCT-WL-ZN11                                                          | WFZ 6                                                                               | SA M8-9.0                                                                           | TS 40120/HG                                                                         |
|                        | Wedge screw                                                                         | Wrench                                                                              | L-Wrench                                                                            | Wedge Wrench                                                                        |                                                                                     |
|                        |  |  |  |  |                                                                                     |
|                        | WS 6                                                                                | T-T15                                                                               | L-W 4                                                                               | T-W 3                                                                               |                                                                                     |



# TSM FF-S/W-ZN14



Slotting cutters: Adjustable flange type



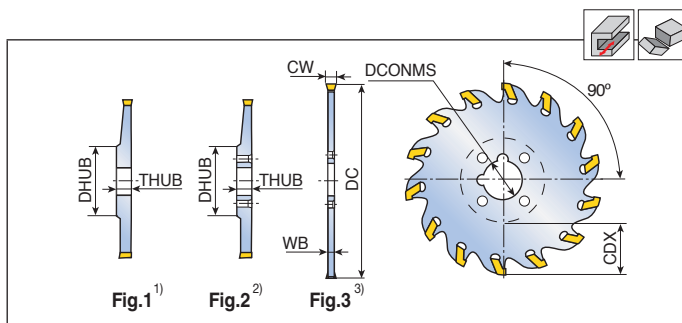
| Designation                 | CW (mm) |  | Dimension (mm) |        |      |     |      | Arbor style |  Kg | Insert                                                                                                |
|-----------------------------|---------|-----------------------------------------------------------------------------------|----------------|--------|------|-----|------|-------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
|                             |         |                                                                                   | DC             | DCONMS | DHUB | OAL | CDX  |             |                                                                                      |                                                                                                       |
| <b>TSM 125FF-S-32R-ZN14</b> | 20-23   | 3+3                                                                               | 125            | 32     | 58   | 50  | 32.5 | B           | 2.6                                                                                  | ZNHU 140...<br> E309 |
| <b>160FF-S-40R-ZN14</b>     | 20-23   | 5+5                                                                               | 160            | 40     | 70   | 50  | 43.0 | B           | 2.8                                                                                  |                                                                                                       |
| <b>200FF-S-40R-ZN14</b>     | 20-23   | 6+6                                                                               | 200            | 40     | 90   | 50  | 53.0 | C           | 4.6                                                                                  |                                                                                                       |
| <b>250FF-S-60R-ZN14</b>     | 20-23   | 8+8                                                                               | 250            | 60     | 130  | 50  | 58.0 | C           | 7.2                                                                                  |                                                                                                       |
| <b>315FF-S-60R-ZN14</b>     | 20-23   | 10+10                                                                             | 315            | 60     | 130  | 50  | 90.0 | C           | 11.3                                                                                 |                                                                                                       |
| <b>125FF-W-32R-ZN14</b>     | 23-26   | 3+3                                                                               | 125            | 32     | 58   | 50  | 32.5 | B           | 1.8                                                                                  |                                                                                                       |
| <b>160FF-W-40R-ZN14</b>     | 23-26   | 5+5                                                                               | 160            | 40     | 70   | 50  | 43.0 | B           | 3.0                                                                                  |                                                                                                       |
| <b>200FF-W-40R-ZN14</b>     | 23-26   | 6+6                                                                               | 200            | 40     | 90   | 50  | 53.0 | C           | 5.0                                                                                  |                                                                                                       |
| <b>250FF-W-60R-ZN14</b>     | 23-26   | 8+8                                                                               | 250            | 60     | 130  | 50  | 58.0 | C           | 7.5                                                                                  |                                                                                                       |
| <b>315FF-W-60R-ZN14</b>     | 23-26   | 10+10                                                                             | 315            | 60     | 130  | 50  | 90.0 | C           | 12.2                                                                                 |                                                                                                       |
|                             |         |                                                                                   |                |        |      |     |      |             |                                                                                      |                                                                                                       |
|                             |         |                                                                                   |                |        |      |     |      |             |                                                                                      |                                                                                                       |
|                             |         |                                                                                   |                |        |      |     |      |             |                                                                                      |                                                                                                       |
|                             |         |                                                                                   |                |        |      |     |      |             |                                                                                      |                                                                                                       |
|                             |         |                                                                                   |                |        |      |     |      |             |                                                                                      |                                                                                                       |
|                             |         |                                                                                   |                |        |      |     |      |             |                                                                                      |                                                                                                       |

► Width of cut is set at the smallest unless a specific width is requested

## Spare parts

| Designation            | Right cartridge                                                                     | Left cartridge                                                                      | Wedge                                                                               | Adjust screw                                                                        | Insert screw                                                                        |
|------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                        |  |  |  |  |  |
| <b>TSM FD-S/W-ZN14</b> | TCT-SR-ZN14                                                                         | TCT-SL-ZN14                                                                         | WFZ 6                                                                               | SA M8-9.0                                                                           | TS 40120L/HG                                                                        |
|                        | Wedge screw                                                                         | Wrench                                                                              | L-Wrench                                                                            | Wedge Wrench                                                                        |                                                                                     |
|                        |  |  |  |  |                                                                                     |
|                        | WS 6                                                                                | T-T15                                                                               | L-W 4                                                                               | T-W 3                                                                               |                                                                                     |





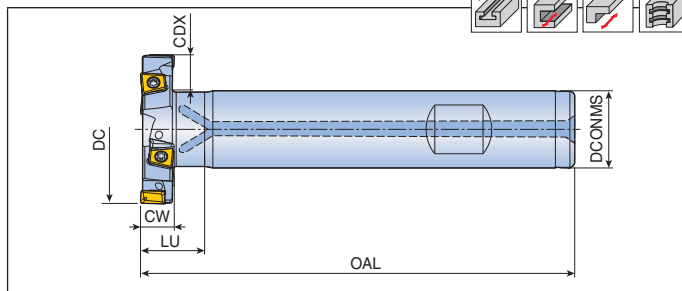
| Designation           | CW<br>(mm) |  | Dimension (mm) |        |      |      |      |     | Fig. | Insert seat<br>size | Insert                                                                                                              |
|-----------------------|------------|-----------------------------------------------------------------------------------|----------------|--------|------|------|------|-----|------|---------------------|---------------------------------------------------------------------------------------------------------------------|
|                       |            |                                                                                   | DC             | DCONMS | DHUB | WB   | THUB | CDX |      |                     |                                                                                                                     |
| <b>TSC 75 1.6 22A</b> | 1.6        | 8                                                                                 | 75             | 22.0   | 39   | 1.24 | 2.4  | 17  | 1    | 1                   | TIMC<br>TIMJ<br>TIPV<br> E300-E301 |
| <b>100 1.6 22A</b>    | 1.6        | 10                                                                                | 100            | 22.0   | 39   | 1.24 | 2.4  | 30  | 1    | 1                   |                                                                                                                     |
| <b>125 1.6 27A</b>    | 1.6        | 12                                                                                | 125            | 27.0   | 64   | 1.24 | 2.4  | 30  | 1    | 1                   |                                                                                                                     |
| <b>75 2 22A</b>       | 2.0-2.3    | 8                                                                                 | 75             | 22.0   | 39   | 1.6  | 2.4  | 17  | 1    | 2                   |                                                                                                                     |
| <b>100 2 22A</b>      | 2.0-2.3    | 10                                                                                | 100            | 22.0   | 39   | 1.6  | 2.4  | 30  | 1    | 2                   |                                                                                                                     |
| <b>125 2 27A</b>      | 2.0-2.3    | 12                                                                                | 125            | 27.0   | 64   | 1.6  | 2.4  | 30  | 1    | 2                   |                                                                                                                     |
| <b>100 2.4 22K</b>    | 2.3-2.5    | 10                                                                                | 100            | 22.0   | 46   | 1.9  | 2.4  | 26  | 2    | 2                   |                                                                                                                     |
| <b>125 2.4 32K</b>    | 2.3-2.5    | 12                                                                                | 125            | 32.0   | 55   | 1.9  | 2.4  | 34  | 2    | 2                   |                                                                                                                     |
| <b>160 2.4 32K</b>    | 2.3-2.5    | 16                                                                                | 160            | 32.0   | 55   | 1.9  | 2.4  | 52  | 2    | 2                   |                                                                                                                     |
| <b>100 3 22K</b>      | 2.8-3.58   | 6                                                                                 | 100            | 22.0   | -    | 2.4  | -    | 26  | 3    | 4                   |                                                                                                                     |
| <b>125 3 32K</b>      | 2.8-3.53   | 8                                                                                 | 125            | 32.0   | -    | 2.4  | -    | 34  | 3    | 4                   |                                                                                                                     |
| <b>160 3 40K</b>      | 2.8-3.53   | 10                                                                                | 160            | 40.0   | -    | 2.4  | -    | 39  | 3    | 4                   |                                                                                                                     |
| <b>100 4 22K</b>      | 3.54-4.52  | 6                                                                                 | 100            | 22.0   | -    | 3.2  | -    | 27  | 3    | 4                   |                                                                                                                     |
| <b>125 4 32K</b>      | 3.54-4.52  | 8                                                                                 | 125            | 32.0   | -    | 3.2  | -    | 34  | 3    | 4                   |                                                                                                                     |
| <b>160 4 40K</b>      | 3.54-4.52  | 10                                                                                | 160            | 40.0   | -    | 3.2  | -    | 39  | 3    | 4                   |                                                                                                                     |
|                       |            |                                                                                   |                |        |      |      |      |     |      |                     |                                                                                                                     |
|                       |            |                                                                                   |                |        |      |      |      |     |      |                     |                                                                                                                     |
|                       |            |                                                                                   |                |        |      |      |      |     |      |                     |                                                                                                                     |

- <sup>1)</sup> Arbor type, <sup>2)</sup> Drive shank, <sup>3)</sup> Drive flange+Drive shank
- Extractor(ESG 0.5 or ESG 1) supplied with each cutter
- Flange set and shank should be ordered separately

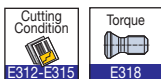
## Spare parts

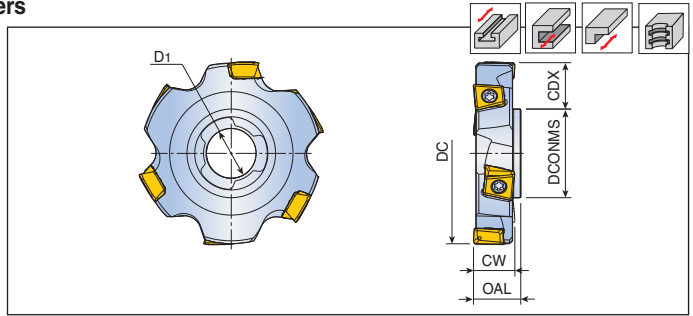
| Designation        | Drive flange set                                                                    | Drive shank                                                                         |  |  |  |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                    |  |  |  |  |  |
| <b>TSC-2.4-22K</b> | -                                                                                   | TW32-40                                                                             |  |  |  |
| <b>TSC-2.4-32K</b> | -                                                                                   | T32-55                                                                              |  |  |  |
| <b>TSC-22K</b>     | TR22-46                                                                             | TW32-40                                                                             |  |  |  |
| <b>TSC-32K</b>     | TR32-55                                                                             | T32-55                                                                              |  |  |  |
| <b>TSC-40K</b>     | TR40-80                                                                             | T40-80                                                                              |  |  |  |



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| Designation        | Screw                                                                               | Wrench                                                                              |  |  |  |
|--------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                    |  |  |  |  |  |
| <b>4T-TSM-W-05</b> | TS 18049/HG-P                                                                       | TD 6P                                                                               |  |  |  |
|                    |                                                                                     |                                                                                     |  |  |  |
|                    |                                                                                     |                                                                                     |  |  |  |
|                    |                                                                                     |                                                                                     |  |  |  |



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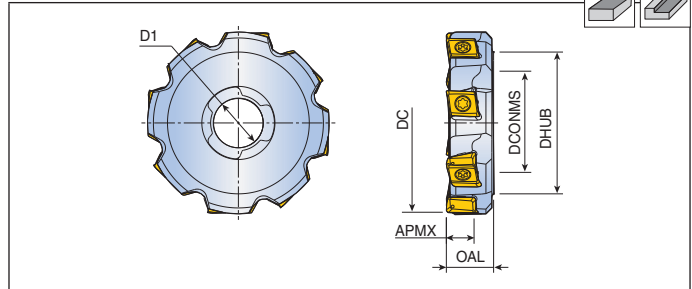
## Spare parts

| Designation   | Screw                                                                               | Wrench                                                                              |  |  |  |
|---------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|               |  |  |  |  |  |
| <b>4T-TSM</b> | TS 18049/HG-P                                                                       | TD 6P                                                                               |  |  |  |
|               |                                                                                     |                                                                                     |  |  |  |
|               |                                                                                     |                                                                                     |  |  |  |
|               |                                                                                     |                                                                                     |  |  |  |



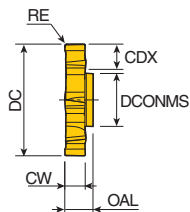
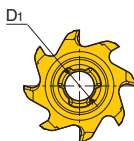


**MaxiTANG**

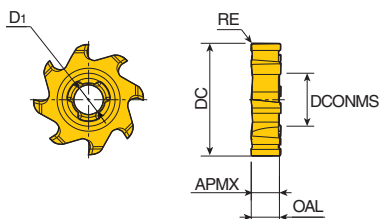
[illegible]

| Designation          | Screw                                                                               | Wrench                                                                              |  |  |  |
|----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|
|                      |  |  |  |  |  |
| <b>4T-TE90-TR-05</b> | TS 18049/HG-P                                                                       | TD 6P                                                                               |  |  |  |
|                      |                                                                                     |                                                                                     |  |  |  |
|                      |                                                                                     |                                                                                     |  |  |  |
|                      |                                                                                     |                                                                                     |  |  |  |
|                      |                                                                                     |                                                                                     |  |  |  |



[illegible]

●: Standard items

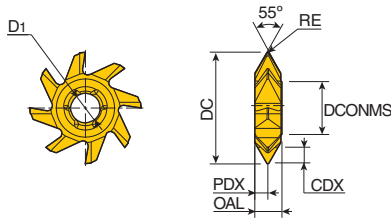
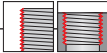
[illegible]

●: Standard items

# TR-T-W55



Interchangeable solid carbide threading heads - 55° partial profile



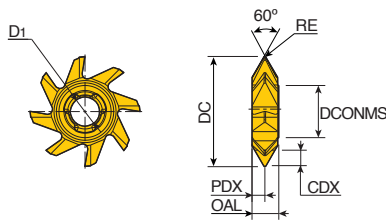
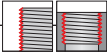
| Designation               | TPI | Dimension (mm) |      |     |     |     |     |     |      |        |        | Grade |
|---------------------------|-----|----------------|------|-----|-----|-----|-----|-----|------|--------|--------|-------|
|                           |     | DC             | DMIN | PDX | RE  | D1  | CDX | OAL | ZEFP | DCONMS | TT5525 |       |
| <b>TR13-T-24.7-W55-3T</b> | 5-3 | 24.7           | 36   | 2.2 | 0.5 | 7.5 | 3.5 | 7.7 | 6    | 13     | ●      |       |
| <b>15-T-31.7-W55-4T</b>   | 6-4 | 31.7           | 46   | 3.7 | 0.5 | 8.4 | 4.7 | 7.7 | 8    | 15     | ●      |       |
| <b>17-T-39.7-W55-3T</b>   | 4-3 | 39.7           | 57   | 4.5 | 0.8 | 9.8 | 6.2 | 9.5 | 10   | 17     | ●      |       |
|                           |     |                |      |     |     |     |     |     |      |        |        |       |
|                           |     |                |      |     |     |     |     |     |      |        |        |       |
|                           |     |                |      |     |     |     |     |     |      |        |        |       |

- TPI: Threads per inch
- ZEFP: Peripheral effective cutting edge count
- : Standard items

# TR-T-M60



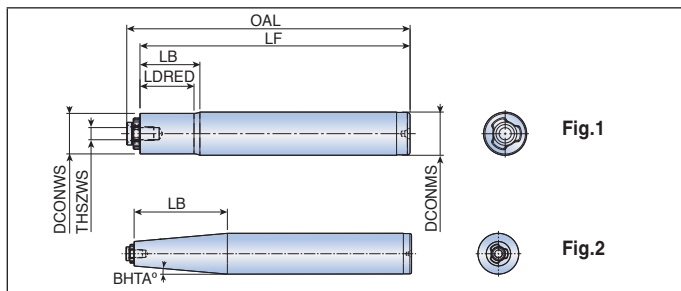
Interchangeable solid carbide threading heads - 60° partial profile



| Designation               | TP (mm) | TPI | Dimension (mm) |      |     |     |     |     |     |      |        |        | Grade |
|---------------------------|---------|-----|----------------|------|-----|-----|-----|-----|-----|------|--------|--------|-------|
|                           |         |     | DC             | DMIN | PDX | RE  | D1  | CDX | OAL | ZEFP | DCONMS | TT5525 |       |
| <b>TR13-T-24.7-M60-5P</b> | 3-5     | 5-3 | 24.7           | 36   | 2.2 | 0.2 | 7.5 | 3.5 | 7.7 | 6    | 13     | ●      |       |
| <b>15-T-31.7-M60-6P</b>   | 4-6     | 6-4 | 31.7           | 46   | 3.7 | 0.3 | 8.4 | 4.7 | 7.7 | 8    | 15     | ●      |       |
| <b>17-T-39.7-M60-8P</b>   | 6-8     | 4-3 | 39.7           | 57   | 4.5 | 0.4 | 9.8 | 6.2 | 9.5 | 10   | 17     | ●      |       |
|                           |         |     |                |      |     |     |     |     |     |      |        |        |       |
|                           |         |     |                |      |     |     |     |     |     |      |        |        |       |
|                           |         |     |                |      |     |     |     |     |     |      |        |        |       |

- TP: Threads pitch, TPI: Threads per inch
- ZEFP: Peripheral effective cutting edge count
- : Standard items

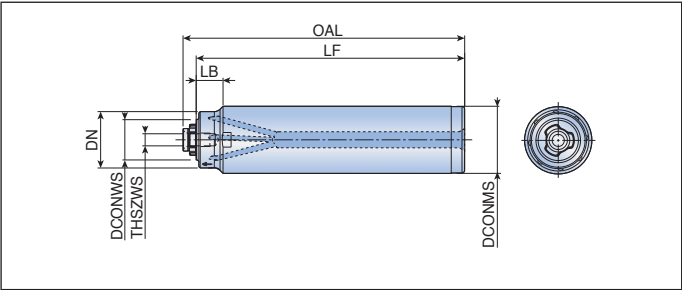


[illegible]

## Spare parts

| Designation | Screw                                                                               | Wrench                                                                              | Wrench handle                                                                       |  |  |
|-------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|             |  |  |  |  |  |
| <b>TR13</b> | TS 40T098/HG-P                                                                      | BLD IP15/S7                                                                         | SW6-T                                                                               |  |  |
| <b>TR15</b> | TS 50T110/HG-P                                                                      | BLD IP20/S7                                                                         | SW6-T                                                                               |  |  |
| <b>TR17</b> | SR M6x0.5-<br>SP1719-IP25-H                                                         | BLD IP25/S7                                                                         | SW6-T                                                                               |  |  |
|             |                                                                                     |                                                                                     |                                                                                     |  |  |

Facing holders



| Designation      | Dimension (mm) |        |      |     |        |        |    | Coolant hole | Carbide head                                                                                                     |
|------------------|----------------|--------|------|-----|--------|--------|----|--------------|------------------------------------------------------------------------------------------------------------------|
|                  | DCONMS         | DCONWS | LB   | LF  | OAL    | THSZWS | DN |              |                                                                                                                  |
| TR13-20-L100-F-C | 20             | 13     | 10.0 | 100 | 104.35 | M4x0.5 | 16 | ●            | TR-F, 4T-TE90-TR<br> E237, E239 |
| 13-25-L100-F-C   | 25             | 13     | 12.5 | 100 | 104.35 | M4x0.5 | 16 | ●            |                                                                                                                  |
| 15-25-L100-F-C   | 25             | 15     | 10.0 | 100 | 104.90 | M5x0.5 | 21 | ●            |                                                                                                                  |
| 15-32-L110-F-C   | 32             | 15     | 13.5 | 110 | 114.90 | M5x0.5 | 21 | ●            |                                                                                                                  |
| 17-32-L140-F-C   | 32             | 17     | 10.0 | 140 | 146.00 | M6x0.5 | 28 | ●            |                                                                                                                  |
| 17-42-L140-F-C   | 42             | 17     | 15.0 | 140 | 146.00 | M6x0.5 | 28 | ●            |                                                                                                                  |
|                  |                |        |      |     |        |        |    |              |                                                                                                                  |
|                  |                |        |      |     |        |        |    |              |                                                                                                                  |
|                  |                |        |      |     |        |        |    |              |                                                                                                                  |
|                  |                |        |      |     |        |        |    |              |                                                                                                                  |
|                  |                |        |      |     |        |        |    |              |                                                                                                                  |
|                  |                |        |      |     |        |        |    |              |                                                                                                                  |
|                  |                |        |      |     |        |        |    |              |                                                                                                                  |
|                  |                |        |      |     |        |        |    |              |                                                                                                                  |
|                  |                |        |      |     |        |        |    |              |                                                                                                                  |
|                  |                |        |      |     |        |        |    |              |                                                                                                                  |

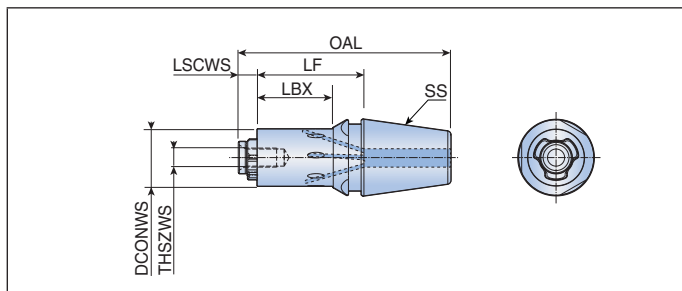
Spare parts

| Designation | Screw                                                                               | Wrench                                                                              | Wrench handle                                                                       |  |  |
|-------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|             |  |  |  |  |  |
| TR13        | TS 40T098/HG-P                                                                      | BLD IP15/S7                                                                         | SW6-T                                                                               |  |  |
| TR15        | TS 50T110/HG-P                                                                      | BLD IP20/S7                                                                         | SW6-T                                                                               |  |  |
| TR17        | SR M6x0.5-SP1719-IP25-H                                                             | BLD IP20/S7                                                                         | SW6-T                                                                               |  |  |
|             |                                                                                     |                                                                                     |                                                                                     |  |  |

# TR-ER-C



## ER Collet adapter

[illegible]

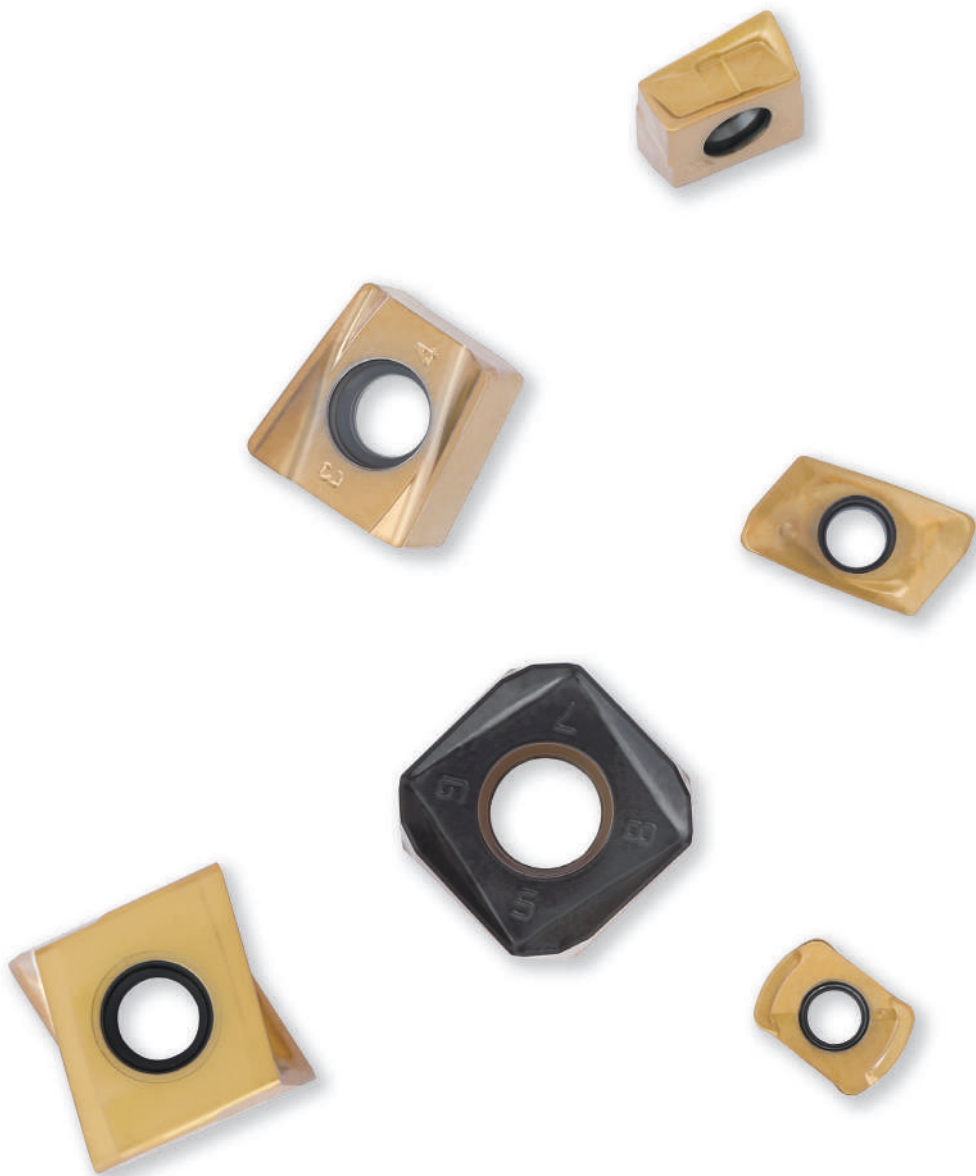
## Spare parts

| Designation | Screw                                                                               | Wrench                                                                              | Wrench handle                                                                       |  |  |
|-------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|
|             |  |  |  |  |  |
| <b>TR13</b> | TS 40T098/HG-P                                                                      | BLD IP15/S7                                                                         | SW6-T                                                                               |  |  |
| <b>TR15</b> | TS 50T110/HG-P                                                                      | BLD IP20/S7                                                                         | SW6-T                                                                               |  |  |
| <b>TR17</b> | SR M6x0.5-<br>SP1719-IP25-H                                                         | BLD IP25/S7                                                                         | SW6-T                                                                               |  |  |
|             |                                                                                     |                                                                                     |                                                                                     |  |  |





# Milling Inserts



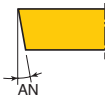
# Insert Designation System



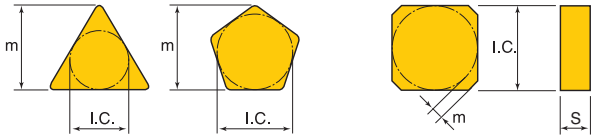
## 1 Shape

|                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |         |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------|
|  |  |  |  |  |  |  |  |  |  |  | Special |
| A                                                                                | B                                                                                 | C                                                                                 | H                                                                                 | L                                                                                 | O                                                                                 | P                                                                                 | R                                                                                 | S                                                                                 | T                                                                                 | W                                                                                 | X       |

## 2 Clearance angle

|                                                                                   |    |     |     |     |     |    |     |
|-----------------------------------------------------------------------------------|----|-----|-----|-----|-----|----|-----|
|  |    |     |     |     |     |    |     |
| B                                                                                 | C  | D   | E   | F   | G   | N  | P   |
| 5°                                                                                | 7° | 15° | 20° | 25° | 30° | 0° | 11° |

## 3 Tolerance



| Class | Tolerance (mm) |        |        | I.C. Dimension (mm) |      |       |       |       |       |
|-------|----------------|--------|--------|---------------------|------|-------|-------|-------|-------|
|       | m              | S      | I.C.   | 6.35                | 9.52 | 12.70 | 15.87 | 19.05 | 25.40 |
| A     | ±0.005         | ±0.025 | ±0.025 | •                   | •    | •     | •     | •     | •     |
| E     | ±0.025         | ±0.025 | ±0.025 | •                   | •    | •     | •     | •     | •     |
| F     | ±0.005         | ±0.025 | ±0.013 | •                   | •    | •     | •     | •     | •     |
| G     | ±0.025         | ±0.130 | ±0.025 | •                   | •    | •     | •     | •     | •     |
| H     | ±0.013         | ±0.025 | ±0.013 | •                   | •    | •     | •     | •     | •     |
| K     | ±0.013         | ±0.025 | ±0.05  | •                   | •    |       |       |       |       |
|       |                |        | ±0.08  |                     |      | •     |       |       |       |
|       |                |        | ±0.10  |                     |      |       | •     | •     |       |
|       |                |        | ±0.13  |                     |      |       |       |       | •     |
| M     | ±0.08          | ±0.130 | ±0.05  | •                   | •    |       |       |       |       |
|       | ±0.13          |        | ±0.08  |                     |      | •     |       |       |       |
|       | ±0.15          |        | ±0.10  |                     |      |       | •     | •     |       |
|       | ±0.18          |        | ±0.13  |                     |      |       |       |       | •     |

## 4 Chipformer and clamp type

|                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |         |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------|
|  |  |  |  |  |  |  |  | Special |
| A                                                                                  | F                                                                                   | G                                                                                   | M                                                                                   | N                                                                                   | R                                                                                   | T                                                                                   | W                                                                                   | X       |

# Insert Designation System



5 Cutting edge length(mm)

6 Thickness(mm)

7 Corner radius(mm)

| I.C(mm) | C  | R,S | T  | H  | O  |
|---------|----|-----|----|----|----|
| 5.56    |    |     |    |    |    |
| 6.35    | 06 | 06  | 11 |    |    |
| 7.94    | 08 |     | 13 |    |    |
| 9.52    | 09 | 09  | 16 |    |    |
| 12.70   | 12 | 12  | 22 | 05 | 05 |
| 15.87   | 16 | 15  | 27 | 09 |    |
| 25.40   | 25 | 25  |    |    |    |

|    |      |
|----|------|
|    |      |
| 01 | 1.59 |
| 02 | 2.38 |
| 03 | 3.18 |
| T3 | 3.97 |
| 04 | 4.76 |
| 05 | 5.56 |
| 06 | 6.35 |
| 07 | 7.94 |
| 09 | 9.52 |

|     |     |
|-----|-----|
|     |     |
| 02R | 0.2 |
| 04R | 0.4 |
| 05R | 0.5 |
| 08R | 0.8 |
| 10R | 1.0 |
| 12R | 1.2 |
| 15R | 1.5 |
| 16R | 1.6 |
| 24R | 2.4 |
| 32R | 3.2 |
| 40R | 4.0 |

7 Parallel land

8 Edge condition

9 Hand of tool

10 Manufacturer's option

A=45° D=60°  
E=75° F=85°  
P=90° Z=Special

Entering angle

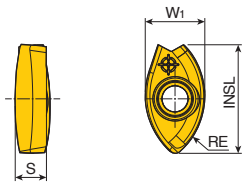
B= 5° F=25°  
C= 7° G=30°  
D=15° N= 0°  
E=20° P=11°  
Z=Special

Clearance angle of wiper

|   |  |
|---|--|
| F |  |
| E |  |
| T |  |
| S |  |

|     |              |
|-----|--------------|
| AL  | Aluminum     |
| WC  | Wiper crown  |
| MR  | Medium rough |
| M   | Medium       |
| L   | Light        |
| ML  | Medium light |
| E□□ | Economical   |

Inserts



| Size | Dimension (mm) |      |     |      |      |  |
|------|----------------|------|-----|------|------|--|
|      | INSL           | W1   | S   | APMX | RE   |  |
| 160  | 12.4           | 6.8  | 3.7 | 8.0  | 8.0  |  |
| 200  | 14.9           | 8.2  | 4.8 | 10.0 | 10.0 |  |
| 250  | 18.9           | 10.2 | 5.9 | 12.5 | 12.5 |  |
| 300  | 22.1           | 11.8 | 6.8 | 15.0 | 15.0 |  |
| 320  | 23.9           | 12.8 | 7.5 | 16.0 | 16.0 |  |
|      |                |      |     |      |      |  |
|      |                |      |     |      |      |  |

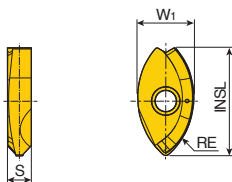


| Insert                                                                           | Designation | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        | Uncoated |     |  |
|----------------------------------------------------------------------------------|-------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|-----|--|
|                                                                                  |             | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510   | K10 |  |
|  | 2FB 160-M   | 2.0-6.5                          | 0.30-0.07       | ●      |        | ●      | ●      | ●       |        |        |        | ●        |     |  |
|                                                                                  | 200-M       | 3.0-8.0                          | 0.35-0.08       | ●      |        | ●      | ●      | ●       |        |        |        | ●        |     |  |
|                                                                                  | 250-M       | 3.5-10.0                         | 0.35-0.08       | ●      |        | ●      | ●      |         |        |        |        | ●        |     |  |
|                                                                                  | 300-M       | 4.0-12.5                         | 0.40-0.08       | ●      |        | ●      | ●      |         |        |        |        | ●        |     |  |
|                                                                                  | 320-M       | 4.5-13.0                         | 0.40-0.08       | ●      |        | ●      | ●      |         |        |        |        | ●        |     |  |
|  | 2FB 160-ML  | 2.0-6.5                          | 0.28-0.05       | ●      |        | ●      | ●      |         |        |        |        |          |     |  |
|                                                                                  | 200-ML      | 3.0-8.0                          | 0.32-0.07       | ●      |        | ●      | ●      |         |        |        |        |          |     |  |
|                                                                                  | 250-ML      | 3.5-10.0                         | 0.32-0.07       | ●      |        | ●      |        |         |        |        |        |          |     |  |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |

●: Standard items



E176-E177



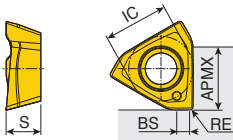
| Size          | Dimension (mm) |      |     |      |    |  |
|---------------|----------------|------|-----|------|----|--|
|               | INSL           | W1   | S   | APMX | RE |  |
| <b>320C-M</b> | 23             | 12.0 | 5.2 | 16   | 16 |  |
| <b>500C-M</b> | 36             | 18.6 | 7.0 | 25   | 25 |  |
| <b>320P-M</b> | 21             | 9.9  | 5.2 | 16   | 16 |  |
| <b>500P-M</b> | 32.9           | 15.3 | 7.0 | 25   | 25 |  |
|               |                |      |     |      |    |  |
|               |                |      |     |      |    |  |

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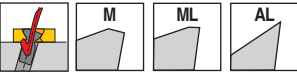
●: Standard items



Inserts



| Size | Dimension (mm) |     |      |         |         |  |
|------|----------------|-----|------|---------|---------|--|
|      | IC             | S   | APMX | BS      | RE      |  |
| 04   | 3.9            | 2.1 | 3.5  | 0.5-0.7 | 0.2-0.4 |  |
| 06   | 5.3            | 2.8 | 4.7  | 0.6-1.2 | 0.2-0.8 |  |
| 10   | 6.9            | 4.0 | 7.0  | 0.5-1.3 | 0.4-1.6 |  |
| 15   | 10.7           | 5.0 | 11.0 | 0.5-2.0 | 0.4-2.4 |  |
| 19   | 13.5           | 6.0 | 15.0 | 0.5-2.0 | 0.4-3.2 |  |
|      |                |     |      |         |         |  |
|      |                |     |      |         |         |  |

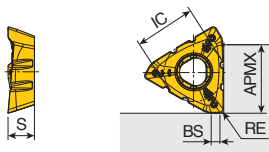


| Insert                                                                             | Designation | Recommended machining conditions |                 | Cermet    | Coated |        |        |         |        |        |        |        |        | Uncoated |     |  |
|------------------------------------------------------------------------------------|-------------|----------------------------------|-----------------|-----------|--------|--------|--------|---------|--------|--------|--------|--------|--------|----------|-----|--|
|                                                                                    |             | ap (mm)                          | Feed (mm/tooth) | CT7000    | TT9080 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT3535 | TT3520 | TT2510   | K10 |  |
|                                                                                    |             |                                  |                 |           |        |        |        |         |        |        |        |        |        |          |     |  |
|    | 3PKT        | 040202R-M                        | 0.5-3.0         | 0.08-0.04 |        | ●      | ●      |         |        |        |        |        |        |          |     |  |
|                                                                                    |             | 040204R-M                        | 0.5-3.0         | 0.08-0.04 |        | ●      | ●      |         |        |        |        |        |        |          |     |  |
|                                                                                    |             | 060302R-M                        | 1.0-4.0         | 0.10-0.04 |        | ●      | ●      | ●       |        |        |        |        |        |          | ●   |  |
|                                                                                    |             | 060304R-M                        | 1.0-4.0         | 0.10-0.04 |        | ●      | ●      | ●       |        |        |        | ●      |        |          | ●   |  |
|                                                                                    |             | 060308R-M                        | 1.0-4.0         | 0.10-0.04 |        | ●      | ●      | ●       |        |        |        | ●      |        |          | ●   |  |
|                                                                                    |             | 100404R-M                        | 2.0-6.0         | 0.12-0.05 |        | ●      | ●      | ●       |        | ●      | ●      | ●      |        |          | ●   |  |
|                                                                                    |             | 100408R-M                        | 2.0-6.0         | 0.12-0.05 |        | ●      | ●      | ●       |        | ●      | ●      | ●      |        |          | ●   |  |
|                                                                                    |             | 100416R-M                        | 2.0-6.0         | 0.12-0.05 |        | ●      |        |         |        |        |        |        |        |          | ●   |  |
|                                                                                    |             | 150508R-M                        | 3.0-9.0         | 0.17-0.07 |        | ●      | ●      | ●       | ●      | ●      | ●      | ●      |        |          | ●   |  |
|                                                                                    |             | 150516R-M                        | 3.0-9.0         | 0.17-0.07 |        | ●      |        |         |        | ●      |        |        |        |          | ●   |  |
|                                                                                    |             | 150524R-M                        | 3.0-12.0        | 0.17-0.07 |        | ●      |        |         |        |        |        |        |        |          | ●   |  |
|                                                                                    |             | 190608R-M                        | 4.5-12.0        | 0.22-0.09 |        | ●      | ●      | ●       | ●      | ●      | ●      | ●      |        |          | ●   |  |
|                                                                                    |             | 190616R-M                        | 4.5-12.0        | 0.22-0.09 |        | ●      | ●      | ●       |        | ●      |        |        |        |          | ●   |  |
|                                                                                    |             | 190624R-M                        | 4.5-12.0        | 0.22-0.09 |        | ●      |        |         |        |        |        |        |        |          | ●   |  |
|                                                                                    |             | 190632R-M                        | 4.5-12.0        | 0.22-0.09 |        | ●      |        |         |        |        |        |        |        |          | ●   |  |
|  | 3PHT        | 100404R-M                        | 2.0-6.0         | 0.12-0.05 | ●      | ●      |        |         |        |        |        |        |        |          |     |  |
|                                                                                    |             | 100408R-M                        | 2.0-6.0         | 0.12-0.05 | ●      | ●      |        |         |        |        |        |        |        |          |     |  |
|                                                                                    |             | 150504R-M                        | 3.0-9.0         | 0.17-0.07 |        | ●      |        |         |        |        |        |        |        |          |     |  |
|                                                                                    |             | 150508R-M                        | 3.0-9.0         | 0.17-0.07 | ●      | ●      |        |         |        |        |        | ●      |        |          |     |  |
|                                                                                    |             | 150516R-M                        | 3.0-9.0         | 0.17-0.07 | ●      | ●      |        |         |        |        |        |        |        |          |     |  |
|                                                                                    |             | 190608R-M                        | 4.5-12.0        | 0.22-0.09 | ●      | ●      |        |         |        |        |        |        |        |          |     |  |
|  | 3PKT        | 100404R-ML                       | 2.0-6.0         | 0.10-0.04 |        | ●      | ●      | ●       |        |        | ●      | ●      |        |          |     |  |
|                                                                                    |             | 100408R-ML                       | 2.0-6.0         | 0.10-0.04 |        | ●      | ●      | ●       |        |        |        | ●      |        |          |     |  |
|                                                                                    |             | 150508R-ML                       | 3.0-9.0         | 0.12-0.05 |        | ●      | ●      | ●       |        |        | ●      | ●      | ●      |          |     |  |
|                                                                                    |             | 190608R-ML                       | 4.5-12.0        | 0.14-0.06 |        | ●      | ●      | ●       |        |        | ●      |        |        |          |     |  |
|  | 3PHT        | 100408R-ML                       | 2.0-6.0         | 0.10-0.04 |        | ●      | ●      |         |        |        |        |        |        |          |     |  |
|                                                                                    |             | 150508R-ML                       | 3.0-9.0         | 0.12-0.05 |        | ●      | ●      |         |        |        |        |        |        |          |     |  |
|  | 3PHT        | 060304R-AL                       | 1.0-4.0         | 0.22-0.07 |        |        |        |         |        |        |        |        |        |          | ●   |  |
|                                                                                    |             | 100404R-AL                       | 2.0-6.0         | 0.40-0.10 |        |        |        |         |        |        |        |        |        |          | ●   |  |
|                                                                                    |             | 100408R-AL                       | 2.0-6.0         | 0.40-0.10 |        |        |        |         |        |        |        |        |        |          | ●   |  |
|                                                                                    |             | 150504R-AL                       | 3.0-9.0         | 0.50-0.10 |        |        |        |         |        |        |        |        |        |          | ●   |  |
|                                                                                    |             | 150508R-AL                       | 3.0-9.0         | 0.50-0.10 |        |        |        |         |        |        |        |        |        |          | ●   |  |
|                                                                                    |             | 190604R-AL                       | 4.5-12.0        | 0.50-0.15 |        |        |        |         |        |        |        |        |        |          | ●   |  |
|                                                                                    |             | 190608R-AL                       | 4.5-12.0        | 0.50-0.15 |        |        |        |         |        |        |        |        |        | ●        |     |  |

•: Standard items



## Splitter Inserts



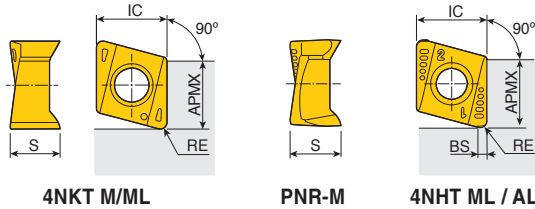
| Size      | Dimension (mm) |     |      |     |     |  |
|-----------|----------------|-----|------|-----|-----|--|
|           | IC             | S   | APMX | BS  | RE  |  |
| <b>15</b> | 10.7           | 5.0 | 11.0 | 1.6 | 0.8 |  |
| <b>19</b> | 13.5           | 6.0 | 15.0 | 2.0 | 0.8 |  |
|           |                |     |      |     |     |  |
|           |                |     |      |     |     |  |
|           |                |     |      |     |     |  |

[illegible]

●: Standard items



Inserts



| Size | Dimension (mm) |         |           |         |         |  |
|------|----------------|---------|-----------|---------|---------|--|
|      | IC             | S       | APMX      | BS      | RE      |  |
| 04   | 4.0            | 3.1     | 3.5       | -       | 0.2-0.8 |  |
| 06   | 6.6            | 4.2-5.0 | 5.8-6.2   | 0.6-1.0 | 0.4-2.0 |  |
| 09   | 8.6            | 5.7-6.3 | 8.0       | 0.8-1.2 | 0.4-1.6 |  |
| 11   | 10.7           | 8.1     | 9.9-10.5  | 1.0     | 0.8     |  |
| 14   | 14.0           | 9.2-9.4 | 13.5-13.8 | 1.25    | 0.8     |  |



| Insert                                                                              | Designation       | Recommended machining conditions |                 | Coated |        |        |         |        |        |        |        | Uncoated |     |  |
|-------------------------------------------------------------------------------------|-------------------|----------------------------------|-----------------|--------|--------|--------|---------|--------|--------|--------|--------|----------|-----|--|
|                                                                                     |                   | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT3535 | TT2510   | K10 |  |
|    | 4NKT 040202R-M    | 0.5-3.0                          | 0.08-0.04       | ●      | ●      |        |         |        |        |        |        |          |     |  |
|                                                                                     | 040204R-M         | 1.0-3.0                          | 0.12-0.06       | ●      | ●      |        |         |        |        | ●      |        |          |     |  |
|                                                                                     | 040208R-M         | 1.0-3.0                          | 0.12-0.06       | ●      | ●      |        |         |        |        | ●      |        |          |     |  |
|                                                                                     | 060304R-M         | 0.5-5.0                          | 0.15-0.07       | ●      | ●      |        |         |        |        | ●      |        |          |     |  |
|                                                                                     | 060308R-M         | 1.0-5.0                          | 0.15-0.07       | ●      | ●      |        | ●       |        |        | ●      |        | ●        |     |  |
|                                                                                     | 060312R-M         | 1.0-5.0                          | 0.15-0.07       | ●      | ●      |        |         |        |        | ●      |        | ●        |     |  |
|                                                                                     | 060316R-M         | 2.0-4.5                          | 0.15-0.07       | ●      | ●      |        |         |        |        | ●      |        | ●        |     |  |
|                                                                                     | 060320R-M         | 2.0-4.5                          | 0.15-0.07       | ●      | ●      |        |         |        |        | ●      |        |          |     |  |
|                                                                                     | 090408R-M         | 2.5-7.0                          | 0.15-0.07       | ●      | ●      |        | ●       |        | ●      | ●      |        | ●        |     |  |
|                                                                                     | 090416R-M         | 2.5-7.0                          | 0.15-0.07       | ●      | ●      |        |         |        |        | ●      |        |          |     |  |
|                                                                                     | 110608R-M         | 3.5-10.0                         | 0.18-0.09       | ●      | ●      |        | ●       |        |        | ●      |        |          |     |  |
|                                                                                     | 110616R-M         | 2.5-9.5                          | 0.18-0.09       | ●      |        |        |         |        |        |        |        |          |     |  |
|                                                                                     | 110624R-M         | 2.5-9.5                          | 0.18-0.09       | ●      |        |        |         |        |        |        |        |          |     |  |
|                                                                                     | 140708R-M         | 4.0-12.0                         | 0.18-0.09       | ●      | ●      |        | ●       | ●      |        | ●      |        |          |     |  |
|   | 4NKT 110608 PNR-M | 3.5-10.0                         | 0.18-0.09       | ●      | ●      |        | ●       |        |        |        |        |          |     |  |
|                                                                                     | 140708 PNR-M      | 4.0-12.0                         | 0.18-0.09       | ●      | ●      |        | ●       |        |        |        |        |          |     |  |
|                                                                                     |                   |                                  |                 |        |        |        |         |        |        |        |        |          |     |  |
|  | 4NKT 060304R-ML   | 0.5-5.0                          | 0.12-0.05       | ●      | ●      |        |         |        |        | ●      |        |          |     |  |
|                                                                                     | 060308R-ML        | 1.0-5.0                          | 0.12-0.05       | ●      | ●      |        |         |        |        | ●      | ●      |          |     |  |
|                                                                                     | 060312R-ML        | 1.0-5.0                          | 0.12-0.05       | ●      | ●      |        |         |        |        | ●      |        |          |     |  |
|                                                                                     | 060316R-ML        | 2.0-4.5                          | 0.12-0.05       | ●      | ●      |        |         |        |        | ●      |        |          |     |  |
|                                                                                     | 060320R-ML        | 2.0-4.5                          | 0.12-0.05       | ●      | ●      |        |         |        |        | ●      |        |          |     |  |
|                                                                                     | 090408R-ML        | 2.5-7.0                          | 0.10-0.05       | ●      | ●      |        |         |        |        |        |        |          |     |  |
|  | 4NHT 060304R-ML   | 0.5-5.0                          | 0.13-0.05       | ●      | ●      |        |         |        |        | ●      |        |          |     |  |
|                                                                                     | 060308R-ML        | 1.0-5.0                          | 0.13-0.05       | ●      | ●      |        |         |        |        | ●      |        |          |     |  |
|                                                                                     | 090404R-ML        | 2.5-7.0                          | 0.12-0.05       | ●      |        |        |         |        |        |        |        |          |     |  |
|                                                                                     | 090408R-ML        | 2.5-7.0                          | 0.12-0.05       | ●      | ●      |        |         |        |        |        |        |          |     |  |
|  | 4NHT 060304R-AL   | 1.0-5.0                          | 0.40-0.10       |        |        |        |         |        |        |        |        |          | ●   |  |
|                                                                                     | 060308R-AL        | 1.0-5.0                          | 0.40-0.10       |        |        |        |         |        |        |        |        |          | ●   |  |
|                                                                                     | 090404R-AL        | 2.5-7.0                          | 0.50-0.10       |        |        |        |         |        |        |        |        |          | ●   |  |
|                                                                                     | 090408R-AL        | 2.5-7.0                          | 0.50-0.10       |        |        |        |         |        |        |        |        |          | ●   |  |
|                                                                                     | 110608R-AL        | 3.5-10.0                         | 0.50-0.10       |        |        |        |         |        |        |        |        |          | ●   |  |
|                                                                                     | 140708R-AL        | 4.0-12.0                         | 0.50-0.10       |        |        |        |         |        |        |        |        |          | ●   |  |

●: Standard items

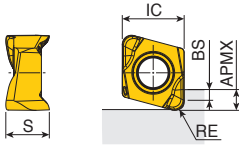




# 4NHT-F



## Inserts



| Size          | Dimension (mm) |     |      |     |     |  |
|---------------|----------------|-----|------|-----|-----|--|
|               | IC             | S   | APMX | BS  | RE  |  |
| <b>04-05R</b> | 4.0            | 3.1 | 2.2  | 1.7 | 0.5 |  |
| <b>04-10R</b> | 4.0            | 3.0 | 2.0  | 1.0 | 1.0 |  |
| <b>06-05R</b> | 6.6            | 4.9 | 2.3  | 1.8 | 0.5 |  |
| <b>06-10R</b> | 6.6            | 4.7 | 2.1  | 1.1 | 1.0 |  |
| <b>06-15R</b> | 6.6            | 4.5 | 3.3  | 1.8 | 1.5 |  |
| <b>06-20R</b> | 6.6            | 4.3 | 3.0  | 1.1 | 2.0 |  |
|               |                |     |      |     |     |  |



| Insert                                                                           | Designation           | Recommended machining conditions |                    | Coated |        |        |         |        |        |        |        | Uncoated |  |     |
|----------------------------------------------------------------------------------|-----------------------|----------------------------------|--------------------|--------|--------|--------|---------|--------|--------|--------|--------|----------|--|-----|
|                                                                                  |                       | ap<br>(mm)                       | Feed<br>(mm/tooth) | TT9080 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510 |          |  | K10 |
|  | <b>4NHT 040205R-F</b> | 0.2-2.0                          | 0.30-0.07          |        |        |        |         |        |        |        | ●      |          |  |     |
|                                                                                  | <b>040210R-F</b>      | 0.2-1.8                          | 0.30-0.07          |        |        |        |         |        |        |        | ●      |          |  |     |
|                                                                                  | <b>060305R-F</b>      | 0.2-2.0                          | 0.30-0.07          | ●      |        |        |         |        |        |        | ●      |          |  |     |
|                                                                                  | <b>060310R-F</b>      | 0.2-1.8                          | 0.30-0.07          | ●      |        |        |         |        |        |        | ●      |          |  |     |
|                                                                                  | <b>060315R-F</b>      | 0.2-3.0                          | 0.30-0.07          | ●      |        |        |         |        |        |        | ●      |          |  |     |
|                                                                                  | <b>060320R-F</b>      | 0.2-2.7                          | 0.30-0.07          | ●      |        |        |         |        |        |        | ●      |          |  |     |

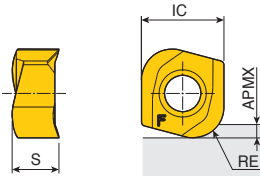
●: Standard items



# 4NKT-HF



## High feed inserts



| Size         | Dimension (mm) |      |      |     |  |  |
|--------------|----------------|------|------|-----|--|--|
|              | IC             | S    | APMX | RE  |  |  |
| <b>04-HF</b> | 4.0            | 2.65 | 0.5  | 1.2 |  |  |
| <b>06-HF</b> | 6.6            | 3.85 | 1.0  | 2.0 |  |  |
| <b>09-HF</b> | 8.6            | 4.76 | 1.5  | 3.2 |  |  |
| <b>11-HF</b> | 10.7           | 6.56 | 2.0  | 4.0 |  |  |
| <b>14-HF</b> | 14.0           | 7.34 | 3.0  | 5.0 |  |  |
|              |                |      |      |     |  |  |

| Insert | Designation            | Recommended machining conditions |                 | Coated |        |         |        |        |        |        | Uncoated |  |
|--------|------------------------|----------------------------------|-----------------|--------|--------|---------|--------|--------|--------|--------|----------|--|
|        |                        | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT8080 | TT8525B | TT7515 | TT7080 | TT6080 | TT2510 | K10      |  |
|        | <b>4NKT 040212R-HF</b> | 0.2-0.4                          | 0.60-0.10       | ●      |        |         |        |        |        | ●      |          |  |
|        | <b>060320R-HF</b>      | 0.2-0.6                          | 0.80-0.20       | ●      | ●      | ●       |        |        |        | ●      |          |  |
|        | <b>090432R-HF</b>      | 0.3-0.8                          | 1.00-0.20       | ●      |        | ●       |        |        |        | ●      |          |  |
|        | <b>110640R-HF</b>      | 0.3-1.2                          | 1.20-0.30       | ●      |        | ●       |        |        |        |        |          |  |
|        | <b>140750R-HF</b>      | 0.3-1.5                          | 1.50-0.30       | ●      |        | ●       |        |        |        |        |          |  |

●: Standard items



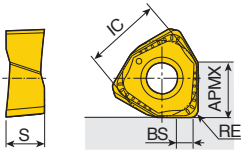
| Size            | Dimension (mm) |                |      |      |     |      |
|-----------------|----------------|----------------|------|------|-----|------|
|                 | L              | W <sub>1</sub> | S    | APMX | RE  | BSR  |
| <b>12-ML/AL</b> | 12             | 10.5           | 9.08 | 0.5  | 0.8 | 1000 |
| <b>12-PCD</b>   | 12             | 10.5           | 6.74 | 0.5  | -   | 1000 |
| <b>12-CBN</b>   | 12             | 10.63          | 6.71 | 0.5  | -   | 1000 |
|                 |                |                |      |      |     |      |
|                 |                |                |      |      |     |      |
|                 |                |                |      |      |     |      |



●: Standard items



Inserts



| Size | Dimension (mm) |      |      |        |         |  |
|------|----------------|------|------|--------|---------|--|
|      | IC             | S    | APMX | BS     | RE      |  |
| 06   | 9.26           | 4.76 | 6.2  | 12-2.4 | 0.4-1.6 |  |
| 09   | 13.05          | 6.70 | 9.2  | 12-2.2 | 0.4-1.6 |  |
|      |                |      |      |        |         |  |
|      |                |      |      |        |         |  |
|      |                |      |      |        |         |  |
|      |                |      |      |        |         |  |



| Insert                                                                            | Designation | Recommended machining conditions |                 | Coated    |        |        |         |        |        |        |        | Uncoated |     |   |
|-----------------------------------------------------------------------------------|-------------|----------------------------------|-----------------|-----------|--------|--------|---------|--------|--------|--------|--------|----------|-----|---|
|                                                                                   |             | ap (mm)                          | Feed (mm/tooth) | TT9080    | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT3535 | TT2510   | K10 |   |
|   | 6NGU        | 060404R-M                        | 1.5-5.0         | 0.15-0.08 | ●      | ●      |         |        | ●      |        | ●      |          | ●   |   |
|                                                                                   |             | 060405R-M                        | 1.5-5.0         | 0.15-0.08 | ●      |        |         |        |        |        |        |          |     |   |
|                                                                                   |             | 060408R-M                        | 1.5-5.0         | 0.15-0.08 | ●      | ●      | ●       | ●      | ●      |        | ●      |          | ●   |   |
|                                                                                   |             | 060410R-M                        | 1.5-5.0         | 0.15-0.08 | ●      |        |         |        |        |        | ●      |          |     |   |
|                                                                                   |             | 060416R-M                        | 1.5-5.0         | 0.15-0.08 | ●      | ●      |         |        | ●      |        | ●      |          | ●   |   |
|                                                                                   |             | 090504R-M                        | 2.5-7.5         | 0.20-0.10 | ●      | ●      |         |        | ●      |        | ●      |          | ●   |   |
|                                                                                   |             | 090508R-M                        | 2.5-7.5         | 0.20-0.10 | ●      | ●      | ●       | ●      | ●      | ●      | ●      |          | ●   |   |
|                                                                                   |             | 090516R-M                        | 2.5-7.5         | 0.20-0.10 | ●      | ●      |         | ●      | ●      | ●      | ●      |          | ●   |   |
|   | 6NGU        | 060404R-ML                       | 1.5-5.0         | 0.10-0.05 | ●      | ●      |         |        |        |        | ●      |          |     |   |
|                                                                                   |             | 060405R-ML                       | 1.5-5.0         | 0.10-0.05 | ●      |        |         |        |        |        |        |          |     |   |
|                                                                                   |             | 060408R-ML                       | 1.5-5.0         | 0.10-0.05 | ●      | ●      | ●       |        | ●      |        | ●      | ●        |     |   |
|                                                                                   |             | 060416R-ML                       | 1.5-5.0         | 0.10-0.05 | ●      | ●      |         |        |        |        | ●      |          |     |   |
|                                                                                   |             | 090504R-ML                       | 2.5-7.5         | 0.10-0.05 | ●      | ●      |         |        |        |        | ●      |          |     |   |
|                                                                                   |             | 090508R-ML                       | 2.5-7.5         | 0.10-0.05 | ●      | ●      | ●       |        | ●      |        | ●      |          |     |   |
|                                                                                   |             | 090516R-ML                       | 2.5-7.5         | 0.10-0.05 | ●      | ●      |         |        |        |        | ●      |          |     |   |
|                                                                                   |             |                                  |                 |           |        |        |         |        |        |        |        |          |     |   |
|  | 6NGU        | 060404R-AL                       | 1.5-5.0         | 0.40-0.10 |        |        |         |        |        |        |        |          |     | ● |
|                                                                                   |             | 060408R-AL                       | 1.5-5.0         | 0.40-0.10 |        |        |         |        |        |        |        |          |     | ● |
|                                                                                   |             | 090504R-AL                       | 2.5-7.5         | 0.40-0.10 |        |        |         |        |        |        |        |          |     | ● |
|                                                                                   |             | 090508R-AL                       | 2.5-7.5         | 0.40-0.10 |        |        |         |        |        |        |        |          |     | ● |
|                                                                                   |             |                                  |                 |           |        |        |         |        |        |        |        |          |     |   |
|                                                                                   |             |                                  |                 |           |        |        |         |        |        |        |        |          |     |   |
|                                                                                   |             |                                  |                 |           |        |        |         |        |        |        |        |          |     |   |
|                                                                                   |             |                                  |                 |           |        |        |         |        |        |        |        |          |     |   |
|                                                                                   |             |                                  |                 |           |        |        |         |        |        |        |        |          |     |   |
|                                                                                   |             |                                  |                 |           |        |        |         |        |        |        |        |          |     |   |
|                                                                                   |             |                                  |                 |           |        |        |         |        |        |        |        |          |     |   |
|                                                                                   |             |                                  |                 |           |        |        |         |        |        |        |        |          |     |   |
|                                                                                   |             |                                  |                 |           |        |        |         |        |        |        |        |          |     |   |
|                                                                                   |             |                                  |                 |           |        |        |         |        |        |        |        |          |     |   |
|                                                                                   |             |                                  |                 |           |        |        |         |        |        |        |        |          |     |   |

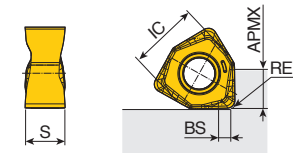


•: Standard items

6NKU 04



Inserts



| Size | Dimension (mm) |     |      |           |         |  |
|------|----------------|-----|------|-----------|---------|--|
|      | IC             | S   | APMX | BS        | RE      |  |
| 04   | 7              | 3.9 | 4.1  | 0.85-1.25 | 0.4-0.8 |  |
|      |                |     |      |           |         |  |
|      |                |     |      |           |         |  |
|      |                |     |      |           |         |  |
|      |                |     |      |           |         |  |
|      |                |     |      |           |         |  |



| Insert                                                                            | Designation           | Recommended machining conditions |                    | Coated |        |        |         |        |        |        |        | Uncoated |  |     |  |
|-----------------------------------------------------------------------------------|-----------------------|----------------------------------|--------------------|--------|--------|--------|---------|--------|--------|--------|--------|----------|--|-----|--|
|                                                                                   |                       | ap<br>(mm)                       | Feed<br>(mm/tooth) | TT9080 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510 |          |  | K10 |  |
|  | <b>6NKU 040304R-M</b> | 1.0-3.0                          | 0.10-0.05          | ●      | ●      |        |         |        |        | ●      | ●      |          |  |     |  |
|                                                                                   | <b>040308R-M</b>      | 1.0-3.0                          | 0.10-0.05          | ●      | ●      |        |         |        |        | ●      | ●      |          |  |     |  |
|                                                                                   |                       |                                  |                    |        |        |        |         |        |        |        |        |          |  |     |  |
|                                                                                   |                       |                                  |                    |        |        |        |         |        |        |        |        |          |  |     |  |

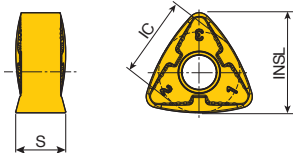


●: Standard items

6RBE



Inserts



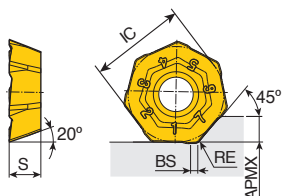
| Size    | Dimension (mm) |   |      |  |  |  |
|---------|----------------|---|------|--|--|--|
|         | IC             | S | INSL |  |  |  |
| 6RBE 50 | 13             | 8 | 16   |  |  |  |
|         |                |   |      |  |  |  |
|         |                |   |      |  |  |  |
|         |                |   |      |  |  |  |
|         |                |   |      |  |  |  |
|         |                |   |      |  |  |  |



| Insert                                                                             | Designation      | Recommended machining conditions |           | Coated |        |        |        |         |        |        |        | Uncoated |     |
|------------------------------------------------------------------------------------|------------------|----------------------------------|-----------|--------|--------|--------|--------|---------|--------|--------|--------|----------|-----|
|                                                                                    |                  |                                  |           | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510   | K10 |
|  | <b>6RBE 50-M</b> | 1.0-5.0                          | 0.80-0.10 | ●      |        | ●      | ●      | ●       |        |        | ●      | ●        |     |
|                                                                                    |                  |                                  |           |        |        |        |        |         |        |        |        |          |     |
|                                                                                    |                  |                                  |           |        |        |        |        |         |        |        |        |          |     |



●: Standard items



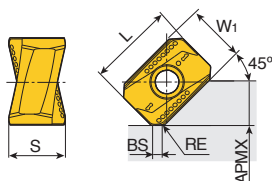
| Size      | Dimension (mm) |     |      |     |     |  |
|-----------|----------------|-----|------|-----|-----|--|
|           | IC             | S   | APMX | BS  | RE  |  |
| <b>06</b> | 12.8           | 4.2 | 3.2  | 1.0 | 0.8 |  |
|           |                |     |      |     |     |  |
|           |                |     |      |     |     |  |
|           |                |     |      |     |     |  |
|           |                |     |      |     |     |  |

[illegible]

●: Standard items

# ANHX 1607 ANR-M

## Inserts



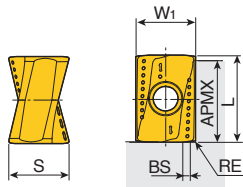
| Size      | Dimension (mm) |                |      |      |     |     |
|-----------|----------------|----------------|------|------|-----|-----|
|           | L              | W <sub>1</sub> | S    | APMX | BS  | RE  |
| <b>16</b> | 16             | 11             | 10.4 | 8.4  | 1.6 | 1.0 |
|           |                |                |      |      |     |     |
|           |                |                |      |      |     |     |
|           |                |                |      |      |     |     |
|           |                |                |      |      |     |     |

[illegible]

► Use only for 45° cutter

●: Standard items

Inserts



| Size | Dimension (mm) |      |           |      |         |         |
|------|----------------|------|-----------|------|---------|---------|
|      | L              | W1   | S         | APMX | BS      | RE      |
| 11   | 12             | 9.2  | 8.5       | 11   | 0.7-1.5 | 0.4-1.6 |
| 16   | 16             | 11.0 | 10.4-10.9 | 15   | 0.6-1.7 | 0.4-2.4 |
|      |                |      |           |      |         |         |
|      |                |      |           |      |         |         |
|      |                |      |           |      |         |         |
|      |                |      |           |      |         |         |
|      |                |      |           |      |         |         |

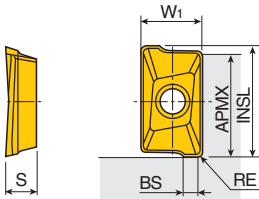


| Insert                                                                             | Designation     | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        |        |  | Uncoated |     |  |
|------------------------------------------------------------------------------------|-----------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|--|----------|-----|--|
|                                                                                    |                 | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510 |  |          | K10 |  |
|    | ANMX 110608R-M  | 3.0-9.0                          | 0.20-0.10       | ●      |        | ●      |        |         |        |        |        |        |  |          |     |  |
|                                                                                    | 160708R-M       | 4.5-12.0                         | 0.20-0.10       | ●      |        | ●      |        |         |        |        |        |        |  |          |     |  |
|                                                                                    | ANHX 110604R-M  | 3.0-9.0                          | 0.15-0.08       | ●      |        | ●      |        |         |        |        | ●      | ●      |  |          |     |  |
|                                                                                    | 110608R-M       | 3.0-9.0                          | 0.15-0.08       | ●      |        | ●      | ●      |         | ●      | ●      | ●      | ●      |  |          |     |  |
|                                                                                    | 110616R-M       | 3.0-9.0                          | 0.15-0.08       | ●      |        | ●      |        |         |        |        |        | ●      |  |          |     |  |
|                                                                                    | 160704R-M       | 4.5-12.0                         | 0.20-0.10       | ●      | ●      | ●      |        |         | ●      |        | ●      | ●      |  |          |     |  |
|                                                                                    | 160708R-M       | 4.5-12.0                         | 0.20-0.10       | ●      | ●      | ●      | ●      | ●       | ●      | ●      | ●      | ●      |  |          |     |  |
|                                                                                    | 160716R-M       | 4.5-12.0                         | 0.20-0.10       | ●      |        | ●      |        |         | ●      |        | ●      | ●      |  |          |     |  |
|                                                                                    | 160720R-M       | 4.5-12.0                         | 0.20-0.10       |        |        |        |        |         | ●      |        |        |        |  |          |     |  |
|                                                                                    | 160724R-M       | 4.5-12.0                         | 0.20-0.10       | ●      |        | ●      |        |         | ●      |        | ●      | ●      |  |          |     |  |
|    | ANHX 110608R-ML | 3.0-9.0                          | 0.15-0.08       | ●      |        | ●      |        |         |        |        |        |        |  |          |     |  |
|                                                                                    | 160708R-ML      | 4.5-12.0                         | 0.12-0.06       |        |        | ●      | ●      |         |        |        |        |        |  |          |     |  |
|                                                                                    |                 |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |     |  |
|    | ANHX 160708R-MR | 4.5-12.0                         | 0.25-0.13       |        |        | ●      |        |         |        |        |        |        |  |          |     |  |
|                                                                                    |                 |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |     |  |
|                                                                                    |                 |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |     |  |
|  | ANHX 110604R-AL | 3.0-9.0                          | 0.40-0.10       |        |        |        |        |         |        |        |        |        |  |          | ●   |  |
|                                                                                    | 110608R-AL      | 3.0-9.0                          | 0.40-0.10       |        |        |        |        |         |        |        |        |        |  |          | ●   |  |
|                                                                                    | 160704R-AL      | 4.5-12.0                         | 0.40-0.10       |        |        |        |        |         |        |        |        |        |  |          | ●   |  |
|                                                                                    | 160708R-AL      | 4.5-12.0                         | 0.40-0.10       |        |        |        |        |         |        |        |        |        |  |          | ●   |  |
|  | ANHX 110608R-SM | 3.0-9.0                          | 0.15-0.08       | ●      |        | ●      |        | ●       |        |        | ●      |        |  |          |     |  |
|                                                                                    | 160708R-SM      | 4.5-12.0                         | 0.20-0.10       | ●      |        | ●      |        |         |        |        | ●      |        |  |          |     |  |
|                                                                                    |                 |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |     |  |
|                                                                                    |                 |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |     |  |
|                                                                                    |                 |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |     |  |
|                                                                                    |                 |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |     |  |
|                                                                                    |                 |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |     |  |
|                                                                                    |                 |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |     |  |
|                                                                                    |                 |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |     |  |
|                                                                                    |                 |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |     |  |

●: Standard items



Inserts



| Size     | Dimension (mm) |      |     |      |          |         |
|----------|----------------|------|-----|------|----------|---------|
|          | INSL           | W1   | S   | APMX | BS       | RE      |
| 09       | 9.7-10.6       | 6.20 | 3.8 | 8.8  | 0.5-1.79 | 0.4-3.2 |
| 09T3 PER | 9.8-9.9        | 6.20 | 3.8 | 8.8  | 0-1.14   | 0.4     |
|          |                |      |     |      |          |         |
|          |                |      |     |      |          |         |
|          |                |      |     |      |          |         |
|          |                |      |     |      |          |         |

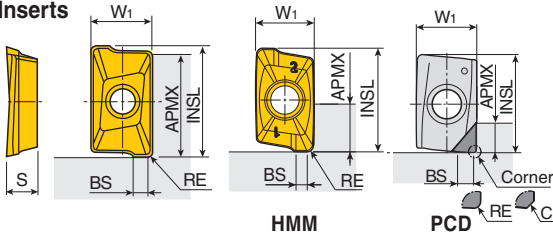


| Insert | Designation      | Recommended machining conditions |                 | Cermets |  |        |        |        |        |         |        |        |        | Coated |  | Uncoated |  |
|--------|------------------|----------------------------------|-----------------|---------|--|--------|--------|--------|--------|---------|--------|--------|--------|--------|--|----------|--|
|        |                  | ap (mm)                          | Feed (mm/tooth) | CT7000  |  | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510 |  | K10      |  |
|        | APKT 09T3 PER-EM | 2.5-7.5                          | 0.10-0.05       | ●       |  | ●      | ●      | ●      | ●      | ●       | ●      |        | ●      | ●      |  | ●        |  |
|        | 09T305R-EM       | 2.5-7.5                          | 0.10-0.05       |         |  |        |        |        | ●      |         |        |        |        |        |  |          |  |
|        | 09T308R-EM       | 2.5-7.5                          | 0.10-0.05       |         |  | ●      | ●      | ●      | ●      |         | ●      |        | ●      | ●      |  |          |  |
|        | 09T316R-EM       | 2.5-7.5                          | 0.10-0.05       |         |  | ●      | ●      | ●      | ●      |         | ●      |        | ●      | ●      |  |          |  |
|        | 09T320R-EM       | 2.5-7.5                          | 0.10-0.05       |         |  | ●      |        | ●      |        |         |        |        |        | ●      |  |          |  |
|        | 09T332R-EM       | 2.5-7.5                          | 0.10-0.05       |         |  | ●      |        | ●      |        |         |        |        |        | ●      |  |          |  |
|        | 09T3 PER-M       | 2.5-7.5                          | 0.10-0.05       |         |  |        |        |        | ●      |         | ●      |        | ●      | ●      |  |          |  |
|        | APCT 09T3 PER-ML | 3.0-7.5                          | 0.10-0.05       |         |  | ●      |        | ●      | ●      |         | ●      |        | ●      |        |  |          |  |
|        |                  |                                  |                 |         |  |        |        |        |        |         |        |        |        |        |  |          |  |
|        | APCT 09T3 PER-AL | 2.5-7.5                          | 0.35-0.05       |         |  |        |        |        |        |         |        |        |        |        |  | ●        |  |
|        |                  |                                  |                 |         |  |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                  |                                  |                 |         |  |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                  |                                  |                 |         |  |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                  |                                  |                 |         |  |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                  |                                  |                 |         |  |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                  |                                  |                 |         |  |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                  |                                  |                 |         |  |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                  |                                  |                 |         |  |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                  |                                  |                 |         |  |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                  |                                  |                 |         |  |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                  |                                  |                 |         |  |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                  |                                  |                 |         |  |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                  |                                  |                 |         |  |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                  |                                  |                 |         |  |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                  |                                  |                 |         |  |        |        |        |        |         |        |        |        |        |  |          |  |

●: Standard items



## Inserts



| Size              | Dimension (mm) |     |         |           |         |         |
|-------------------|----------------|-----|---------|-----------|---------|---------|
|                   | INSL           | W1  | S       | APMX      | BS      | RE(ch)  |
| <b>12</b>         | 13.0-14.6      | 8.3 | 4.5-4.9 | 11.8-12.5 | 0.9-2.1 | 0.4-4.0 |
| <b>1204 PER</b>   | 13.4-14.6      | 8.3 | 4.5-4.9 | 11.8-12.5 | 0.9-2.1 | 0.8     |
| <b>1204-HMM</b>   | 14.6           | 8.3 | 4.7     | 6.5       | 16      | 0.8     |
| <b>12...R-PCD</b> | 13.3           | 8.2 | 4.5     | 3.5       | 2       | 0.4     |
| <b>12...C-PCD</b> | 13.3           | 8.2 | 4.5     | 3.5       | 2.1     | (0.25)  |
|                   |                |     |         |           |         |         |
|                   |                |     |         |           |         |         |



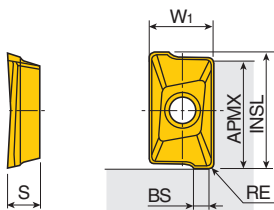
| Insert                                                                             | Designation        | Recommended machining conditions |                 | PCD    |  | Coated |        |        |        |         |        |        |        | Uncoated |     |   |
|------------------------------------------------------------------------------------|--------------------|----------------------------------|-----------------|--------|--|--------|--------|--------|--------|---------|--------|--------|--------|----------|-----|---|
|                                                                                    |                    | ap (mm)                          | Feed (mm/tooth) | TD1030 |  | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510   | K10 |   |
|    | APKT 1204 PER-EM   | 3.5-10.0                         | 0.14-0.07       |        |  | ●      | ●      | ●      | ●      | ●       | ●      | ●      | ●      | ●        |     |   |
|                                                                                    | 120404R-EM         | 3.5-10.0                         | 0.14-0.07       |        |  |        |        | ●      | ●      | ●       | ●      | ●      | ●      | ●        |     |   |
|                                                                                    | 120416R-EM         | 3.5-10.0                         | 0.14-0.07       |        |  | ●      | ●      | ●      | ●      | ●       |        | ●      | ●      |          |     |   |
|                                                                                    | 120424R-EM         | 3.5-10.0                         | 0.14-0.07       |        |  |        | ●      | ●      | ●      |         |        |        | ●      | ●        |     |   |
|                                                                                    | 120430R-EM         | 3.5-10.0                         | 0.14-0.07       |        |  | ●      | ●      | ●      | ●      | ●       |        | ●      | ●      |          |     |   |
|                                                                                    | 120432R-EM         | 3.5-10.0                         | 0.14-0.07       |        |  |        | ●      |        | ●      |         |        |        | ●      | ●        |     |   |
|                                                                                    | 120440R-EM         | 3.5-10.0                         | 0.14-0.07       |        |  | ●      |        | ●      |        |         |        |        | ●      | ●        |     |   |
|    | APKT 1204 PER-SM   | 3.5-10.0                         | 0.14-0.07       |        |  | ●      |        | ●      |        | ●       |        |        | ●      |          |     |   |
|                                                                                    |                    |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |     |   |
|    | APKT 1204 PER-SML  | 3.5-10.5                         | 0.14-0.06       |        |  | ●      |        | ●      |        |         |        |        |        |          |     |   |
|                                                                                    |                    |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |     |   |
|    | APKT 1204 PER-EML  | 3.5-10.0                         | 0.08-0.04       |        |  | ●      |        | ●      |        |         |        |        |        |          |     |   |
|                                                                                    |                    |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |     |   |
|   | APKT 1204 PER-EL   | 3.5-10.0                         | 0.05-0.03       |        |  | ●      | ●      | ●      | ●      |         |        |        |        |          |     |   |
|                                                                                    |                    |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |     |   |
|  | APKT 1204 PER-HMM  | 3.5-6.5                          | 0.12-0.05       |        |  | ●      |        |        |        |         |        |        |        |          |     |   |
|                                                                                    |                    |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |     |   |
|  | APCT 120430R-ML    | 3.5-10.0                         | 0.08-0.04       |        |  | ●      |        | ●      |        |         |        |        |        |          |     |   |
|                                                                                    | 120432R-ML         | 3.5-10.0                         | 0.08-0.04       |        |  | ●      |        | ●      |        |         |        |        |        |          |     |   |
|                                                                                    | 120440R-ML         | 3.5-9.5                          | 0.08-0.04       |        |  | ●      |        | ●      |        |         |        |        |        |          |     |   |
|  | APCT 1204 PER-AL   | 3.5-10.0                         | 0.50-0.10       |        |  |        |        |        |        |         |        |        |        |          |     | ● |
|                                                                                    | 120404R-AL         | 3.5-10.0                         | 0.50-0.10       |        |  |        |        |        |        |         |        |        |        |          |     | ● |
|                                                                                    | 120416R-AL         | 3.5-10.0                         | 0.50-0.10       |        |  |        |        |        |        |         |        |        |        |          |     | ● |
|  | APCT 120404R-PCD35 | 0.2-3.0                          | 0.30-0.05       | ●      |  |        |        |        |        |         |        |        |        |          |     |   |
|                                                                                    | 1204C025-PCD35     | 0.2-3.0                          | 0.30-0.05       | ●      |  |        |        |        |        |         |        |        |        |          |     |   |
|                                                                                    |                    |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |     |   |
| PCD                                                                                |                    |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |     |   |
|                                                                                    |                    |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |     |   |

•: Standard items

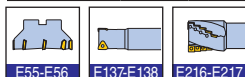




## Inserts

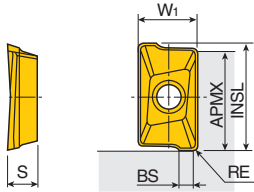


| Size          | Dimension (mm) |      |      |      |           |         |
|---------------|----------------|------|------|------|-----------|---------|
|               | INSL           | W1   | S    | APMX | BS        | RE      |
| <b>17-ML</b>  | 18.5           | 10.8 | 5.55 | 16.1 | 2.07      | 0.8     |
| <b>17-AL</b>  | 18.3-18.5      | 10.8 | 5.62 | 16.1 | 1.55-2.56 | 0.8-3.0 |
| <b>17-SAL</b> | 18.5           | 10.8 | 5.62 | 16.1 | 2.56      | 0.8     |
|               |                |      |      |      |           |         |
|               |                |      |      |      |           |         |
|               |                |      |      |      |           |         |

[illegible]

●: Standard items

## Inserts



| Size   | Dimension (mm) |      |          |       |          |         |
|--------|----------------|------|----------|-------|----------|---------|
|        | INSL           | W1   | S        | APMX  | BS       | RE      |
| 17     | 16.8-18.5      | 10.7 | 5.56     | 15-16 | 0.9-3.17 | 0.4-6.4 |
| 17 PER | 18.5-18.9      | 10.7 | 5.56-6.5 | 16    | 0.9-3.17 | 0.8     |
|        |                |      |          |       |          |         |
|        |                |      |          |       |          |         |
|        |                |      |          |       |          |         |
|        |                |      |          |       |          |         |



| Insert | Designation       | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        |        |  | Uncoated |  |
|--------|-------------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|--|----------|--|
|        |                   | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510 |  | K10      |  |
|        | APKT 1705 PER-EM  | 4.5-13.0                         | 0.18-0.09       | ●      | ●      | ●      | ●      | ●       | ●      | ●      | ●      | ●      |  | ●        |  |
|        | 170504R-EM        | 4.5-13.0                         | 0.18-0.09       | ●      |        | ●      | ●      | ●       | ●      |        | ●      | ●      |  |          |  |
|        | 170510R-EM        | 4.5-13.0                         | 0.17-0.09       | ●      | ●      | ●      |        | ●       | ●      |        | ●      | ●      |  |          |  |
|        | 170516R-EM        | 4.5-13.0                         | 0.17-0.09       | ●      | ●      | ●      | ●      | ●       | ●      |        | ●      | ●      |  |          |  |
|        | 170524R-EM        | 4.5-13.0                         | 0.17-0.09       | ●      | ●      | ●      | ●      | ●       | ●      |        | ●      | ●      |  |          |  |
|        | 170530R-EM        | 4.5-13.0                         | 0.17-0.09       | ●      | ●      | ●      | ●      | ●       | ●      |        | ●      | ●      |  |          |  |
|        | 170532R-EM        | 4.5-13.0                         | 0.17-0.09       | ●      | ●      | ●      | ●      | ●       | ●      |        | ●      | ●      |  |          |  |
|        | 170535R-EM        | 4.5-13.0                         | 0.17-0.09       | ●      | ●      |        |        |         |        |        | ●      | ●      |  |          |  |
|        | 170540R-EM        | 4.5-13.0                         | 0.20-0.10       | ●      | ●      |        | ●      |         |        |        |        | ●      |  |          |  |
|        | 170548R-EM        | 4.5-13.0                         | 0.17-0.09       | ●      | ●      | ●      | ●      | ●       | ●      | ●      | ●      | ●      |  |          |  |
|        | 170550R-EM        | 4.5-13.0                         | 0.20-0.10       |        | ●      |        | ●      |         |        |        | ●      | ●      |  |          |  |
|        | 170564R-EM        | 4.5-13.0                         | 0.18-0.09       | ●      | ●      | ●      | ●      |         | ●      |        | ●      | ●      |  |          |  |
|        | APKT 1705 PER-M   | 4.5-13.0                         | 0.18-0.09       |        |        |        | ●      |         | ●      |        | ●      | ●      |  | ●        |  |
|        | 170516R-M         | 4.5-13.0                         | 0.20-0.10       |        |        |        | ●      |         |        |        |        |        |  |          |  |
|        | 170532R-M         | 4.5-13.0                         | 0.20-0.10       |        |        |        | ●      |         | ●      |        | ●      | ●      |  |          |  |
|        | 170548R-M         | 4.5-13.0                         | 0.20-0.10       |        |        |        | ●      |         |        |        |        |        |  |          |  |
|        | APKT 1705 PER-SM  | 4.5-13.0                         | 0.17-0.09       | ●      |        | ●      |        | ●       |        |        | ●      |        |  |          |  |
|        | APKT 1705 PER-SML | 4.5-14.5                         | 0.17-0.06       | ●      |        | ●      |        |         |        |        |        |        |  |          |  |
|        |                   |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |  |
|        | APKT 1705 PER-EML | 4.5-13.0                         | 0.14-0.07       | ●      |        | ●      |        |         | ●      |        |        |        |  |          |  |
|        |                   |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |  |
|        | APKT 1705 PER-EL  | 4.5-13.0                         | 0.10-0.05       | ●      | ●      | ●      | ●      | ●       |        |        |        |        |  |          |  |
|        |                   |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                   |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                   |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                   |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |  |
|        |                   |                                  |                 |        |        |        |        |         |        |        |        |        |  |          |  |

●: Standard items



## Inserts

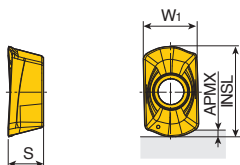


| Size      | Dimension (mm) |                |     |      |     |     |
|-----------|----------------|----------------|-----|------|-----|-----|
|           | INSL           | W <sub>1</sub> | S   | APMX | BS  | RE  |
| <b>19</b> | 21             | 13             | 735 | 179  | 2.0 | 1.2 |
|           |                |                |     |      |     |     |
|           |                |                |     |      |     |     |
|           |                |                |     |      |     |     |
|           |                |                |     |      |     |     |

[illegible]

●: Standard items

## High feed inserts



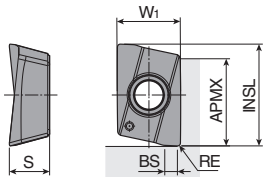
| Size      | Dimension (mm) |      |     |      |  |
|-----------|----------------|------|-----|------|--|
|           | INSL           | W1   | S   | APMX |  |
| <b>06</b> | 6.7            | 4.04 | 2.6 | 0.5  |  |
| <b>09</b> | 10.7           | 5.94 | 3.9 | 1.0  |  |
| <b>12</b> | 14.2           | 8.0  | 5.0 | 1.2  |  |
|           |                |      |     |      |  |
|           |                |      |     |      |  |
|           |                |      |     |      |  |

[illegible]

●: Standard items



Inserts



| Size | Dimension (mm) |     |     |      |         |       |
|------|----------------|-----|-----|------|---------|-------|
|      | INSL           | W1  | S   | APMX | BS      | RE    |
| 06   | 6.5            | 4.2 | 2.6 | 5.5  | 0.6-1.0 | 0-0.4 |
|      |                |     |     |      |         |       |
|      |                |     |     |      |         |       |
|      |                |     |     |      |         |       |
|      |                |     |     |      |         |       |
|      |                |     |     |      |         |       |

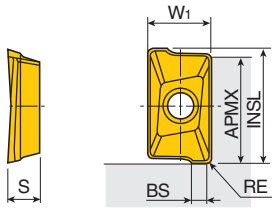


| Insert                                                                           | Designation           | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        | Uncoated |     |  |
|----------------------------------------------------------------------------------|-----------------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|-----|--|
|                                                                                  |                       | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT5525   | K10 |  |
|  | <b>AXCT 060200R-L</b> | 0.1-5.0                          | 0.08-0.03       |        |        |        |        |         |        |        |        | ●        |     |  |
|                                                                                  | <b>060202R-L</b>      | 0.2-5.0                          | 0.10-0.03       |        |        |        |        |         |        |        |        | ●        |     |  |
|                                                                                  | <b>060204R-L</b>      | 0.3-5.0                          | 0.10-0.03       |        |        |        |        |         |        |        |        | ●        |     |  |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |

• Standard items



Inserts



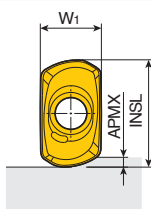
| Size  | Dimension (mm) |      |     |      |           |         |
|-------|----------------|------|-----|------|-----------|---------|
|       | INSL           | W1   | S   | APMX | BS        | RE      |
| 06-EM | 6.7            | 4.15 | 2.6 | 5.5  | 0-0.76    | 0.2-2.0 |
| 06-AL | 6.7            | 4.20 | 2.6 | 5.5  | 0.23-0.83 | 0.2-0.8 |
|       |                |      |     |      |           |         |
|       |                |      |     |      |           |         |
|       |                |      |     |      |           |         |
|       |                |      |     |      |           |         |



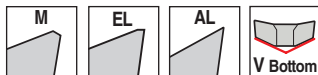
| Insert | Designation      | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        |        |        | Uncoated |  |
|--------|------------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|--------|----------|--|
|        |                  | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT5525 | TT2510 | K10      |  |
|        | AXMT 0602 PER-EM | 1.5-5.0                          | 0.08-0.04       | ●      | ●      | ●      | ●      |         |        |        |        |        | ●      |          |  |
|        | 060204R-EM       | 1.5-5.0                          | 0.13-0.07       | ●      | ●      | ●      | ●      |         |        |        | ●      |        | ●      |          |  |
|        | 060208R-EM       | 1.5-5.0                          | 0.13-0.07       | ●      | ●      | ●      | ●      |         |        |        | ●      |        | ●      |          |  |
|        | 060216R-EM       | 1.5-5.0                          | 0.13-0.07       | ●      | ●      | ●      | ●      |         |        |        |        |        | ●      |          |  |
|        | 060220R-EM       | 1.5-5.0                          | 0.13-0.07       | ●      |        | ●      |        |         |        |        |        |        |        |          |  |
|        | AXCT 060202R-AL  | 1.5-5.0                          | 0.20-0.10       |        |        |        |        |         |        |        |        |        |        | ●        |  |
|        | 060204R-AL       | 1.5-5.0                          | 0.20-0.10       |        |        |        |        |         |        |        |        |        |        | ●        |  |
|        | 060208R-AL       | 1.5-5.0                          | 0.20-0.10       |        |        |        |        |         |        |        |        |        |        | ●        |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |        |        |          |  |

●: Standard items





### HF (High Feed)

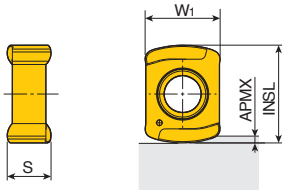


| Size           | Dimension (mm) |         |         |          |       |         |
|----------------|----------------|---------|---------|----------|-------|---------|
|                | INSL           | W1      | S       | APMX     | BS    | RE      |
| <b>10-M/EL</b> | 11.5-12.4      | 6.8     | 4.1-4.3 | 9.6-10   | 0-1.0 | 0.8-3.2 |
| <b>10-HF</b>   | 11.6           | 6.6     | 4.4     | 1.0      | -     | -       |
| <b>10-AL</b>   | 11.3-12.5      | 6.7-6.8 | 4.0-4.5 | 9.5-10.1 | 0-1.2 | 0.4-3.2 |
|                |                |         |         |          |       |         |
|                |                |         |         |          |       |         |
|                |                |         |         |          |       |         |

[illegible]

●: Standard items

High feed inserts



| Size | Dimension (mm) |      |      |      |  |  |
|------|----------------|------|------|------|--|--|
|      | INSL           | W1   | S    | APMX |  |  |
| 04   | 6.0            | 4.2  | 2.5  | 0.5  |  |  |
| 06   | 9.0            | 6.39 | 3.73 | 1.0  |  |  |
| 09   | 11.9           | 9.20 | 4.79 | 1.5  |  |  |
| 11   | 14.6           | 11.2 | 6.54 | 2.0  |  |  |
|      |                |      |      |      |  |  |
|      |                |      |      |      |  |  |
|      |                |      |      |      |  |  |



| Insert | Designation   | Recommended machining conditions |                 | Coated |        |        |         |        |        |        |        |  |  | Uncoated |  |
|--------|---------------|----------------------------------|-----------------|--------|--------|--------|---------|--------|--------|--------|--------|--|--|----------|--|
|        |               | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510 |  |  | K10      |  |
|        | BLMP 0402R-M  | 0.1-0.5                          | 1.50-0.20       | ●      | ●      |        |         |        |        |        | ●      |  |  |          |  |
|        | 0603R-M       | 0.1-1.0                          | 2.50-0.30       | ●      | ●      | ●      | ●       |        |        | ●      | ●      |  |  |          |  |
|        | 0904R-M       | 0.1-1.5                          | 3.50-0.30       | ●      | ●      | ●      | ●       |        | ●      | ●      | ●      |  |  |          |  |
|        | 1105R-M       | 0.3-2.0                          | 4.00-0.30       | ●      | ●      | ●      | ●       |        |        |        | ●      |  |  |          |  |
|        | BLMP 0603R-MM | 0.1-1.0                          | 2.00-0.20       | ●      | ●      | ●      |         |        |        |        | ●      |  |  |          |  |
|        | 0904R-MM      | 0.1-1.5                          | 3.00-0.20       | ●      | ●      | ●      |         |        |        |        | ●      |  |  |          |  |
|        | BLMP 0402R-ML | 0.1-0.5                          | 0.80-0.10       | ●      | ●      |        |         |        |        |        |        |  |  |          |  |
|        | 0603R-ML      | 0.1-1.0                          | 0.80-0.10       | ●      | ●      | ●      |         |        |        |        |        |  |  |          |  |
|        | 0904R-ML      | 0.1-1.5                          | 0.80-0.30       | ●      | ●      | ●      |         |        |        |        |        |  |  |          |  |
|        | 1105R-ML      | 0.3-2.0                          | 0.40-0.30       | ●      | ●      |        |         |        |        |        |        |  |  |          |  |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |  |  |          |  |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |  |  |          |  |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |  |  |          |  |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |  |  |          |  |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |  |  |          |  |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |  |  |          |  |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |  |  |          |  |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |  |  |          |  |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |  |  |          |  |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |  |  |          |  |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |  |  |          |  |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |  |  |          |  |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |  |  |          |  |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |  |  |          |  |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |  |  |          |  |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |  |  |          |  |

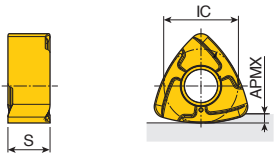
●: Standard items





BLMP 13

High feed inserts



| Size | Dimension (mm) |   |      |  |  |  |
|------|----------------|---|------|--|--|--|
|      | IC             | S | APMX |  |  |  |
| 13   | 12.3           | 7 | 2.0  |  |  |  |
|      |                |   |      |  |  |  |
|      |                |   |      |  |  |  |
|      |                |   |      |  |  |  |
|      |                |   |      |  |  |  |
|      |                |   |      |  |  |  |
|      |                |   |      |  |  |  |
|      |                |   |      |  |  |  |
|      |                |   |      |  |  |  |

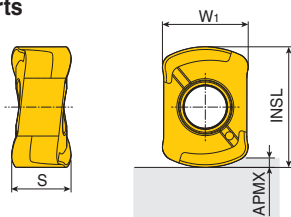


| Insert | Designation   | Recommended machining conditions |                 | Coated |        |        |         |        |        |        |        | Uncoated |     |
|--------|---------------|----------------------------------|-----------------|--------|--------|--------|---------|--------|--------|--------|--------|----------|-----|
|        |               | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510 |          | K10 |
|        | BLMP 1306R-M  | 0.5-2.0                          | 4.50-0.40       | ●      | ●      | ●      | ●       |        | ●      | ●      | ●      |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        | BLMP 1306R-MM | 0.5-2.0                          | 4.50-0.40       | ●      | ●      | ●      | ●       |        |        |        | ●      |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        | BLMP 1306R-MR | 0.5-2.0                          | 4.50-0.40       | ●      | ●      | ●      | ●       |        | ●      | ●      | ●      |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |
|        |               |                                  |                 |        |        |        |         |        |        |        |        |          |     |

●: Standard items



## High feed inserts



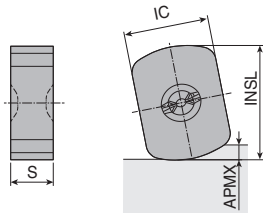
| Size      | Dimension (mm) |     |      |      |  |
|-----------|----------------|-----|------|------|--|
|           | INSL           | W1  | S    | APMX |  |
| <b>06</b> | 9              | 6.4 | 4.43 | 1.0  |  |
|           |                |     |      |      |  |
|           |                |     |      |      |  |
|           |                |     |      |      |  |
|           |                |     |      |      |  |

[illegible]

●: Standard items



High feed inserts



| Size | Dimension (mm) |    |   |      |  |  |  |
|------|----------------|----|---|------|--|--|--|
|      | INSL           | IC | S | APMX |  |  |  |
| 06   | 8              | 6  | 3 | 1.0  |  |  |  |
| 09   | 12             | 9  | 5 | 1.5  |  |  |  |
|      |                |    |   |      |  |  |  |
|      |                |    |   |      |  |  |  |
|      |                |    |   |      |  |  |  |
|      |                |    |   |      |  |  |  |
|      |                |    |   |      |  |  |  |
|      |                |    |   |      |  |  |  |

| Insert                                                                           | Designation             | Recommended machining conditions |                 | Ceramic |        | Coated |        |        |        |         |        |        |        | Uncoated |  |
|----------------------------------------------------------------------------------|-------------------------|----------------------------------|-----------------|---------|--------|--------|--------|--------|--------|---------|--------|--------|--------|----------|--|
|                                                                                  |                         | ap (mm)                          | Feed (mm/tooth) | TC3030  | TC3020 | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | K10      |  |
|  | <b>BNGX 0603 CH-E04</b> | 0.4-0.8                          | 0.30-0.10       | ●       |        |        |        |        |        |         |        |        |        |          |  |
|                                                                                  | <b>0904 CH-E04</b>      | 0.5-1.0                          | 0.35-0.15       | ●       |        |        |        |        |        |         |        |        |        |          |  |
|                                                                                  |                         |                                  |                 |         |        |        |        |        |        |         |        |        |        |          |  |

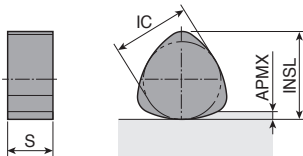


► E04: Honing 0.04-0.05mm

●: Standard items

BNGX 12

High feed inserts



| Size | Dimension (mm) |    |   |      |  |  |
|------|----------------|----|---|------|--|--|
|      | INSL           | IC | S | APMX |  |  |
| 12   | 13.6           | 12 | 7 | 2.5  |  |  |
|      |                |    |   |      |  |  |
|      |                |    |   |      |  |  |
|      |                |    |   |      |  |  |
|      |                |    |   |      |  |  |
|      |                |    |   |      |  |  |
|      |                |    |   |      |  |  |

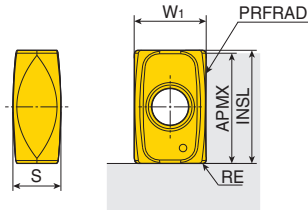
| Insert                                                                             | Designation          | Recommended machining conditions |                 | Ceramic |        | Coated |        |        |        |         |        |        |        | Uncoated |  |
|------------------------------------------------------------------------------------|----------------------|----------------------------------|-----------------|---------|--------|--------|--------|--------|--------|---------|--------|--------|--------|----------|--|
|                                                                                    |                      | ap (mm)                          | Feed (mm/tooth) | TC3030  | TC3020 | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | K10      |  |
|  | <b>BNGX 1207-E04</b> | 1.0-2.0                          | 0.35-0.15       | ●       |        |        |        |        |        |         |        |        |        |          |  |
|                                                                                    |                      |                                  |                 |         |        |        |        |        |        |         |        |        |        |          |  |
|                                                                                    |                      |                                  |                 |         |        |        |        |        |        |         |        |        |        |          |  |
|                                                                                    |                      |                                  |                 |         |        |        |        |        |        |         |        |        |        |          |  |



► E04: Honing 0.04-0.05mm

●: Standard items

Inserts



| Size | Dimension (mm) |      |      |      |     |        |
|------|----------------|------|------|------|-----|--------|
|      | W1             | S    | APMX | INSL | RE  | PRFRAD |
| 06   | 4.2            | 2.8  | 6.4  | 6.6  | 0.2 | 20     |
| 12   | 7              | 4.56 | 12.2 | 12.4 | 0.2 | 30     |
|      |                |      |      |      |     |        |
|      |                |      |      |      |     |        |
|      |                |      |      |      |     |        |
|      |                |      |      |      |     |        |
|      |                |      |      |      |     |        |

| Insert                                                                           | Designation           | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        | Uncoated |  |     |
|----------------------------------------------------------------------------------|-----------------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|--|-----|
|                                                                                  |                       | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT5515 | TT2510   |  | K10 |
|  | <b>BRHU 06R2002-L</b> | -                                | 0.15-0.08       |        |        |        |        |         |        |        | ●      |          |  |     |
|                                                                                  | <b>12R3002-L</b>      | -                                | 0.20-0.08       |        |        |        |        |         |        |        | ●      |          |  |     |
|                                                                                  |                       |                                  |                 |        |        |        |        |         |        |        |        |          |  |     |

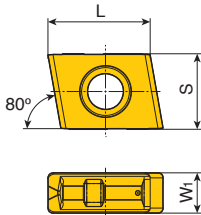


●: Standard items

CNHX



Inserts



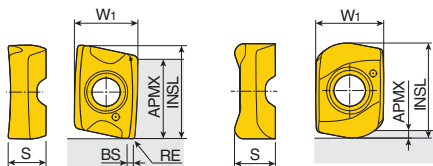
| Size | Dimension (mm) |    |     |  |  |
|------|----------------|----|-----|--|--|
|      | L              | S  | W1  |  |  |
| 13   | 12.7           | 11 | 5.4 |  |  |
| 16   | 16.0           | 12 | 6.4 |  |  |
|      |                |    |     |  |  |
|      |                |    |     |  |  |
|      |                |    |     |  |  |
|      |                |    |     |  |  |

| Insert                                                                             | Designation  | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        | Uncoated |  |
|------------------------------------------------------------------------------------|--------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|--|
|                                                                                    |              | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | K10      |  |
|  | CNHX 131108T | 1.2-5.5                          | 0.55-0.17       |        |        |        |        | ●       |        |        |        |          |  |
|                                                                                    | 160608T      | 1.2-5.5                          | 0.60-0.20       |        |        |        |        | ●       |        |        |        |          |  |
|                                                                                    |              |                                  |                 |        |        |        |        |         |        |        |        |          |  |



●: Standard items

Inserts



M / L / AL

HF (High Feed)

| Size    | Dimension (mm) |     |     |      |     |         |
|---------|----------------|-----|-----|------|-----|---------|
|         | INSL           | W1  | S   | APMX | BS  | RE      |
| 05-M    | 6.2-6.3        | 4.2 | 2.6 | 5.0  | 0.3 | 0.2-0.4 |
| 05-L/AL | 6.3            | 4.1 | 2.6 | 5.0  | 0.3 | 0.2     |
| 05-HF   | 5.6            | 4.1 | 2.5 | 0.5  | -   | -       |
|         |                |     |     |      |     |         |
|         |                |     |     |      |     |         |
|         |                |     |     |      |     |         |
|         |                |     |     |      |     |         |

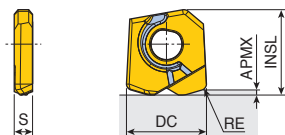


| Insert                                                                           | Designation     | Recommended machining conditions |                    | Coated |        |        |        |        |        |        |        |        |        | Uncoated |  |
|----------------------------------------------------------------------------------|-----------------|----------------------------------|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--|
|                                                                                  |                 | ap<br>(mm)                       | Feed<br>(mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525 | TT7080 | TT7515 | TT6080 | TT5525 | TT2510 | UF10     |  |
|  | CVKT 0502PNR-M  | 0.5-4.0                          | 0.08-0.04          | ●      |        | ●      |        |        |        |        |        |        | ●      |          |  |
|                                                                                  | 050204R-M       | 0.5-4.0                          | 0.08-0.04          | ●      |        | ●      |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|  | CVHT 0502PNR-L  | 0.5-4.0                          | 0.07-0.03          | ●      |        | ●      |        |        |        |        |        | ●      |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|  | CVHT 0502PNR-AL | 0.5-4.0                          | 0.20-0.07          |        |        |        |        |        |        |        |        |        |        | ●        |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|  | CVKT 0502R-HF   | 0.2-0.4                          | 0.70-0.30          | ●      |        | ●      |        |        |        |        |        |        | ●      |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |
|                                                                                  |                 |                                  |                    |        |        |        |        |        |        |        |        |        |        |          |  |

●: Standard items



E113-E114



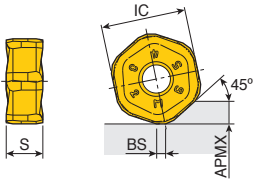
| Size      | Dimension (mm) |    |     |      |     |  |
|-----------|----------------|----|-----|------|-----|--|
|           | INSL           | DC | S   | APMX | RE  |  |
| <b>06</b> | 5.9            | 6  | 1.6 | 0.3  | 0.5 |  |
| <b>08</b> | 8.4            | 8  | 1.8 | 0.5  | 0.6 |  |
|           |                |    |     |      |     |  |
|           |                |    |     |      |     |  |
|           |                |    |     |      |     |  |
|           |                |    |     |      |     |  |

[illegible]

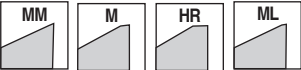
●: Standard items



Inserts



| Size       | Dimension (mm) |     |      |     |  |  |  |
|------------|----------------|-----|------|-----|--|--|--|
|            | IC             | S   | APMX | BS  |  |  |  |
| 06-MM      | 14             | 6.8 | 3.0  | 1.3 |  |  |  |
| 06-M/ML    | 14             | 6.8 | 3.0  | 1.0 |  |  |  |
| 10-MM      | 19.05          | 8.3 | 5.0  | 1.6 |  |  |  |
| 10-M/HR/ML | 19.05          | 8.3 | 5.0  | 1.0 |  |  |  |
|            |                |     |      |     |  |  |  |
|            |                |     |      |     |  |  |  |
|            |                |     |      |     |  |  |  |

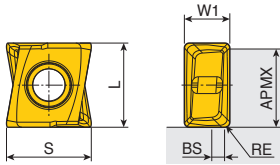


| Insert | Designation      | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        | Uncoated |  |
|--------|------------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|--|
|        |                  | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | K10      |  |
|        | HXHU 0605 ANR-MM | 1.0-3.0                          | 0.25-0.10       | ●      |        |        |        |         |        |        | ●      |          |  |
|        | 1007 ANR-MM      | 2.0-5.0                          | 0.30-0.10       | ●      |        |        |        |         |        |        | ●      |          |  |
|        | HXKU 0605 ANR-M  | 1.0-3.0                          | 0.35-0.10       | ●      |        |        |        | ●       |        |        | ●      |          |  |
|        | 1007 ANR-M       | 2.0-5.0                          | 0.45-0.10       | ●      |        |        |        | ●       |        |        | ●      |          |  |
|        | HXKU 1007 ANR-HR | 2.0-5.0                          | 0.60-0.10       | ●      |        |        |        | ●       |        | ●      |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |
|        | HXKU 0605 ANR-ML | 1.0-3.0                          | 0.25-0.10       | ●      | ●      |        |        |         |        |        |        |          |  |
|        | 1007 ANR-ML      | 2.0-5.0                          | 0.30-0.10       | ●      | ●      |        |        |         |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |
|        |                  |                                  |                 |        |        |        |        |         |        |        |        |          |  |

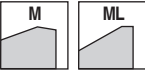


●: Standard items

Inserts



| Size | Dimension (mm) |     |         |      |     |         |
|------|----------------|-----|---------|------|-----|---------|
|      | L              | W1  | S       | APMX | BS  | RE      |
| 05   | 5              | 2.7 | 5.0-5.2 | 4.6  | -   | 0.4     |
| 09   | 9              | 4.5 | 8.3-8.6 | 8.3  | 0.6 | 0.4-1.6 |
| 14   | 13.5           | 6.7 | 13.5    | 12.5 | 0.9 | 0.8     |
|      |                |     |         |      |     |         |
|      |                |     |         |      |     |         |
|      |                |     |         |      |     |         |
|      |                |     |         |      |     |         |



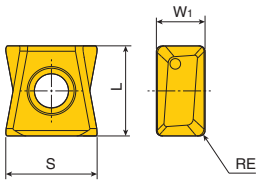
| Insert                                                                           | Designation        | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        | Uncoated |     |  |
|----------------------------------------------------------------------------------|--------------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|-----|--|
|                                                                                  |                    | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT5525   | K10 |  |
|  | LPKU 050204 PNR-M  | 1.0-3.5                          | 0.08-0.04       | ●      |        | ●      |        |         |        |        | ●      |          |     |  |
|                                                                                  | 090404 PNR-M       | 2.5-6.0                          | 0.15-0.06       | ●      |        | ●      | ●      |         |        |        | ●      |          |     |  |
|                                                                                  | 090408 PNR-M       | 2.5-6.0                          | 0.15-0.06       | ●      |        | ●      |        |         |        |        | ●      |          |     |  |
|                                                                                  | 090416 PNR-M       | 3.5-10.0                         | 0.20-0.10       | ●      |        | ●      |        |         |        |        | ●      |          |     |  |
|                                                                                  | 140708 PNR-M       | 3.5-10.0                         | 0.20-0.10       | ●      |        | ●      | ●      |         |        |        | ●      |          |     |  |
|  | LPHU 050200 PNR-ML | 0.1-3.5                          | 0.08-0.03       |        |        |        |        |         |        |        |        | ●        |     |  |
|                                                                                  | 050202 PNR-ML      | 0.2-3.5                          | 0.10-0.03       |        |        |        |        |         |        |        |        | ●        |     |  |
|                                                                                  | 050204 PNR-ML      | 0.3-3.5                          | 0.10-0.03       | ●      |        | ●      |        |         |        |        | ●      | ●        |     |  |
|  | LPHU 090404 PNR-M  | 2.5-6.0                          | 0.15-0.06       |        |        | ●      |        |         |        |        | ●      |          |     |  |
|                                                                                  |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |

●: Standard items





Inserts



| Size | Dimension (mm) |     |     |      |    |     |
|------|----------------|-----|-----|------|----|-----|
|      | L              | W1  | S   | APMX | BS | RE  |
| 05   | 5              | 2.7 | 5.0 | -    | -  | 0.4 |
|      |                |     |     |      |    |     |
|      |                |     |     |      |    |     |
|      |                |     |     |      |    |     |
|      |                |     |     |      |    |     |
|      |                |     |     |      |    |     |
|      |                |     |     |      |    |     |
|      |                |     |     |      |    |     |

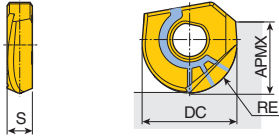


| Insert                                                                           | Designation   | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        | Uncoated |     |  |
|----------------------------------------------------------------------------------|---------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|-----|--|
|                                                                                  |               | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT5525   | K10 |  |
|  | LXHU 05-04-ML | -                                | 0.08-0.04       | ●      |        | ●      |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |               |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |



●: Standard items

Inserts



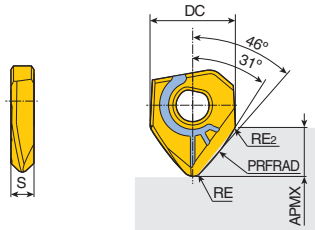
| Size | Dimension (mm) |     |           |      |  |  |  |
|------|----------------|-----|-----------|------|--|--|--|
|      | DC             | S   | APMX      | RE   |  |  |  |
| 060  | 6              | 2.0 | 4.5-4.8   | 3.0  |  |  |  |
| 080  | 8              | 2.2 | 6.6-6.9   | 4.0  |  |  |  |
| 100  | 10             | 2.7 | 8.0-8.2   | 5.0  |  |  |  |
| 120  | 12             | 3.2 | 9.6-9.7   | 6.0  |  |  |  |
| 160  | 16             | 4.2 | 12.3-12.7 | 8.0  |  |  |  |
| 200  | 20             | 5.2 | 14.4-14.7 | 10.0 |  |  |  |
| 250  | 25             | 6.2 | 16.8-17.4 | 12.5 |  |  |  |
| 300  | 30             | 7.2 | 18.6-19.2 | 15.0 |  |  |  |
| 320  | 32             | 7.2 | 18.4-19.2 | 16.0 |  |  |  |

| Insert                                                                                                    | Designation       | Recommended machining conditions |                 | Coated |        |         |        |        |        |        |        | Uncoated |     |
|-----------------------------------------------------------------------------------------------------------|-------------------|----------------------------------|-----------------|--------|--------|---------|--------|--------|--------|--------|--------|----------|-----|
|                                                                                                           |                   | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT8080 | TT8525B | TT7080 | TT7515 | TT6080 | TT5525 | TT5515 | TT2510   | K10 |
| <br>Straight cutting edge | <b>NFB 060-FM</b> | 0.05-0.2                         | 0.15-0.05       |        |        |         |        |        |        |        | ●      |          |     |
|                                                                                                           | <b>080-FM</b>     | 0.05-0.3                         | 0.20-0.05       |        |        |         |        |        |        | ●      | ●      |          |     |
|                                                                                                           | <b>100-FM</b>     | 0.05-0.3                         | 0.20-0.05       |        |        |         |        |        |        | ●      | ●      |          |     |
|                                                                                                           | <b>120-FM</b>     | 0.05-0.5                         | 0.30-0.08       |        |        |         |        |        |        | ●      | ●      |          |     |
|                                                                                                           | <b>160-FM</b>     | 0.05-0.5                         | 0.30-0.08       |        |        |         |        |        |        | ●      | ●      |          |     |
|                                                                                                           | <b>200-FM</b>     | 0.10-1.0                         | 0.30-0.08       |        |        |         |        |        |        | ●      | ●      |          |     |
|                                                                                                           | <b>250-FM</b>     | 0.15-1.0                         | 0.40-0.08       |        |        |         |        |        |        | ●      | ●      |          |     |
|                                                                                                           | <b>300-FM</b>     | 0.15-1.0                         | 0.40-0.08       |        |        |         |        |        |        | ●      | ●      |          |     |
|                                                                                                           | <b>320-FM</b>     | 0.15-1.0                         | 0.40-0.08       |        |        |         |        |        |        | ●      | ●      |          |     |
| <br>Helical cutting edge  | <b>NFB 060-SM</b> | 0.80-2.5                         | 0.20-0.05       |        |        |         |        |        |        |        | ●      | ●        |     |
|                                                                                                           | <b>080-SM</b>     | 1.20-3.2                         | 0.25-0.05       |        |        |         |        |        |        | ●      | ●      | ●        |     |
|                                                                                                           | <b>100-SM</b>     | 1.50-4.0                         | 0.25-0.05       |        |        |         |        |        |        | ●      | ●      | ●        |     |
|                                                                                                           | <b>120-SM</b>     | 1.80-4.8                         | 0.35-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |
|                                                                                                           | <b>160-SM</b>     | 2.40-6.4                         | 0.35-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |
|                                                                                                           | <b>200-SM</b>     | 3.00-8.0                         | 0.35-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |
|                                                                                                           | <b>250-SM</b>     | 3.75-10.0                        | 0.45-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |
|                                                                                                           | <b>300-SM</b>     | 4.50-12.0                        | 0.45-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |
|                                                                                                           | <b>320-SM</b>     | 4.80-12.8                        | 0.45-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |
|                                                                                                           |                   |                                  |                 |        |        |         |        |        |        |        |        |          |     |
|                                                                                                           |                   |                                  |                 |        |        |         |        |        |        |        |        |          |     |
|                                                                                                           |                   |                                  |                 |        |        |         |        |        |        |        |        |          |     |
|                                                                                                           |                   |                                  |                 |        |        |         |        |        |        |        |        |          |     |
|                                                                                                           |                   |                                  |                 |        |        |         |        |        |        |        |        |          |     |
|                                                                                                           |                   |                                  |                 |        |        |         |        |        |        |        |        |          |     |
|                                                                                                           |                   |                                  |                 |        |        |         |        |        |        |        |        |          |     |

●: Standard items



Inserts



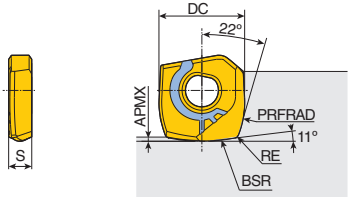
| Size | Dimension (mm) |     |      |     |        |                 |
|------|----------------|-----|------|-----|--------|-----------------|
|      | DC             | S   | APMX | RE  | PRFRAD | RE <sub>2</sub> |
| 080  | 8              | 2.2 | 4.3  | 1.0 | 20     | 0.6             |
| 100  | 10             | 2.7 | 5.4  | 1.2 | 25     | 0.8             |
| 120  | 12             | 3.2 | 6.4  | 1.5 | 30     | 1.0             |
| 160  | 16             | 4.2 | 8.5  | 2.0 | 40     | 1.3             |
| 200  | 20             | 5.2 | 10.7 | 2.5 | 50     | 1.6             |
| 250  | 25             | 6.2 | 13.5 | 3.0 | 62.5   | 2.0             |
| 300  | 30             | 7.2 | 16.3 | 3.5 | 75     | 2.4             |

| Insert                                                                           | Designation  | Recommended machining conditions |                    | Coated |        |        |        |         |        |        | Uncoated |        |
|----------------------------------------------------------------------------------|--------------|----------------------------------|--------------------|--------|--------|--------|--------|---------|--------|--------|----------|--------|
|                                                                                  |              | ap<br>(mm)                       | Feed<br>(mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080   | TT5515 |
|  | NFCB 080-R20 | -                                | 0.12-0.05          |        |        |        |        |         |        |        | ●        |        |
|                                                                                  | 100-R25      | -                                | 0.12-0.05          |        |        |        |        |         |        |        | ●        |        |
|                                                                                  | 120-R30      | -                                | 0.15-0.08          |        |        |        |        |         |        |        | ●        |        |
|                                                                                  | 160-R40      | -                                | 0.15-0.08          |        |        |        |        |         |        |        | ●        |        |
|                                                                                  | 200-R50      | -                                | 0.15-0.08          |        |        |        |        |         |        |        | ●        |        |
|                                                                                  | 250-R62.5    | -                                | 0.15-0.08          |        |        |        |        |         |        |        | ●        |        |
|                                                                                  | 300-R75      | -                                | 0.20-0.08          |        |        |        |        |         |        |        | ●        |        |

●: Standard items

NFLB

Inserts



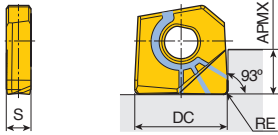
| Size | Dimension (mm) |     |      |     |     |        |
|------|----------------|-----|------|-----|-----|--------|
|      | DC             | S   | APMX | RE  | BSR | PRFRAD |
| 120  | 12             | 3.2 | 0.4  | 0.7 | 24  | 12     |
| 160  | 16             | 4.2 | 0.6  | 0.8 | 32  | 16     |
| 200  | 20             | 5.2 | 0.7  | 1   | 40  | 20     |
| 250  | 25             | 6.2 | 0.9  | 1.3 | 50  | 25     |
| 300  | 30             | 7.2 | 1.1  | 1.5 | 60  | 30     |
|      |                |     |      |     |     |        |
|      |                |     |      |     |     |        |

| Insert                                                                             | Designation             | Recommended machining conditions |                 | Coated |        |        |        |         |        |        | Uncoated |        |  |     |  |
|------------------------------------------------------------------------------------|-------------------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|----------|--------|--|-----|--|
|                                                                                    |                         | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080   | TT5515 |  | K10 |  |
|  | <b>NFLB 120-L24-B12</b> | -                                | 0.15-0.08       |        |        |        |        |         |        |        |          | ●      |  |     |  |
|                                                                                    | <b>160-L32-B16</b>      | -                                | 0.15-0.08       |        |        |        |        |         |        |        |          | ●      |  |     |  |
|                                                                                    | <b>200-L40-B20</b>      | -                                | 0.15-0.08       |        |        |        |        |         |        |        |          | ●      |  |     |  |
|                                                                                    | <b>250-L50-B25</b>      | -                                | 0.15-0.08       |        |        |        |        |         |        |        |          | ●      |  |     |  |
|                                                                                    | <b>300-L60-B30</b>      | -                                | 0.20-0.08       |        |        |        |        |         |        |        |          | ●      |  |     |  |

●: Standard items



E168-E170

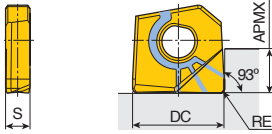


| Size       | Dimension (mm) |     |      |         |  |  |
|------------|----------------|-----|------|---------|--|--|
|            | DC             | S   | APMX | RE      |  |  |
| <b>060</b> | 6              | 2.0 | 2.5  | 0.3-1.0 |  |  |
| <b>080</b> | 8              | 2.2 | 3.4  | 0.3-1.0 |  |  |
| <b>100</b> | 10             | 2.7 | 4.0  | 0.3-2.0 |  |  |
| <b>110</b> | 11             | 2.7 | 4.4  | 0.3-2.0 |  |  |
| <b>120</b> | 12             | 3.2 | 5.0  | 0.3-2.0 |  |  |
| <b>130</b> | 13             | 3.2 | 5.4  | 0.3-2.0 |  |  |
| <b>160</b> | 16             | 4.2 | 6.9  | 0.3-3.0 |  |  |
| <b>170</b> | 17             | 4.2 | 7.4  | 1.0-2.0 |  |  |

| Insert                                                                           | Designation         | Recommended machining conditions |                 | Coated |        |         |        |        |        |        |        | Uncoated |     |  |
|----------------------------------------------------------------------------------|---------------------|----------------------------------|-----------------|--------|--------|---------|--------|--------|--------|--------|--------|----------|-----|--|
|                                                                                  |                     | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT8080 | TT8525B | TT7080 | TT7515 | TT6080 | TT5525 | TT5515 | TT2510   | K10 |  |
|  | <b>NFR 060A-R03</b> | 0.05-0.15                        | 0.10-0.05       |        |        |         |        |        |        |        | ●      |          |     |  |
|                                                                                  | <b>060A-R05</b>     | 0.10-0.15                        | 0.10-0.05       |        |        |         |        |        |        |        | ●      |          |     |  |
|                                                                                  | <b>060A-R10</b>     | 0.10-0.15                        | 0.10-0.05       |        |        |         |        |        |        |        | ●      |          |     |  |
|                                                                                  | <b>080A-R03</b>     | 0.05-0.2                         | 0.12-0.05       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>080A-R05</b>     | 0.05-0.2                         | 0.12-0.05       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>080A-R06</b>     | 0.05-0.2                         | 0.12-0.05       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>080A-R10</b>     | 0.05-0.2                         | 0.12-0.05       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>100A-R03</b>     | 0.05-0.3                         | 0.12-0.05       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>100A-R05</b>     | 0.05-0.3                         | 0.12-0.05       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>100A-R08</b>     | 0.05-0.3                         | 0.12-0.05       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>100A-R10</b>     | 0.05-0.3                         | 0.12-0.05       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>100A-R15</b>     | 0.05-0.3                         | 0.12-0.05       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>100A-R20</b>     | 0.05-0.3                         | 0.12-0.05       |        |        |         |        |        |        |        | ●      | ●        |     |  |
|                                                                                  | <b>110A-R10</b>     | 0.05-0.3                         | 0.12-0.05       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>110A-R20</b>     | 0.05-0.3                         | 0.12-0.05       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>120A-R03</b>     | 0.07-0.3                         | 0.15-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>120A-R05</b>     | 0.07-0.3                         | 0.15-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>120A-R10</b>     | 0.07-0.3                         | 0.15-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>120A-R15</b>     | 0.07-0.3                         | 0.15-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>120A-R20</b>     | 0.07-0.3                         | 0.15-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>130A-R10</b>     | 0.07-0.3                         | 0.15-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>130A-R20</b>     | 0.07-0.3                         | 0.15-0.08       |        |        |         |        |        |        | ●      |        | ●        |     |  |
|                                                                                  | <b>160A-R03</b>     | 0.08-0.5                         | 0.15-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>160A-R05</b>     | 0.08-0.5                         | 0.15-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>160A-R10</b>     | 0.08-0.5                         | 0.15-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>160A-R13</b>     | 0.08-0.5                         | 0.15-0.08       |        |        |         |        |        |        |        | ●      | ●        |     |  |
|                                                                                  | <b>160A-R15</b>     | 0.08-0.5                         | 0.15-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>160A-R20</b>     | 0.08-0.5                         | 0.15-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>160A-R30</b>     | 0.08-0.5                         | 0.15-0.08       |        |        |         |        |        |        | ●      | ●      | ●        |     |  |
|                                                                                  | <b>170A-R10</b>     | 0.08-0.5                         | 0.15-0.08       |        |        |         |        |        |        |        | ●      | ●        |     |  |
|                                                                                  | <b>170A-R20</b>     | 0.08-0.5                         | 0.15-0.08       |        |        |         |        |        |        |        | ●      |          |     |  |
|                                                                                  |                     |                                  |                 |        |        |         |        |        |        |        |        |          |     |  |
|                                                                                  |                     |                                  |                 |        |        |         |        |        |        |        |        |          |     |  |

•: Standard items





| Size       | Dimension (mm) |     |         |         |  |  |
|------------|----------------|-----|---------|---------|--|--|
|            | DC             | S   | APMX    | RE      |  |  |
| <b>200</b> | 20             | 5.2 | 8.7-9.2 | 0.3-3.0 |  |  |
| <b>210</b> | 21             | 5.2 | 9.2     | 1.0-2.0 |  |  |
| <b>250</b> | 25             | 6.2 | 10.6    | 0.3-3.0 |  |  |
| <b>260</b> | 26             | 6.2 | 11      | 1.0-2.0 |  |  |
| <b>300</b> | 30             | 7.1 | 12.7    | 1.0-2.0 |  |  |
| <b>320</b> | 32             | 7.1 | 13.6    | 1.0-2.0 |  |  |
|            |                |     |         |         |  |  |

[illegible]

●: Standard items

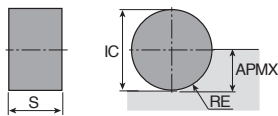
| Size    | Dimension (mm) |     |      |     |  |  |  |
|---------|----------------|-----|------|-----|--|--|--|
|         | IC             | S   | APMX | RE  |  |  |  |
| 05(HF)  | 7.1            | 3.8 | 1.5  | 1.5 |  |  |  |
| 05(65°) | 7.1            | 3.8 | 3.3  | 1.5 |  |  |  |
| 10(HF)  | 14.2           | 7.7 | 3.0  | 3.0 |  |  |  |
| 10(65°) | 14.2           | 7.7 | 6.5  | 3.0 |  |  |  |
|         |                |     |      |     |  |  |  |
|         |                |     |      |     |  |  |  |

[illegible]

RNGN 12-FL



Inserts



| Size | Dimension (mm) |      |      |      |  |  |  |
|------|----------------|------|------|------|--|--|--|
|      | RE             | IC   | S    | APMX |  |  |  |
| 12   | 6.35           | 12.7 | 7.94 | 6.3  |  |  |  |
|      |                |      |      |      |  |  |  |
|      |                |      |      |      |  |  |  |
|      |                |      |      |      |  |  |  |
|      |                |      |      |      |  |  |  |
|      |                |      |      |      |  |  |  |
|      |                |      |      |      |  |  |  |

| Insert | Designation           | Recommended machining conditions |                 | Ceramic |        | Coated |        |         |        |        |        |        | Uncoated |  |
|--------|-----------------------|----------------------------------|-----------------|---------|--------|--------|--------|---------|--------|--------|--------|--------|----------|--|
|        |                       | ap (mm)                          | Feed (mm/tooth) | TC3020  | TC3030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510 | K10      |  |
|        | <b>RNGN 1207 FL-E</b> | 0.5-3.0                          | 0.25-0.10       | ●       | ●      |        |        |         |        |        |        |        |          |  |
|        | <b>1207 FL-E04</b>    | 0.5-3.0                          | 0.25-0.10       | ●       | ●      |        |        |         |        |        |        |        |          |  |
|        | <b>1207 FL-T6</b>     | 0.5-3.0                          | 0.25-0.10       | ●       | ●      |        |        |         |        |        |        |        |          |  |

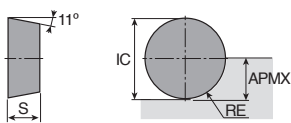


●: Standard items

RPGN 09/12-FL



Inserts



| Size | Dimension (mm) |      |      |      |  |  |  |
|------|----------------|------|------|------|--|--|--|
|      | RE             | IC   | S    | APMX |  |  |  |
| 09   | 4.76           | 9.52 | 3.18 | 4.7  |  |  |  |
| 12   | 6.35           | 12.7 | 4.76 | 6.3  |  |  |  |
|      |                |      |      |      |  |  |  |
|      |                |      |      |      |  |  |  |
|      |                |      |      |      |  |  |  |
|      |                |      |      |      |  |  |  |
|      |                |      |      |      |  |  |  |

| Insert | Designation             | Recommended machining conditions |                 | Ceramic |        | Coated |        |         |        |        |        |        | Uncoated |  |
|--------|-------------------------|----------------------------------|-----------------|---------|--------|--------|--------|---------|--------|--------|--------|--------|----------|--|
|        |                         | ap (mm)                          | Feed (mm/tooth) | TC3020  | TC3030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510 | K10      |  |
|        | <b>RPGN 0903 FL-E04</b> | 0.5-1.5                          | 0.15-0.07       | ●       | ●      |        |        |         |        |        |        |        |          |  |
|        | <b>1204 FL-E</b>        | 0.5-2.0                          | 0.20-0.07       | ●       | ●      |        |        |         |        |        |        |        |          |  |
|        | <b>1204 FL-E04</b>      | 0.5-2.0                          | 0.20-0.07       | ●       | ●      |        |        |         |        |        |        |        |          |  |
|        | <b>1204 FL-T6</b>       | 0.5-2.0                          | 0.20-0.07       | ●       | ●      |        |        |         |        |        |        |        |          |  |

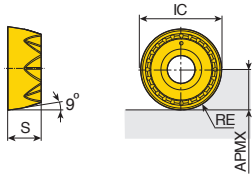


●: Standard items

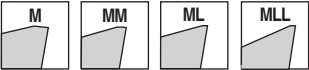




Inserts



| Size | Dimension (mm) |    |     |      |  |  |
|------|----------------|----|-----|------|--|--|
|      | RE             | IC | S   | APMX |  |  |
| 08   | 4              | 8  | 3.2 | 4.0  |  |  |
| 10   | 5              | 10 | 4.0 | 5.0  |  |  |
| 12   | 6              | 12 | 4.8 | 6.0  |  |  |
| 16   | 8              | 16 | 6.1 | 8.0  |  |  |
| 20   | 10             | 20 | 7.0 | 10.0 |  |  |
|      |                |    |     |      |  |  |
|      |                |    |     |      |  |  |



| Insert                                                                           | Designation                                                                        | Recommended machining conditions |                 | Coated    |        |        |        |         |        |        |        | Uncoated |     |  |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------|-----------------|-----------|--------|--------|--------|---------|--------|--------|--------|----------|-----|--|
|                                                                                  |                                                                                    | ap (mm)                          | Feed (mm/tooth) | TT9080    | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510   | K10 |  |
|  | <b>RYMX 0803-M</b>                                                                 | 1.0-3.5                          | 0.25-0.05       | ●         |        | ●      |        | ●       | ●      |        | ●      | ●        |     |  |
|                                                                                  | <b>1004-M</b>                                                                      | 1.5-4.0                          | 0.30-0.10       | ●         |        | ●      | ●      | ●       | ●      |        | ●      | ●        |     |  |
|                                                                                  | <b>1205-M</b>                                                                      | 1.5-5.0                          | 0.50-0.10       | ●         |        | ●      | ●      | ●       | ●      |        | ●      | ●        |     |  |
|                                                                                  | <b>1205-6M</b>                                                                     | 1.5-5.0                          | 0.50-0.10       | ●         |        |        |        |         |        |        |        | ●        |     |  |
|                                                                                  | <b>1606-M</b>                                                                      | 2.0-6.5                          | 0.50-0.10       | ●         |        | ●      | ●      | ●       | ●      |        | ●      | ●        |     |  |
|                                                                                  | <b>1606-7M</b>                                                                     | 2.0-6.5                          | 0.50-0.10       | ●         |        |        |        | ●       |        |        |        | ●        |     |  |
|                                                                                  | <b>2007-M</b>                                                                      | 3.0-8.0                          | 0.50-0.10       | ●         |        | ●      | ●      | ●       | ●      |        | ●      | ●        |     |  |
|  | <b>RYMX 0803-MM</b>                                                                | 1.0-3.5                          | 0.30-0.07       | ●         |        | ●      | ●      |         |        |        |        |          |     |  |
|                                                                                  | <b>1004-MM</b>                                                                     | 1.5-4.0                          | 0.35-0.07       | ●         |        | ●      | ●      |         |        |        |        |          |     |  |
|                                                                                  | <b>1205-MM</b>                                                                     | 1.5-5.0                          | 0.40-0.10       | ●         |        | ●      | ●      | ●       |        |        |        |          |     |  |
|                                                                                  | <b>1205-6MM</b>                                                                    | 1.5-5.0                          | 0.40-0.10       | ●         |        |        |        |         |        |        |        |          |     |  |
|                                                                                  | <b>1606-MM</b>                                                                     | 2.0-6.5                          | 0.45-0.10       | ●         |        | ●      | ●      |         |        |        |        |          |     |  |
|                                                                                  | <b>1606-7MM</b>                                                                    | 2.0-6.5                          | 0.45-0.10       | ●         |        | ●      | ●      |         |        |        |        |          |     |  |
|                                                                                  | <b>RYHX 1205-MM</b>                                                                | 3.0-8.0                          | 0.40-0.10       | ●         |        |        | ●      |         |        |        |        |          |     |  |
|  | <b>RYMX 0803-ML</b>                                                                | 1.0-3.5                          | 0.25-0.05       | ●         |        | ●      | ●      | ●       |        |        |        |          |     |  |
|                                                                                  | <b>1004-ML</b>                                                                     | 1.5-4.0                          | 0.30-0.05       | ●         |        | ●      | ●      | ●       |        |        |        |          |     |  |
|                                                                                  | <b>1205-ML</b>                                                                     | 1.5-5.0                          | 0.35-0.05       | ●         |        | ●      | ●      | ●       |        |        |        |          |     |  |
|                                                                                  | <b>1205-6ML</b>                                                                    | 1.5-5.0                          | 0.35-0.05       | ●         |        | ●      |        |         |        |        |        |          |     |  |
|                                                                                  | <b>1606-ML</b>                                                                     | 2.0-6.5                          | 0.40-0.05       | ●         |        | ●      | ●      | ●       |        |        |        |          |     |  |
|                                                                                  | <b>1606-7ML</b>                                                                    | 2.0-6.5                          | 0.40-0.05       | ●         |        |        |        |         |        |        |        |          |     |  |
|                                                                                  | <b>2007-ML</b>                                                                     | 3.0-8.0                          | 0.50-0.10       | ●         |        | ●      | ●      | ●       | ●      |        |        |          |     |  |
|                                                                                  | <b>RYHX 0803-ML</b>                                                                | 1.0-3.5                          | 0.25-0.05       | ●         |        | ●      | ●      |         |        |        |        |          |     |  |
|                                                                                  | <b>1004-ML</b>                                                                     | 1.5-4.0                          | 0.30-0.05       | ●         |        | ●      | ●      |         |        |        |        |          |     |  |
|                                                                                  | <b>1205-ML</b>                                                                     | 1.5-5.0                          | 0.35-0.05       | ●         |        | ●      | ●      |         |        |        |        |          |     |  |
|                                                                                  | <b>1606-ML</b>                                                                     | 2.0-6.5                          | 0.40-0.10       | ●         |        | ●      |        |         |        |        |        |          |     |  |
|                                                                                  |  | <b>RYMX 0803-MLL</b>             | 1.0-3.5         | 0.25-0.05 |        |        | ●      | ●       |        |        |        |          |     |  |
| <b>1004-MLL</b>                                                                  |                                                                                    | 1.5-4.0                          | 0.30-0.05       | ●         |        | ●      | ●      |         |        |        |        |          |     |  |
| <b>1205-MLL</b>                                                                  |                                                                                    | 1.5-5.0                          | 0.35-0.05       | ●         |        | ●      | ●      |         |        |        |        |          |     |  |
| <b>RYHX 0803-MLL</b>                                                             |                                                                                    | 1.0-3.5                          | 0.25-0.05       |           |        | ●      | ●      |         |        |        |        |          |     |  |
| <b>1004-MLL</b>                                                                  |                                                                                    | 1.5-4.0                          | 0.30-0.05       |           |        | ●      |        |         |        |        |        |          |     |  |
| <b>1205-MLL</b>                                                                  |                                                                                    | 1.5-5.0                          | 0.35-0.05       | ●         |        | ●      | ●      |         |        |        |        |          |     |  |
|                                                                                  |                                                                                    |                                  |                 |           |        |        |        |         |        |        |        |          |     |  |

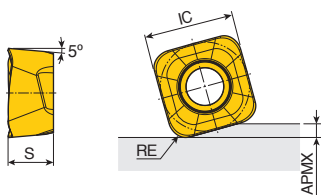


●: Standard items

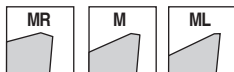
| Size      | Dimension (mm) |    |     |      |  |
|-----------|----------------|----|-----|------|--|
|           | RE             | IC | S   | APMX |  |
| <b>08</b> | 4              | 8  | 3.2 | 4.0  |  |
| <b>10</b> | 5              | 10 | 4.0 | 5.0  |  |
| <b>12</b> | 6              | 12 | 4.8 | 6.0  |  |
| <b>16</b> | 8              | 16 | 6.1 | 8.0  |  |
| <b>20</b> | 10             | 20 | 7.0 | 10.0 |  |
|           |                |    |     |      |  |

[illegible]

●: Standard items

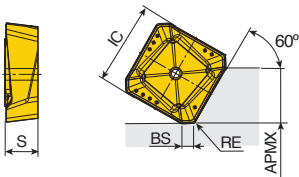


| Size      | Dimension (mm) |      |      |     |  |  |  |
|-----------|----------------|------|------|-----|--|--|--|
|           | IC             | S    | APMX | RE  |  |  |  |
| <b>06</b> | 6.3            | 3.16 | 1.0  | 1.0 |  |  |  |
| <b>09</b> | 9.0            | 4.0  | 1.2  | 1.5 |  |  |  |
| <b>13</b> | 13.1           | 6.7  | 2.0  | 2.5 |  |  |  |
|           |                |      |      |     |  |  |  |
|           |                |      |      |     |  |  |  |
|           |                |      |      |     |  |  |  |

[illegible]

●: Standard items

Inserts



| Size  | Dimension (mm) |      |      |    |     |  |
|-------|----------------|------|------|----|-----|--|
|       | IC             | S    | APMX | BS | RE  |  |
| 21-HE | 20.8           | 7    | 13   | 2  | 1.5 |  |
| 27-HE | 26.8           | 8.95 | 18   | 2  | 2   |  |
|       |                |      |      |    |     |  |
|       |                |      |      |    |     |  |
|       |                |      |      |    |     |  |
|       |                |      |      |    |     |  |



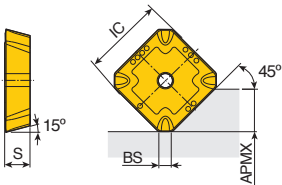
| Insert                                                                           | Designation              | Recommended machining conditions |                    | Coated |        |        |        |         |        |        |        | Uncoated |  |     |  |
|----------------------------------------------------------------------------------|--------------------------|----------------------------------|--------------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|--|-----|--|
|                                                                                  |                          | ap<br>(mm)                       | Feed<br>(mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 |          |  | K10 |  |
|  | <b>SCKN 2107 DDTR-HE</b> | 3.5-10.5                         | 0.25-0.13          |        |        |        |        | ●       | ●      | ●      |        |          |  |     |  |
|                                                                                  | <b>2708 DDTR-HE</b>      | 5.0-14.5                         | 0.30-0.15          |        |        |        |        | ●       |        |        |        |          |  |     |  |
|                                                                                  |                          |                                  |                    |        |        |        |        |         |        |        |        |          |  |     |  |
|                                                                                  |                          |                                  |                    |        |        |        |        |         |        |        |        |          |  |     |  |
|                                                                                  |                          |                                  |                    |        |        |        |        |         |        |        |        |          |  |     |  |



●: Standard items

SDKN 12/15

Inserts



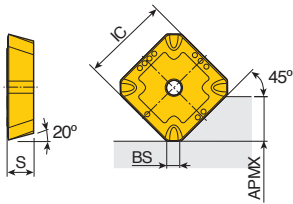
| Size | Dimension (mm) |      |      |      |  |
|------|----------------|------|------|------|--|
|      | IC             | S    | APMX | BS   |  |
| 12   | 12.7           | 3.18 | 6.5  | 2.00 |  |
| 15   | 15.875         | 4.76 | 8.7  | 1.89 |  |
|      |                |      |      |      |  |
|      |                |      |      |      |  |
|      |                |      |      |      |  |

| Insert                                                                             | Designation             | Recommended machining conditions |                    | Coated |        |        |        |         |        |        |        | Uncoated |     |
|------------------------------------------------------------------------------------|-------------------------|----------------------------------|--------------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|-----|
|                                                                                    |                         | ap<br>(mm)                       | Feed<br>(mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 |          | K10 |
|  | <b>SDKN 1203 MT-HPN</b> | 1.5-6.0                          | 0.25-0.10          |        |        |        |        |         | ●      |        |        |          |     |
|                                                                                    | <b>1504 MT-HPN</b>      | 1.5-8.0                          | 0.25-0.10          |        |        |        |        |         | ●      |        |        |          |     |
|                                                                                    |                         |                                  |                    |        |        |        |        |         |        |        |        |          |     |
|                                                                                    |                         |                                  |                    |        |        |        |        |         |        |        |        |          |     |
|                                                                                    |                         |                                  |                    |        |        |        |        |         |        |        |        |          |     |



●: Standard items

Inserts



| Size | Dimension (mm) |      |      |      |  |  |
|------|----------------|------|------|------|--|--|
|      | IC             | S    | APMX | BS   |  |  |
| 12   | 12.7           | 3.18 | 6.5  | 2.08 |  |  |
| 15   | 15.875         | 4.76 | 8.7  | 2.06 |  |  |
|      |                |      |      |      |  |  |
|      |                |      |      |      |  |  |
|      |                |      |      |      |  |  |
|      |                |      |      |      |  |  |
|      |                |      |      |      |  |  |

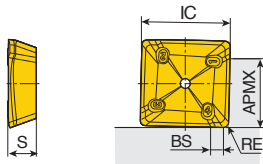
| Insert                                                                           | Designation               | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        | Uncoated |  |     |  |
|----------------------------------------------------------------------------------|---------------------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|--|-----|--|
|                                                                                  |                           | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 |          |  | K10 |  |
|  | <b>SEKN 1203 AFTN-HPN</b> | 1.5-6.0                          | 0.25-0.10       |        |        |        |        |         | ●      |        |        |          |  |     |  |
|                                                                                  | <b>1504 AFTN-HPN</b>      | 1.5-8.0                          | 0.25-0.10       |        |        |        |        |         | ●      |        |        |          |  |     |  |
|                                                                                  |                           |                                  |                 |        |        |        |        |         |        |        |        |          |  |     |  |
|                                                                                  |                           |                                  |                 |        |        |        |        |         |        |        |        |          |  |     |  |
|                                                                                  |                           |                                  |                 |        |        |        |        |         |        |        |        |          |  |     |  |



●: Standard items

SEKX 21

Inserts



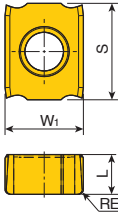
| Size | Dimension (mm) |   |      |    |     |  |
|------|----------------|---|------|----|-----|--|
|      | IC             | S | APMX | BS | RE  |  |
| 21   | 21.85          | 7 | 17   | 2  | 1.2 |  |
|      |                |   |      |    |     |  |
|      |                |   |      |    |     |  |
|      |                |   |      |    |     |  |
|      |                |   |      |    |     |  |
|      |                |   |      |    |     |  |
|      |                |   |      |    |     |  |

| Insert                                                                             | Designation             | Recommended machining conditions |                    | Coated |        |        |        |         |        |        |        | Uncoated |     |
|------------------------------------------------------------------------------------|-------------------------|----------------------------------|--------------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|-----|
|                                                                                    |                         | ap<br>(mm)                       | Feed<br>(mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 |          | K10 |
|  | <b>SEKX 2107 PETR-M</b> | 5.5-13.0                         | 0.22-0.10          |        |        |        |        | ●       |        |        | ●      |          |     |
|                                                                                    |                         |                                  |                    |        |        |        |        |         |        |        |        |          |     |
|                                                                                    |                         |                                  |                    |        |        |        |        |         |        |        |        |          |     |
|                                                                                    |                         |                                  |                    |        |        |        |        |         |        |        |        |          |     |



●: Standard items

Inserts



| Size | Dimension (mm) |     |     |     |  |  |
|------|----------------|-----|-----|-----|--|--|
|      | S              | W1  | L   | RE  |  |  |
| 018  | 8              | 6.5 | 1.8 | 0.4 |  |  |
| 023  | 8              | 6.5 | 2.3 | 0.4 |  |  |
| 028  | 8              | 6.5 | 2.8 | 0.4 |  |  |
| 033  | 8              | 6.5 | 3.3 | 0.4 |  |  |
|      |                |     |     |     |  |  |
|      |                |     |     |     |  |  |
|      |                |     |     |     |  |  |
|      |                |     |     |     |  |  |

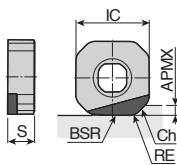
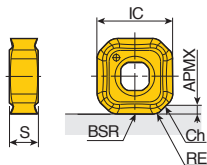
| Insert                                                                           | Designation | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        | Uncoated |     |
|----------------------------------------------------------------------------------|-------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|-----|
|                                                                                  |             | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 |          | K10 |
|  | SLOT 018-04 | -                                | 0.08-0.05       | ●      |        | ●      |        |         |        |        | ●      |          |     |
|                                                                                  | 023-04      | -                                | 0.08-0.05       | ●      |        | ●      |        |         |        |        | ●      |          |     |
|                                                                                  | 028-04      | -                                | 0.08-0.05       | ●      |        | ●      |        |         |        |        | ●      |          |     |
|                                                                                  | 033-04      | -                                | 0.10-0.06       | ●      |        | ●      |        |         |        |        | ●      |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |             |                                  |                 |        |        |        |        |         |        |        |        |          |     |

●: Standard items

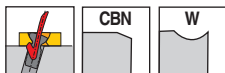


E221-E222

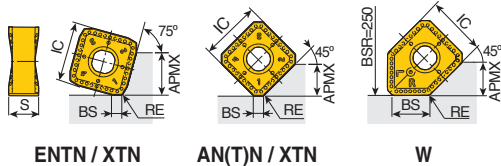
# CHASE 2 QUAD



| Size             | Dimension (mm) |      |      |     |     |     |
|------------------|----------------|------|------|-----|-----|-----|
|                  | IC             | S    | APMX | RE  | BSR | C5  |
| <b>1204 P-W</b>  | 12.7           | 4.76 | 1.0  | 2.0 | 450 | 2.5 |
| <b>1204-W</b>    | 12.7           | 4.76 | 1.0  | 2.0 | 800 | -   |
| <b>1205-W</b>    | 12.7           | 5.56 | 1.0  | 2.0 | 450 | 2.5 |
| <b>1204R-CBN</b> | 12.7           | 4.76 | 1.0  | 0.8 | 250 | 1.5 |
|                  |                |      |      |     |     |     |
|                  |                |      |      |     |     |     |

[illegible]

Inserts



| Size            | Dimension (mm) |     |      |     |     |  |
|-----------------|----------------|-----|------|-----|-----|--|
|                 | IC             | S   | APMX | BS  | RE  |  |
| 13 ENTN-M       | 13.5           | 7.0 | 9.5  | 2.2 | 0.4 |  |
| 13 ANTN-M/ML/AL | 13.5           | 6.8 | 7.0  | 2.2 | 0.4 |  |
| 13 ANTR-MP      | 13.5           | 6.8 | 6.0  | 2.2 | 0.4 |  |
| 13 ANTN-W       | 13.5           | 6.8 | 7.0  | 7.5 | 12  |  |
| 13 XTN(75°)     | 13.5           | 6.8 | 9.6  | 1.4 | 0.4 |  |
| 13 XTN(45°)     | 13.5           | 6.8 | 6.35 | 1.4 | 0.4 |  |



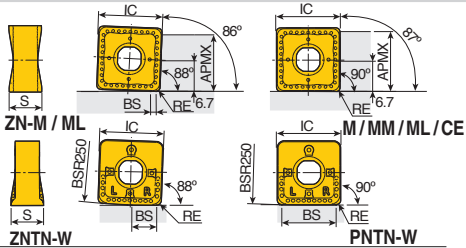
| Insert                                                                            | Designation       | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        | Uncoated |     |
|-----------------------------------------------------------------------------------|-------------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|-----|
|                                                                                   |                   | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510   | K10 |
|   | SNGX 1306 ENTN-M  | 2.5-8.0                          | 0.20-0.10       | ●      |        | ●      |        | ●       |        | ●      | ●      |          |     |
|                                                                                   | SNMX 1306 ENTN-M  | 2.5-8.0                          | 0.20-0.10       | ●      |        | ●      |        | ●       |        | ●      | ●      | ●        |     |
|   | SNGX 1306 ANTN-M  | 2.0-6.0                          | 0.20-0.10       | ●      |        | ●      |        | ●       | ●      |        | ●      |          |     |
|                                                                                   | 1306 ANTN-ML      | 2.0-6.0                          | 0.25-0.13       | ●      |        | ●      |        |         |        |        | ●      |          |     |
|                                                                                   | SNMX 1306 ANTN-M  | 2.0-6.0                          | 0.20-0.10       | ●      |        | ●      |        | ●       | ●      | ●      | ●      | ●        |     |
|   | SNGX 1306 ANN-AL  | 2.0-6.0                          | 0.35-0.10       |        |        |        |        |         |        |        |        |          | ●   |
|                                                                                   |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|   | SNMX 1306 ANTR-MP | 2.0-6.0                          | 0.20-0.10       | ●      |        | ●      |        | ●       |        |        | ●      |          |     |
|                                                                                   |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|   | SNMX 1306 XTN     | 2.5-6.5                          | 0.20-0.10       | ●      |        | ●      |        |         | ●      | ●      | ●      | ●        |     |
|                                                                                   |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|  | SNGX 1306 ANTN-W  | 0.2-1.0                          | 0.20-0.10       | ●      |        |        |        |         |        |        | ●      |          |     |
|                                                                                   |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                   |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                   |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                   |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                   |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                   |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                   |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                   |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                   |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                   |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                   |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |

●: Standard items





Inserts



| Size | Dimension (mm) |         |       |        |         |  |
|------|----------------|---------|-------|--------|---------|--|
|      | IC             | S       | APMX  | BS     | RE      |  |
| 13   | 13.5           | 6.8-7.0 | 10-12 | 12-5.3 | 0.4-1.6 |  |
| 13-W | 13.5           | 6.8     | 10-12 | 11.5   | 1.0     |  |
|      |                |         |       |        |         |  |
|      |                |         |       |        |         |  |
|      |                |         |       |        |         |  |
|      |                |         |       |        |         |  |
|      |                |         |       |        |         |  |
|      |                |         |       |        |         |  |
|      |                |         |       |        |         |  |

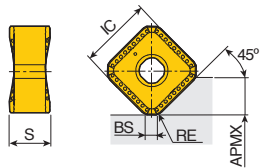


| Insert | Designation      | Recommended machining conditions |                 | Ceramic |        |        |        |         |        |        |        |        |     | Uncoated |  |
|--------|------------------|----------------------------------|-----------------|---------|--------|--------|--------|---------|--------|--------|--------|--------|-----|----------|--|
|        |                  | ap (mm)                          | Feed (mm/tooth) | AS10    | TT9080 | TT9030 | TT8080 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510 | K10 |          |  |
|        | SNGX 1306 ZN-M   | 3.5-10.0                         | 0.20-0.10       |         | ●      |        | ●      |         | ●      | ●      | ●      |        |     |          |  |
|        |                  |                                  |                 |         |        |        |        |         |        |        |        |        |     |          |  |
|        | SNGX 1306 ZN-ML  | 3.5-10.0                         | 0.25-0.13       |         |        |        | ●      |         |        |        | ●      |        |     |          |  |
|        | 1306C08 ZN-M     | 3.5-10.0                         | 0.20-0.10       |         | ●      |        |        |         | ●      | ●      | ●      |        |     |          |  |
|        | 130608-MM        | 3.5-10.0                         | 0.15-0.08       |         |        |        | ●      |         |        |        |        |        |     |          |  |
|        | 130612-MM        | 3.5-10.0                         | 0.15-0.08       |         |        |        |        |         |        |        | ●      |        |     |          |  |
|        | 130616-MM        | 3.5-10.0                         | 0.15-0.08       |         |        |        | ●      |         | ●      |        |        |        |     |          |  |
|        | 130608-ML        | 3.5-10.0                         | 0.25-0.13       |         |        |        |        |         |        | ●      | ●      |        |     |          |  |
|        | 130612-ML        | 3.5-10.0                         | 0.25-0.13       |         |        |        |        |         |        | ●      |        |        |     |          |  |
|        | SNGX 130608-M    | 3.5-10.0                         | 0.20-0.10       |         | ●      |        |        |         | ●      | ●      | ●      |        |     |          |  |
|        | 130612-M         | 3.5-10.0                         | 0.20-0.10       |         | ●      |        |        |         |        | ●      | ●      |        |     |          |  |
|        | 130616-M         | 3.5-10.0                         | 0.20-0.10       |         | ●      |        | ●      | ●       | ●      | ●      | ●      |        |     |          |  |
|        | 130620-M         | 3.5-10.0                         | 0.20-0.10       |         | ●      |        |        |         | ●      | ●      | ●      |        |     |          |  |
|        | SNGX 130608-CE   | 3.5-10.0                         | 0.25-0.13       | ●       |        |        |        |         |        |        |        |        |     |          |  |
|        | SNGX 1306 ZNTN-W | 0.2-1.0                          | 0.20-0.10       |         | ●      |        |        |         |        |        | ●      |        |     |          |  |
|        | 1306 PNTN-W      | 0.2-1.0                          | 0.20-0.10       |         | ●      |        |        |         |        |        | ●      |        |     |          |  |
|        |                  |                                  |                 |         |        |        |        |         |        |        |        |        |     |          |  |
|        |                  |                                  |                 |         |        |        |        |         |        |        |        |        |     |          |  |
|        |                  |                                  |                 |         |        |        |        |         |        |        |        |        |     |          |  |
|        |                  |                                  |                 |         |        |        |        |         |        |        |        |        |     |          |  |
|        |                  |                                  |                 |         |        |        |        |         |        |        |        |        |     |          |  |
|        |                  |                                  |                 |         |        |        |        |         |        |        |        |        |     |          |  |
|        |                  |                                  |                 |         |        |        |        |         |        |        |        |        |     |          |  |
|        |                  |                                  |                 |         |        |        |        |         |        |        |        |        |     |          |  |
|        |                  |                                  |                 |         |        |        |        |         |        |        |        |        |     |          |  |
|        |                  |                                  |                 |         |        |        |        |         |        |        |        |        |     |          |  |
|        |                  |                                  |                 |         |        |        |        |         |        |        |        |        |     |          |  |
|        |                  |                                  |                 |         |        |        |        |         |        |        |        |        |     |          |  |
|        |                  |                                  |                 |         |        |        |        |         |        |        |        |        |     |          |  |
|        |                  |                                  |                 |         |        |        |        |         |        |        |        |        |     |          |  |

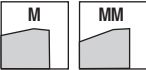


●: Standard items

Inserts



| Size    | Dimension (mm) |     |      |     |     |  |
|---------|----------------|-----|------|-----|-----|--|
|         | IC             | S   | APMX | BS  | RE  |  |
| SNMX 16 | 16.7           | 7.8 | 8.8  | 2.4 | 0.8 |  |
| SNHX 16 | 16.7           | 6.4 | 8.8  | 2.4 | 0.8 |  |
|         |                |     |      |     |     |  |
|         |                |     |      |     |     |  |
|         |                |     |      |     |     |  |
|         |                |     |      |     |     |  |

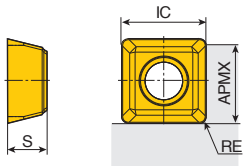


| Insert                                                                           | Designation       | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        | Uncoated |     |
|----------------------------------------------------------------------------------|-------------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|-----|
|                                                                                  |                   | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 |          | K10 |
|  | SNMX 1607 ANT-N-M | 2.5-7.5                          | 0.25-0.13       | ●      |        | ●      |        | ●       | ●      | ●      |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|  | SNHX 1606 ANN-MM  | 2.5-7.5                          | 0.20-0.10       |        |        |        |        |         | ●      | ●      |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|                                                                                  |                   |                                  |                 |        |        |        |        |         |        |        |        |          |     |

●: Standard items



Inserts



| Size | Dimension (mm) |      |      |     |  |  |
|------|----------------|------|------|-----|--|--|
|      | IC             | S    | APMX | RE  |  |  |
| 06   | 6.16           | 2.56 | 5.6  | 0.4 |  |  |
| 09   | 9.8            | 4.3  | 9.0  | 0.8 |  |  |
| 11   | 11.5           | 4.8  | 10.7 | 0.8 |  |  |
| 14   | 14.2           | 5.2  | 13.4 | 0.8 |  |  |
|      |                |      |      |     |  |  |
|      |                |      |      |     |  |  |
|      |                |      |      |     |  |  |



| Insert | Designation    | Recommended machining conditions |                 | Cermet |  | Coated |        |        |        |         |        |        |        | Uncoated |  |
|--------|----------------|----------------------------------|-----------------|--------|--|--------|--------|--------|--------|---------|--------|--------|--------|----------|--|
|        |                | ap (mm)                          | Feed (mm/tooth) | CT7000 |  | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | K10      |  |
|        | SPMG 090404-EM | 2.5-7.5                          | 0.15-0.08       |        |  |        |        |        | •      |         |        |        |        |          |  |
|        | 090408-EM      | 2.5-7.5                          | 0.15-0.08       |        |  | •      |        |        | •      |         | •      |        | •      |          |  |
|        | 110408-EM      | 3.0-8.5                          | 0.16-0.09       |        |  | •      | •      | •      | •      |         | •      |        | •      |          |  |
|        | 140508-EM      | 4.0-11.0                         | 0.18-0.10       |        |  | •      |        | •      |        |         | •      |        | •      |          |  |
|        | SPMT 090408-EM | 2.5-7.5                          | 0.15-0.08       |        |  |        | •      |        | •      |         |        |        | •      |          |  |
|        | 110408-EM      | 3.0-8.5                          | 0.16-0.09       |        |  | •      | •      | •      | •      |         | •      |        | •      |          |  |
|        | 140508-EM      | 4.0-11.0                         | 0.18-0.10       |        |  | •      |        | •      | •      | •       | •      |        | •      |          |  |
|        | XOMT 060204    | 1.5-4.5                          | 0.06-0.03       |        |  |        | •      |        | •      |         |        |        |        |          |  |
|        |                |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |  |
|        |                |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |  |
|        |                |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |  |
|        |                |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |  |
|        |                |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |  |
|        |                |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |  |
|        |                |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |  |
|        |                |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |  |
|        |                |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |  |
|        |                |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |  |
|        |                |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |  |
|        |                |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |  |
|        |                |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |  |
|        |                |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |  |
|        |                |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |  |
|        |                |                                  |                 |        |  |        |        |        |        |         |        |        |        |          |  |

•: Standard items

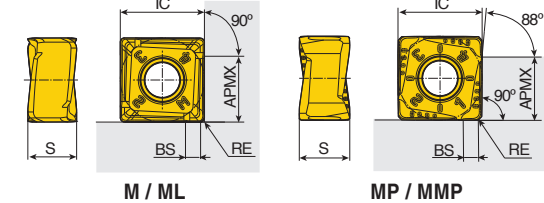


| Size      | Dimension (mm) |      |      |         |  |
|-----------|----------------|------|------|---------|--|
|           | IC             | S    | APMX | BS      |  |
| <b>12</b> | 12.7           | 3.18 | 9.5  | 1.2-1.6 |  |
| <b>15</b> | 15.875         | 4.76 | 12.5 | 1.4-1.6 |  |
|           |                |      |      |         |  |
|           |                |      |      |         |  |
|           |                |      |      |         |  |
|           |                |      |      |         |  |
|           |                |      |      |         |  |

[illegible]

E74

Inserts



| Size   | Dimension (mm) |      |      |     |     |  |
|--------|----------------|------|------|-----|-----|--|
|        | IC             | S    | APMX | BS  | RE  |  |
| 07     | 7              | 4.16 | 5.0  | 0.9 | 0.8 |  |
| 10-M   | 10             | 5.8  | 7.0  | 1.1 | 0.8 |  |
| 10-MP  | 10             | 6    | 7.0  | 1.1 | 0.8 |  |
| 10-MMP | 10             | 6    | 6.5  | 1.1 | 0.8 |  |
| 12-MP  | 12.2           | 8.06 | 8.5  | 1.1 | 0.8 |  |
| 12-MMP | 12.2           | 8.06 | 8.0  | 1.1 | 0.8 |  |



| Insert                                                                           | Designation                | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        | Uncoated |     |  |
|----------------------------------------------------------------------------------|----------------------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|-----|--|
|                                                                                  |                            | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510   | K10 |  |
|  | <b>SQKU 070308 PNR-M</b>   | 1.0-4.0                          | 0.20-0.10       | ●      |        | ●      |        |         |        |        | ●      | ●        |     |  |
|                                                                                  | <b>100408 PNR-M</b>        | 1.5-5.5                          | 0.20-0.10       | ●      |        | ●      |        |         |        |        | ●      | ●        |     |  |
|  | <b>SQKU 070308 PNR-ML</b>  | 1.0-4.0                          | 0.20-0.10       | ●      |        | ●      |        |         |        |        | ●      |          |     |  |
|                                                                                  |                            |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|  | <b>SQKU 100408 PNR-MP</b>  | 1.5-5.5                          | 0.20-0.10       | ●      |        |        |        |         |        |        | ●      | ●        |     |  |
|                                                                                  | <b>120608 PNR-MP</b>       | 2.0-6.5                          | 0.25-0.15       | ●      |        |        |        | ●       |        |        | ●      | ●        |     |  |
|  | <b>SQHU 100408 PNR-MMP</b> | 1.5-5.5                          | 0.25-0.10       | ●      |        |        |        |         |        |        | ●      |          |     |  |
|                                                                                  | <b>120608 PNR-MMP</b>      | 2.0-6.5                          | 0.25-0.15       | ●      |        |        |        |         |        |        | ●      |          |     |  |
|                                                                                  |                            |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                            |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                            |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                            |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                            |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                            |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                            |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                            |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                            |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                            |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                            |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                            |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                            |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                  |                            |                                  |                 |        |        |        |        |         |        |        |        |          |     |  |

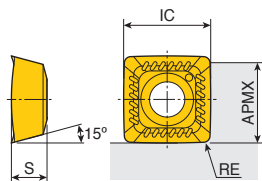


●: Standard items

| Size           | Dimension (mm) |     |      |     |  |
|----------------|----------------|-----|------|-----|--|
|                | IC             | S   | APMX | BS  |  |
| <b>11(45°)</b> | 11.2           | 6.3 | 4.2  | 1.9 |  |
| <b>11(20°)</b> | 11.2           | 6.3 | 1.8  | 1   |  |
| <b>14(45°)</b> | 14.5           | 7.8 | 6    | 2   |  |
| <b>14(20°)</b> | 14.5           | 7.8 | 2.5  | 1.6 |  |
|                |                |     |      |     |  |
|                |                |     |      |     |  |

[illegible]

●: Standard items

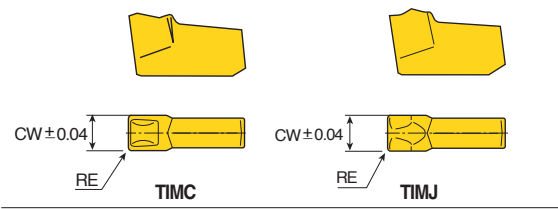


| Size          | Dimension (mm) |      |      |     |  |
|---------------|----------------|------|------|-----|--|
|               | IC             | S    | APMX | RE  |  |
| <b>093808</b> | 9              | 3.75 | 7.5  | 0.8 |  |
| <b>093816</b> | 9              | 3.75 | 7    | 1.6 |  |
| <b>114508</b> | 11             | 4.5  | 10   | 0.8 |  |
| <b>114516</b> | 11             | 4.5  | 9    | 1.6 |  |
|               |                |      |      |     |  |
|               |                |      |      |     |  |

[illegible]

# TIMC/J

## Slotting inserts



| Size | Dimension (mm) |     |      |  |  |  |
|------|----------------|-----|------|--|--|--|
|      | Seat size      | CW  | RE   |  |  |  |
| 1.6  | 1              | 1.6 | 0.16 |  |  |  |
| 2    | 2              | 2.2 | 0.20 |  |  |  |
| 2.4  | 2              | 2.4 | 0.20 |  |  |  |
| 3    | 4              | 3.1 | 0.20 |  |  |  |
| 4    | 4              | 4.1 | 0.25 |  |  |  |
| 4.8  | 4              | 4.8 | 0.28 |  |  |  |

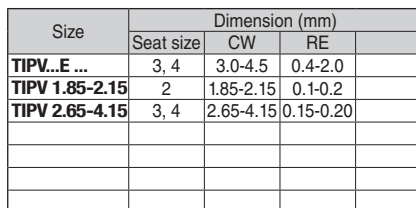
| Insert                                                                           | Designation     | Recommended machining conditions |                 | Coated |        |        |        |        |        |        |        | Uncoated |     |  |
|----------------------------------------------------------------------------------|-----------------|----------------------------------|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-----|--|
|                                                                                  |                 | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT7220 | TT7080 | TT6030 | TT5100 |          | K10 |  |
|  | <b>TIMC 1.6</b> | -                                | 0.12-0.04       |        | ●      |        | ●      | ●      |        | ●      |        |          | ●   |  |
|                                                                                  | <b>2</b>        | -                                | 0.13-0.05       |        | ●      |        | ●      | ●      |        | ●      |        |          | ●   |  |
|                                                                                  | <b>2.4</b>      | -                                | 0.15-0.06       |        | ●      |        |        |        |        |        |        |          |     |  |
|                                                                                  | <b>3</b>        | -                                | 0.18-0.06       |        | ●      |        | ●      | ●      |        | ●      | ●      |          |     |  |
|                                                                                  | <b>4</b>        | -                                | 0.20-0.08       |        | ●      |        | ●      | ●      |        |        |        |          |     |  |
|                                                                                  | <b>4.8</b>      | -                                | 0.20-0.08       |        |        |        | ●      |        |        | ●      |        |          |     |  |
|  | <b>TIMJ 2</b>   | -                                | 0.12-0.04       |        |        |        | ●      |        |        | ●      |        |          |     |  |
|                                                                                  | <b>2.4</b>      | -                                | 0.13-0.05       |        |        |        | ●      |        | ●      |        |        |          | ●   |  |
|                                                                                  | <b>3</b>        | -                                | 0.15-0.05       |        |        |        | ●      |        |        | ●      |        |          | ●   |  |
|                                                                                  | <b>4</b>        | -                                | 0.18-0.05       |        |        |        | ●      |        |        | ●      |        |          | ●   |  |
|                                                                                  | <b>4.8</b>      | -                                | 0.18-0.05       |        |        |        | ●      |        |        | ●      |        |          | ●   |  |
|                                                                                  |                 |                                  |                 |        |        |        |        |        |        |        |        |          |     |  |
|                                                                                  |                 |                                  |                 |        |        |        |        |        |        |        |        |          |     |  |
|                                                                                  |                 |                                  |                 |        |        |        |        |        |        |        |        |          |     |  |
|                                                                                  |                 |                                  |                 |        |        |        |        |        |        |        |        |          |     |  |
|                                                                                  |                 |                                  |                 |        |        |        |        |        |        |        |        |          |     |  |
|                                                                                  |                 |                                  |                 |        |        |        |        |        |        |        |        |          |     |  |

●: Standard items





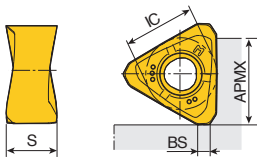
## Slotting inserts

[illegible]

●: Standard items



Inserts



| Size | Dimension (mm) |   |      |     |  |  |  |
|------|----------------|---|------|-----|--|--|--|
|      | IC             | S | APMX | BS  |  |  |  |
| 18   | 11.65          | 8 | 13   | 1.4 |  |  |  |
| 22   | 12.7           | 8 | 15   | 2.2 |  |  |  |
|      |                |   |      |     |  |  |  |
|      |                |   |      |     |  |  |  |
|      |                |   |      |     |  |  |  |
|      |                |   |      |     |  |  |  |

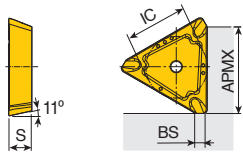


| Insert                                                                            | Designation                | Recommended machining conditions |                    | Coated |        |        |        |         |        |        |        | Uncoated |     |  |
|-----------------------------------------------------------------------------------|----------------------------|----------------------------------|--------------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|-----|--|
|                                                                                   |                            | ap<br>(mm)                       | Feed<br>(mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 | TT2510   | K10 |  |
|  | <b>TNMX 1806 PNTR-M</b>    | 1.0-11.0                         | 0.15-0.07          | ●      |        | ●      |        | ●       | ●      |        | ●      | ●        |     |  |
|                                                                                   |                            |                                  |                    |        |        |        |        |         |        |        |        |          |     |  |
|  | <b>TNMX 1806 PNTR-SMR2</b> | 2.7-11.0                         | 0.20-0.10          | ●      |        | ●      |        | ●       |        |        | ●      |          |     |  |
|                                                                                   |                            |                                  |                    |        |        |        |        |         |        |        |        |          |     |  |
|  | <b>TNMX 1806 PNTR-SMR3</b> | 2.7-11.0                         | 0.20-0.10          | ●      |        | ●      |        | ●       |        |        | ●      |          |     |  |
|                                                                                   |                            |                                  |                    |        |        |        |        |         |        |        |        |          |     |  |
|  | <b>TNGX 2207 PNTN</b>      | 1.0-13.0                         | 0.20-0.10          | ●      |        | ●      |        | ●       | ●      |        | ●      |          |     |  |
|                                                                                   | <b>TNMX 2207 PNTN</b>      | 1.0-13.0                         | 0.20-0.10          | ●      |        | ●      |        | ●       | ●      |        | ●      | ●        |     |  |
|                                                                                   |                            |                                  |                    |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                   |                            |                                  |                    |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                   |                            |                                  |                    |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                   |                            |                                  |                    |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                   |                            |                                  |                    |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                   |                            |                                  |                    |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                   |                            |                                  |                    |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                   |                            |                                  |                    |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                   |                            |                                  |                    |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                   |                            |                                  |                    |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                   |                            |                                  |                    |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                   |                            |                                  |                    |        |        |        |        |         |        |        |        |          |     |  |
|                                                                                   |                            |                                  |                    |        |        |        |        |         |        |        |        |          |     |  |

●: Standard items



Inserts

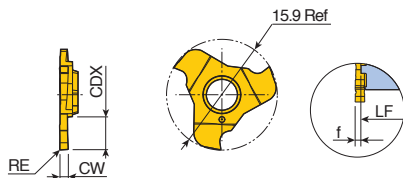


| Size | Dimension (mm) |      |      |         |  |
|------|----------------|------|------|---------|--|
|      | IC             | S    | APMX | BS      |  |
| 22   | 12.7           | 4.76 | 176  | 1.7-1.8 |  |
|      |                |      |      |         |  |
|      |                |      |      |         |  |
|      |                |      |      |         |  |
|      |                |      |      |         |  |
|      |                |      |      |         |  |

| Insert | Designation        | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        | Uncoated |     |
|--------|--------------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|-----|
|        |                    | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 |          | K10 |
|        | TPKN 2204 PDTR-HPN | 1.5-13.0                         | 0.25-0.10       |        |        |        |        |         | ●      |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        | TPKN 2204 PDR-HPN  | 1.5-13.0                         | 0.25-0.10       |        |        |        | ●      |         |        | ●      |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |
|        |                    |                                  |                 |        |        |        |        |         |        |        |        |          |     |

●: Standard items





| Size        | Dimension (mm) |      |     | Size        | Dimension (mm) |      |     |
|-------------|----------------|------|-----|-------------|----------------|------|-----|
|             | CW             | RE   | CDX |             | CW             | RE   | CDX |
| <b>1.2</b>  | 1.2            | 0.05 | 4.6 | <b>3.0</b>  | 3.0            | 0.20 | 4.8 |
| <b>1.4</b>  | 1.4            | 0.10 | 4.8 | <b>3.25</b> | 3.25           | 0.15 | 4.8 |
| <b>1.5</b>  | 1.5            | 0.10 | 4.8 | <b>4.0</b>  | 4.0            | 0.20 | 4.8 |
| <b>1.7</b>  | 1.7            | 0.10 | 4.8 | <b>4.25</b> | 4.25           | 0.15 | 4.8 |
| <b>1.95</b> | 1.95           | 0.15 | 4.8 | <b>5.0</b>  | 5.0            | 0.20 | 4.8 |
| <b>2.0</b>  | 2.0            | 0.20 | 4.8 | <b>5.25</b> | 5.25           | 0.15 | 4.8 |
| <b>2.25</b> | 2.25           | 0.15 | 4.8 | <b>6.0</b>  | 6.0            | 0.20 | 4.8 |
| <b>2.75</b> | 2.75           | 0.15 | 4.8 |             |                |      |     |

[illegible]

●: Standard items

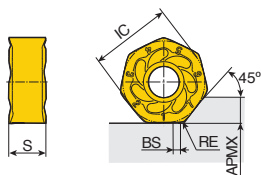
**CHASE ALU**

| Size      | Dimension (mm) |                |         |         |         |         |
|-----------|----------------|----------------|---------|---------|---------|---------|
|           | INSL           | W <sub>1</sub> | S       | APMX    | BS      | RE      |
| <b>16</b> | 18.3-22.2      | 11.2           | 5.1-5.5 | 14-16   | 0.6-1.5 | 0.4-5.0 |
| <b>22</b> | 22.4-28        | 13.6           | 6.8-7.4 | 18.5-21 | 1.2-1.7 | 0.5-6.4 |
|           |                |                |         |         |         |         |
|           |                |                |         |         |         |         |
|           |                |                |         |         |         |         |
|           |                |                |         |         |         |         |

[illegible]

Two cross-sectional diagrams of components. The left diagram, labeled E65, shows a blue component with three yellow pins. The right diagram, labeled F152-F153, shows a blue component with a yellow triangle symbol.

# CHASE<sup>2</sup>HEPTA

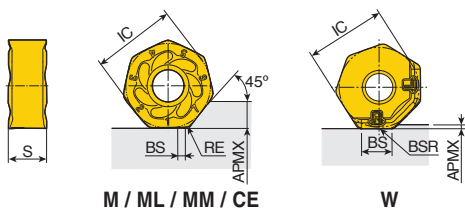


| Size                 | Dimension (mm) |     |      |     |     |  |
|----------------------|----------------|-----|------|-----|-----|--|
|                      | IC             | S   | APMX | BS  | RE  |  |
| <b>06(M, MM, ML)</b> | 13.7           | 6.2 | 3.5  | 1.0 | 1.0 |  |
| <b>06-MT</b>         | 13.7           | 6.0 | 4.2  | -   | 0.8 |  |
| <b>06-MLW</b>        | 13.7           | 6.2 | 3.5  | 1.5 | 0.2 |  |
|                      |                |     |      |     |     |  |
|                      |                |     |      |     |     |  |
|                      |                |     |      |     |     |  |

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E83. E85

## Inserts



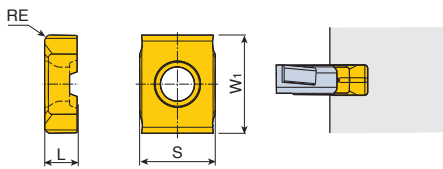
| Size        | Dimension (mm) |          |      |     |     |     |
|-------------|----------------|----------|------|-----|-----|-----|
|             | IC             | S        | APMX | BS  | RE  | BSR |
| <b>09</b>   | 18.5           | 6.35-7.4 | 5.0  | 1.0 | 1.0 | -   |
| <b>09-W</b> | 18.5           | 6.35     | 1.0  | 7.1 | -   | 250 |
|             |                |          |      |     |     |     |
|             |                |          |      |     |     |     |
|             |                |          |      |     |     |     |
|             |                |          |      |     |     |     |

[illegible]

●: Standard items



Inserts



| Size | Dimension (mm) |     |     |         |  |  |
|------|----------------|-----|-----|---------|--|--|
|      | W1             | S   | L   | RE      |  |  |
| 018  | 10             | 7.5 | 1.8 | 0.2-0.8 |  |  |
| 023  | 10             | 7.5 | 2.3 | 0.2-0.8 |  |  |
| 028  | 10             | 7.5 | 2.8 | 0.2-0.8 |  |  |
| 033  | 10             | 7.5 | 3.3 | 0.2-0.8 |  |  |
| 038  | 13             | 10  | 3.8 | 0.4-0.8 |  |  |
| 043  | 13             | 10  | 4.3 | 0.4-0.8 |  |  |
| 048  | 13             | 10  | 4.8 | 0.4-0.8 |  |  |
| 053  | 13             | 10  | 5.3 | 0.4-0.8 |  |  |

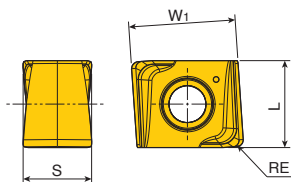


| Insert                                                                             | Designation           | Recommended machining conditions |                 | Coated |        |        |        |         |        |        |        | Uncoated |   |     |
|------------------------------------------------------------------------------------|-----------------------|----------------------------------|-----------------|--------|--------|--------|--------|---------|--------|--------|--------|----------|---|-----|
|                                                                                    |                       | ap (mm)                          | Feed (mm/tooth) | TT9080 | TT9030 | TT8080 | TT8020 | TT8525B | TT7080 | TT7515 | TT6080 |          |   | K10 |
|    | <b>ZNHT 018-04</b>    | -                                | 0.08-0.05       | ●      |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>018-08</b>         | -                                | 0.08-0.05       | ●      |        | ●      |        |         |        |        |        |          |   |     |
|                                                                                    | <b>023-04</b>         | -                                | 0.08-0.05       | ●      |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>023-08</b>         | -                                | 0.08-0.05       | ●      |        | ●      |        |         |        |        |        |          |   |     |
|                                                                                    | <b>028-04</b>         | -                                | 0.10-0.15       | ●      |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>028-08</b>         | -                                | 0.10-0.15       | ●      |        | ●      |        |         |        |        |        |          |   |     |
|                                                                                    | <b>033-04</b>         | -                                | 0.12-0.05       | ●      |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>033-08</b>         | -                                | 0.12-0.05       | ●      |        | ●      |        |         |        |        |        |          |   |     |
|                                                                                    | <b>038-04</b>         | -                                | 0.12-0.05       | ●      |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>038-08</b>         | -                                | 0.12-0.05       | ●      |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>043-04</b>         | -                                | 0.15-0.05       | ●      |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>043-08</b>         | -                                | 0.15-0.05       | ●      |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>048-04</b>         | -                                | 0.15-0.05       | ●      |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>048-08</b>         | -                                | 0.15-0.05       | ●      |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>053-04</b>         | -                                | 0.15-0.05       | ●      |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>053-08</b>         | -                                | 0.15-0.05       | ●      |        | ●      |        |         |        |        | ●      |          |   |     |
|   | <b>ZNHT 018-04-ML</b> | -                                | 0.08-0.05       |        |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>023-04-ML</b>      | -                                | 0.08-0.05       |        |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>028-04-ML</b>      | -                                | 0.08-0.05       |        |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>033-04-ML</b>      | -                                | 0.12-0.05       |        |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>038-04-ML</b>      | -                                | 0.12-0.05       |        |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>043-04-ML</b>      | -                                | 0.12-0.05       |        |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>048-04-ML</b>      | -                                | 0.12-0.05       |        |        | ●      |        |         |        |        | ●      |          |   |     |
|                                                                                    | <b>053-04-ML</b>      | -                                | 0.12-0.05       |        |        | ●      |        |         |        |        | ●      |          |   |     |
|  | <b>ZNHT 018-02-AL</b> | -                                | 0.35-0.10       |        |        |        |        |         |        |        |        |          | ● |     |
|                                                                                    | <b>023-02-AL</b>      | -                                | 0.35-0.10       |        |        |        |        |         |        |        |        |          | ● |     |
|                                                                                    | <b>028-02-AL</b>      | -                                | 0.35-0.10       |        |        |        |        |         |        |        |        |          | ● |     |
|                                                                                    | <b>033-02-AL</b>      | -                                | 0.35-0.10       |        |        |        |        |         |        |        |        |          | ● |     |
|                                                                                    | <b>038-04-AL</b>      | -                                | 0.35-0.10       |        |        |        |        |         |        |        |        |          | ● |     |
|                                                                                    | <b>043-04-AL</b>      | -                                | 0.35-0.10       |        |        |        |        |         |        |        |        |          | ● |     |
|                                                                                    | <b>048-04-AL</b>      | -                                | 0.35-0.10       |        |        |        |        |         |        |        |        |          | ● |     |
|                                                                                    | <b>053-04-AL</b>      | -                                | 0.35-0.10       |        |        |        |        |         |        |        |        |          | ● |     |

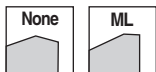
●: Standard items







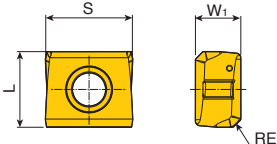
| Size       | Dimension (mm) |                |           |     |  |  |
|------------|----------------|----------------|-----------|-----|--|--|
|            | L              | W <sub>1</sub> | S         | RE  |  |  |
| <b>080</b> | 7.6            | 10.7           | 6.36-6.49 | 0.8 |  |  |
| <b>110</b> | 10.6           | 13.0           | 8.38-8.42 | 0.8 |  |  |
| <b>140</b> | 14             | 13.0           | 9.59-9.65 | 0.8 |  |  |
|            |                |                |           |     |  |  |
|            |                |                |           |     |  |  |
|            |                |                |           |     |  |  |

[illegible]

- : Standard items

# Tailor-made Insert

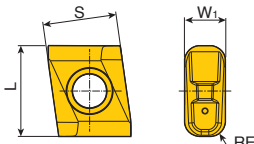
## Tangential inserts

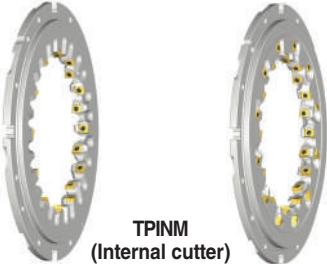




**TTRC**  
(Slotting cutter)

| Insert                                                                            | Designation               | Dimension (mm) |      |     |         |
|-----------------------------------------------------------------------------------|---------------------------|----------------|------|-----|---------|
|                                                                                   |                           | L              | S    | W1  | RE      |
|  | <b>LNC 1060-C</b>         | 10.0           | 11.5 | 6.0 | chamfer |
|                                                                                   |                           |                |      |     |         |
|  | <b>LNC 137020-L</b>       | 13.6           | 11.6 | 6.7 | 2.0     |
|                                                                                   |                           |                |      |     |         |
|  | <b>LNCX 136508 PNR-ML</b> | 13.0           | 10.6 | 6.5 | 0.8     |
|                                                                                   |                           |                |      |     |         |



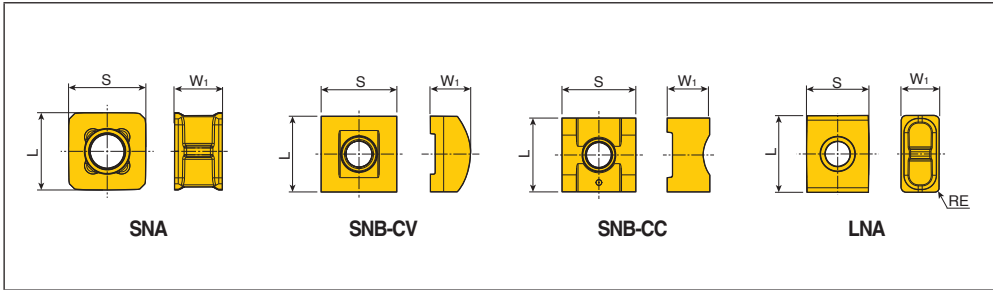


**TPINM**  
(Internal cutter)

| Insert                                                                              | Designation          | Dimension (mm) |     |     |     |
|-------------------------------------------------------------------------------------|----------------------|----------------|-----|-----|-----|
|                                                                                     |                      | L              | S   | W1  | RE  |
|  | <b>PMIN 120905-M</b> | 12.0           | 9.7 | 5.4 | 2.0 |
|                                                                                     | <b>PMIN 130907-M</b> | 13.5           | 9.7 | 7.0 | 2.0 |
|                                                                                     | <b>PMIN 150907-M</b> | 15.0           | 9.9 | 7.0 | 2.0 |
|                                                                                     | <b>PMIN 180907-M</b> | 18.0           | 9.7 | 7.0 | 2.0 |
|                                                                                     |                      |                |     |     |     |
|                                                                                     |                      |                |     |     |     |
|                                                                                     |                      |                |     |     |     |
|                                                                                     |                      |                |     |     |     |

# Tailor-made Insert

## Tangential inserts

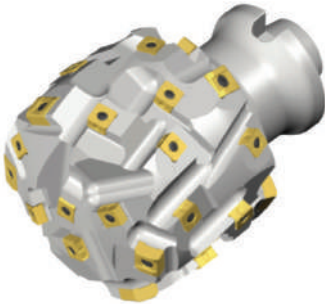


| Insert                                                                           | Designation         | Dimension (mm) |      |                |     |
|----------------------------------------------------------------------------------|---------------------|----------------|------|----------------|-----|
|                                                                                  |                     | L              | S    | W <sub>1</sub> | RE  |
|  | <b>SNA 1065-M</b>   | 10.5           | 10.5 | 6.5            | -   |
|                                                                                  | <b>SNA 1370-M</b>   | 13.0           | 13.0 | 7.0            | -   |
|                                                                                  | <b>SNA 1680-M</b>   | 16.0           | 16.0 | 8.0            | -   |
|  | <b>SNB 1375-CV</b>  | 13.0           | 13.0 | 7.5            | -   |
|                                                                                  | <b>SNB 1685-CV</b>  | 16.0           | 16.0 | 8.5            | -   |
|                                                                                  |                     |                |      |                |     |
|  | <b>SNB 1375-CC</b>  | 13.0           | 13.0 | 7.5            | -   |
|                                                                                  | <b>SNB 1685-CC</b>  | 16.0           | 16.0 | 8.5            | -   |
|                                                                                  |                     |                |      |                |     |
|  | <b>LNA 137008-M</b> | 13.5           | 10.0 | 6.7            | 0.8 |
|                                                                                  | <b>LNA 168008-M</b> | 16.5           | 14.0 | 8.0            | 0.8 |
|                                                                                  |                     |                |      |                |     |

- ▶ CV: Convex, CC: Concave
- ▶ Various corner radii are available for SNB insert



TRMT  
(Form profile cutter)



# Recommended Cutting Conditions

## Machining data for MAXI-SPEED

| ISO | Material                    |                | Hardness<br>HB | Vc(m/min) | Feed (mm/tooth) |           |           |
|-----|-----------------------------|----------------|----------------|-----------|-----------------|-----------|-----------|
|     | Material                    | AISI/SAE/ASTM  |                |           | TR13            | TR15      | TR17      |
| P   | Non-alloy steel             | 1020           | 130-180        | 120-200   | 0.04-0.12       | 0.05-0.15 | 0.06-0.15 |
|     | Low alloy steel             | 4030           | 260-300        | 200-300   | 0.04-0.12       | 0.05-0.15 | 0.06-0.15 |
|     | Low alloy steel             | 3135           | HRC 35-40      | 80-120    | 0.02-0.06       | 0.03-0.12 | 0.04-0.12 |
|     | High alloy steel            | H13            | 200-220        | 100-150   | 0.03-0.07       | 0.04-0.12 | 0.04-0.12 |
| M   | Martensitic stainless steel | 420            | 200            | 100-150   | 0.02-0.06       | 0.04-0.12 | 0.04-0.12 |
|     | Austenitic stainless steel  | 304L           | 200            | 80-120    | 0.02-0.06       | 0.03-0.10 | 0.03-0.12 |
| K   | Gray cast iron              | Class 40       | 250            | 150-200   | 0.04-0.12       | 0.05-0.20 | 0.05-0.20 |
|     | Malleable cast iron         | Class 65 45 12 | 200            | 130-180   | 0.04-0.10       | 0.05-0.18 | 0.05-0.18 |
| S   | High temp. alloys           | Inconel 718    | HRC 36-40      | 20-30     | 0.015-0.10      | 0.02-0.12 | 0.02-0.12 |
|     |                             | AMS R56400     | HRC40-45       | 30-40     | 0.015-0.06      | 0.02-0.12 | 0.02-0.12 |

► For more information of material groups, see the materials & grades "material conversion table".

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous
 ■ High temp. alloys
 ■ Hardened steel

# Recommended Cutting Conditions

## Machining data for CBN grade

| ISO | Material                     | D.O.C.<br>(mm) | Grade                      |                    |              |
|-----|------------------------------|----------------|----------------------------|--------------------|--------------|
|     |                              |                | TB7015                     |                    |              |
|     |                              |                | Cutting speed<br>Vc(m/min) | Feed<br>(mm/tooth) | Cutting edge |
| P   | Bearing steel                | < 2            | 180 - 220                  | 0.05 - 0.25        | Chamfer      |
|     | Ferrous powder metal         | < 2            | 150 - 300                  | 0.1 - 0.15         | Chamfer      |
| K   | Grey cast iron HB 200 - 280  | < 0.5          | 500 - 1500                 | 0.1 - 0.3          | Chamfer hone |
|     |                              | 0.5 - 2.0      | 500 - 1100                 | 0.1 - 0.25         | Chamfer      |
|     | Compated graphite iron (CGI) | < 0.5          | 400 - 600                  | 0.1 - 0.2          | Hone         |
| S   | Co based > 35 HRC            | 0.5 - 2.0      | 150 - 200                  | 0.05 - 0.15        | Chamfer      |
|     | Ni based > 35 HRC            |                | 120 - 150                  | 0.05 - 0.15        | Chamfer      |
|     | Fe based > 35 HRC            |                | 60 - 120                   | 0.05 - 0.15        | Chamfer      |
|     | Cr based > 35 HRC            |                | 50 - 75                    | 0.05 - 0.15        | Chamfer      |
| H   | Hardened steels > 45 HRC     | < 0.5          | 80 - 180                   | 0.1 - 0.25         | Chamfer      |
|     | Hardened cast iron           | < 2            | 80 - 200                   | 0.1 - 0.15         | Chamfer      |

► For more information of material groups, see the materials & grades "material conversion table".

Steel    Stainless steel    Cast iron    Nonferrous    High temp. alloys    Hardened steel

# Recommended Cutting Conditions

## Machining data

Cutting Speed: Vc(m/min)

| ISO | Material                                                           | Condition                      | Tensile strength<br>(N/mm <sup>2</sup> ) | Hardness<br>HB | Material<br>No. | Uncoated |         |         |         |         |
|-----|--------------------------------------------------------------------|--------------------------------|------------------------------------------|----------------|-----------------|----------|---------|---------|---------|---------|
|     |                                                                    |                                |                                          |                |                 | K10      | TT9080  | TT9030  | TT7080  | TT8525B |
| P   | Non-alloy steel, cast steel, free cutting steel                    | < 0.25%C Annealed              | 420                                      | 125            | 1               |          | 220-370 | 190-310 | 250-410 | 160-270 |
|     |                                                                    | >= 0.25%C Annealed             | 650                                      | 190            | 2               |          | 180-310 | 160-260 | 200-380 | 140-210 |
|     |                                                                    | < 0.55%C Quenched and tempered | 850                                      | 250            | 3               |          | 115-195 | 105-185 | 140-230 | 90-160  |
|     |                                                                    | >= 0.55%C Annealed             | 750                                      | 220            | 4               |          | 130-210 | 120-200 | 160-250 | 100-170 |
|     |                                                                    | Quenched and tempered          | 1000                                     | 300            | 5               |          | 115-175 | 95-160  | 135-195 | 80-140  |
|     | Low alloy steel and cast steel (less than 5% of alloying elements) | Annealed                       | 600                                      | 200            | 6               |          | 175-265 | 160-250 | 190-290 | 140-200 |
|     |                                                                    |                                | 930                                      | 275            | 7               |          | 130-215 | 120-200 | 150-240 | 90-160  |
|     |                                                                    | Quenched and tempered          | 1000                                     | 300            | 8               |          | 105-185 | 95-175  | 135-225 | 70-150  |
|     |                                                                    |                                | 1200                                     | 350            | 9               |          | 95-160  | 80-150  | 120-190 | 60-110  |
|     | High alloy steel, cast steel and tool steel                        | Annealed                       | 680                                      | 200            | 10              |          | 85-155  | 75-135  | 100-150 | 60-90   |
|     |                                                                    | Quenched and tempered          | 1100                                     | 325            | 11              |          | 75-135  | 65-120  | 90-140  | 50-90   |
| M   | Stainless steel and cast steel                                     | Ferritic / martensitic         | 680                                      | 200            | 12              |          | 115-270 | 100-250 |         |         |
|     |                                                                    | Martensitic                    | 820                                      | 240            | 13              |          | 100-230 | 80-200  |         |         |
|     |                                                                    | Austenitic                     | 600                                      | 180            | 14              |          | 120-275 | 110-260 |         |         |
| K   | Gray cast iron (GG)                                                | Ferritic                       |                                          | 160            | 15              |          | 130-300 |         |         |         |
|     |                                                                    | Pearlitic                      |                                          | 250            | 16              |          | 120-280 |         |         |         |
|     | Cast iron nodular (GGG)                                            | Ferritic                       |                                          | 180            | 17              |          | 110-220 |         |         |         |
|     |                                                                    | Pearlitic                      |                                          | 260            | 18              |          | 100-200 |         |         |         |
|     | Malleable cast iron                                                | Ferritic                       |                                          | 130            | 19              |          | 150-250 |         |         |         |
|     |                                                                    | Pearlitic                      |                                          | 230            | 20              |          | 100-250 |         |         |         |
| N   | Aluminum - wrought alloy                                           | Not cureable                   |                                          | 60             | 21              | 550-700  |         |         |         |         |
|     |                                                                    | Cured                          |                                          | 100            | 22              | 600-750  |         |         |         |         |
|     | Aluminum-cast, alloyed                                             | <=12% Si Not cureable          |                                          | 75             | 23              | 800-900  |         |         |         |         |
|     |                                                                    | Cured                          |                                          | 90             | 24              | 650-800  |         |         |         |         |
|     |                                                                    | >12% Si High temp.             |                                          | 130            | 25              | 250-320  |         |         |         |         |
|     | Copper alloys                                                      | >1% Pb Free cutting            |                                          | 110            | 26              | 300-400  |         |         |         |         |
|     |                                                                    | Brass                          |                                          | 90             | 27              | 300-400  |         |         |         |         |
|     |                                                                    | Electrolitic copper            |                                          | 100            | 28              | 210-280  |         |         |         |         |
|     | Non-metallic                                                       | Duroplastics, fiber plastics   |                                          | 70 Shore D     | 29              | 150-250  |         |         |         |         |
|     |                                                                    | Graphite                       |                                          |                |                 |          |         |         |         |         |
| S   | High temp. alloys                                                  | Hard rubber                    |                                          | 55Shore D      | 30              | 150-250  |         |         |         |         |
|     |                                                                    | Fe based                       | Annealed                                 |                | 200             | 31       | 40-80   |         |         |         |
|     |                                                                    |                                | Cured                                    |                | 280             | 32       | 30-60   |         |         |         |
|     |                                                                    | Ni or Co based                 | Annealed                                 |                | 250             | 33       | 35-70   |         |         |         |
|     |                                                                    |                                | Cured                                    |                | 350             | 34       | 30-60   |         |         |         |
|     |                                                                    |                                | Cast                                     |                | 320             | 35       | 35-65   |         |         |         |
|     | Titanium, Ti alloys                                                | Pure                           | Rm 400                                   | 190            | 36              | 90-130   |         |         |         |         |
|     |                                                                    | Alpha-beta alloys, hardened    | Rm 1050                                  | 310            | 37              | 35-70    |         |         |         |         |
| H   | Hardened steel                                                     | Hardened                       |                                          | 55HRC          | 38              | 40-75    | 40-60   |         |         |         |
|     |                                                                    | Hardened                       |                                          | 60HRC          | 39              | 30-55    | 30-55   |         |         |         |
|     | Chilled cast iron                                                  | Cast                           |                                          | 400            | 40              | 70-105   | 60-100  |         |         |         |
|     | Cast iron nodular                                                  | Hardened                       |                                          | 55HRC          | 41              | 50-65    | 40-60   |         |         |         |

► For more information of material groups, see the materials & grades "material conversion table".

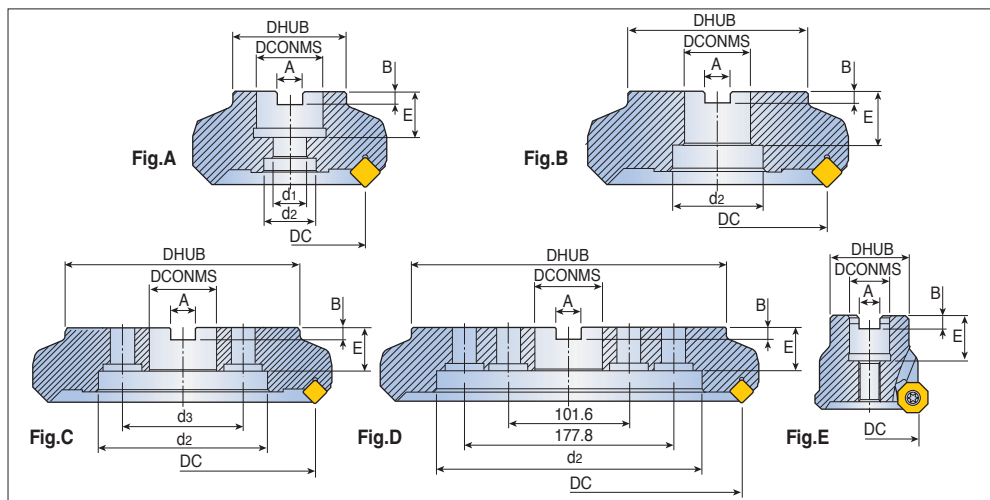
■ Steel 
 ■ Stainless steel 
 ■ Cast iron 
 ■ Nonferrous 
 ■ High temp. alloys 
 ■ Hardened steel

## Machining data

| Coated  |         |         |         |         |         |         |         |         | Diamond Coated | Ceramic |         |          |          | Cermet  |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------------|---------|---------|----------|----------|---------|
| TT8080  | TT8020  | TT6080  | TT7515  | TT3535  | TT3525  | TT2510  | TT5515  | TT5525  | TTD620         | AS10    | AS20    | TC3020   | TC3030   | CT7000  |
| 170-250 | 150-210 |         |         |         |         |         | 260-280 | 150-210 |                |         |         |          |          | 270-510 |
| 130-220 | 120-200 |         |         |         |         |         | 200-230 | 120-200 |                |         |         |          |          | 230-450 |
| 90-170  | 70-140  |         |         |         |         |         | 160-220 | 70-140  |                |         |         |          |          | 150-370 |
| 100-190 | 90-150  |         |         |         |         |         | 160-220 | 90-150  |                |         |         |          |          | 210-430 |
| 70-160  | 60-130  |         |         |         |         |         | 140-180 | 60-130  |                |         |         |          |          | 150-280 |
| 150-220 | 130-170 |         |         |         |         |         | 160-220 | 130-170 |                |         |         |          |          | 150-285 |
| 110-190 | 70-150  |         |         |         |         |         | 120-180 | 70-150  |                |         |         |          |          | 100-190 |
| 80-160  | 60-110  |         |         |         |         |         | 130-180 | 60-110  |                |         |         |          |          | 90-170  |
| 70-120  | 50-100  |         |         |         |         |         | 140-180 | 50-100  |                |         |         |          |          | 80-130  |
| 70-110  | 50-80   |         |         |         |         |         | 130-180 | 60-100  |                |         |         |          |          | 100-170 |
| 60-100  | 40-80   |         |         |         |         |         | 70-120  | 60-120  |                |         |         |          |          | 80-120  |
| 90-200  | 75-170  |         |         | 130-240 | 130-240 |         | 80-150  | 75-170  |                |         |         |          |          |         |
| 70-160  | 60-130  |         |         | 120-240 | 120-240 |         | 60-140  | 60-130  |                |         |         |          |          |         |
| 100-210 | 80-180  |         |         | 100-200 | 100-200 |         | 60-120  | 80-180  |                |         |         |          |          |         |
|         |         | 180-350 | 200-390 |         |         | 250-430 | 80-260  |         |                | 400-900 |         |          |          |         |
|         |         | 140-280 | 160-300 |         |         | 190-270 | 130-240 |         |                | 250-600 |         |          |          |         |
|         |         | 115-230 | 130-250 |         |         |         | 150-270 |         |                | 350-800 |         |          |          |         |
|         |         | 100-200 | 110-210 |         |         |         | 90-270  |         |                | 250-600 |         |          |          |         |
|         |         | 190-310 | 210-330 |         |         |         | 150-270 |         |                | 360-540 |         |          |          |         |
|         |         | 120-260 | 130-280 |         |         |         | 140-240 |         |                | 300-440 |         |          |          |         |
|         |         |         |         |         |         |         |         |         |                |         |         |          |          |         |
|         |         |         |         |         |         |         |         |         |                |         |         |          |          |         |
|         |         |         |         |         |         |         |         |         |                |         |         |          |          |         |
|         |         |         |         |         |         |         |         |         | 250-350        |         |         |          |          |         |
|         |         |         |         |         |         |         |         |         |                |         |         |          |          |         |
|         |         |         |         |         |         |         |         |         |                |         |         |          |          |         |
|         |         |         |         |         |         |         |         |         |                |         |         |          |          |         |
|         |         |         |         |         |         |         |         |         | 500-900        |         |         |          |          |         |
|         |         |         |         |         |         |         |         |         |                |         |         |          |          |         |
| 30-65   |         |         |         | 40-70   | 40-70   |         | 20-40   | 30-55   |                |         | 500-900 |          |          |         |
| 20-45   |         |         |         | 40-65   | 40-70   |         | 20-30   | 20-45   |                |         | 500-900 |          |          |         |
| 25-50   |         |         |         | 30-70   | 30-70   |         | 20-30   | 25-50   |                |         | 500-900 | 600-1200 | 600-1200 |         |
| 20-40   |         |         |         | 30-55   | 30-55   |         | 20-30   | 20-40   |                |         | 500-900 | 600-1200 | 600-1200 |         |
| 20-45   |         |         |         | 35-70   | 35-70   |         | 30-70   | 20-45   |                |         | 500-900 | 600-1200 | 600-1200 |         |
| 60-100  |         |         |         | 70-120  | 70-120  |         | 30-70   | 50-90   |                |         | 500-900 |          |          |         |
| 25-55   |         |         |         | 40-75   | 40-75   |         | 30-70   | 25-55   |                |         | 500-900 |          |          |         |
|         |         | 60-90   |         |         |         | 70-180  |         |         |                |         |         |          |          |         |
|         |         | 50-90   |         |         |         | 50-130  |         |         |                |         |         |          |          |         |
|         |         | 60-100  |         |         |         | 60-120  | 60-80   |         |                |         |         |          |          |         |
|         |         | 60-80   |         |         |         | 70-95   | 30-50   |         |                |         |         |          |          |         |

# Mounting Reference

## Arbor style



| Dimension (mm) |        |        |     |    |                |             |                |                |                | Fig. | Arbor     |
|----------------|--------|--------|-----|----|----------------|-------------|----------------|----------------|----------------|------|-----------|
| DC             | DCONMS | A      | B   | E  | DHUB           |             | d <sub>1</sub> | d <sub>2</sub> | d <sub>3</sub> |      |           |
|                |        |        |     |    | For mold & die | For general |                |                |                |      |           |
| 32             | 16     | 8.4    | 5.6 | 20 | 30             | -           | -              | -              | -              | E    | SEM16     |
| 32             | 16     | 8.4    | 5.6 | 20 | 30             | -           | 9              | 13.5           | -              | A    | SEM16     |
| 40             | 16     | 8.4    | 5.6 | 20 | 38             | -           | 9              | 13.5           | -              | A    | SEM16     |
| 40             | 22     | 10.4   | 6.3 | 22 | 38             | -           | 11             | 17             | -              | A    | SEM22     |
| 50             | 22     | 10.4   | 6.3 | 22 | 40             | 45          | 11             | 17             | -              | A    | SEM22     |
| 63             | 22     | 10.4   | 6.3 | 22 | 47             | -           | 11             | 17             | -              | A    | SEM22     |
| 80             | 25.4   | 9.526  | 6   | 26 | -              | 70          | 13             | 20             | -              | A    | FMA25.4   |
| 80             | 27     | 12.4   | 7   | 28 | 58             | 70          | 13             | 22             | -              | A    | SEM27     |
| 100            | 31.75  | 12.7   | 8   | 32 | -              | 80          | 18             | 26             | -              | A    | FMA31.75  |
| 100            | 31.75  | 12.7   | 8   | 32 | -              | 80          | -              | 46             | -              | B    | FMA31.75  |
| 100            | 32     | 14.4   | 8   | 26 | 66             | 85          | 18             | 26             | -              | A    | SEM32     |
| 100            | 32     | 14.4   | 8   | 26 | 66             | 85          | -              | 46             | -              | B    | SEM32     |
| 125            | 38.1   | 15.875 | 10  | 38 | 80             | -           | -              | 56             | -              | B    | FMA38.1   |
| 125            | 40     | 16.4   | 9   | 32 | 85             | -           | 22             | 32             | -              | A    | SEM40     |
| 125            | 40     | 16.4   | 9   | 32 | 85             | -           | -              | 56             | -              | B    | SEM40     |
| 160            | 40     | 16.4   | 9   | 32 | 110            | -           | -              | 90             | 66.7           | C    | FM40      |
| 160            | 50.8   | 19.05  | 11  | 38 | 100            | -           | -              | 72             | -              | B    | FMA50.8   |
| 200            | 47.625 | 25.4   | 14  | 38 | 130            | -           | -              | 132            | 101.6          | C    | FMA47.625 |
| 200            | 60     | 25.7   | 14  | 40 | 130            | -           | -              | 132            | 101.6          | C    | FM60      |
| 250            | 47.625 | 25.4   | 14  | 38 | 160            | -           | -              | 150            | 101.6          | C    | FMA47.625 |
| 250            | 60     | 25.7   | 14  | 40 | 160            | -           | -              | 150            | 101.6          | C    | FM60      |
| 315            | 47.625 | 25.4   | 14  | 38 | 220            | -           | -              | 224            | -              | D    | -         |
| 315            | 60     | 25.7   | 14  | 40 | 220            | -           | -              | 220            | -              | D    | -         |

► For Face Mill arbors, please refer to TaeguTec tooling system(part G)



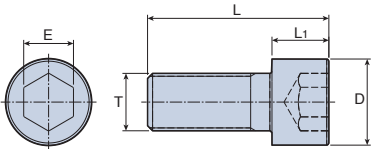
# Mounting Reference

## Mounting bolt

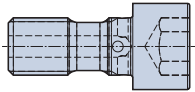
### SH type

| Designation        | Dimension (mm) |    |                |    |    | Cutter size |
|--------------------|----------------|----|----------------|----|----|-------------|
|                    | D              | L  | L <sub>1</sub> | T  | E  |             |
| SH M8x1.25x25(-C)  | 13             | 33 | 8              | 8  | 6  | 32,40       |
| SH M8x1.25x30(-C)  | 13             | 38 | 8              | 8  | 6  | 32,40       |
| SH M8x1.25x35(-C)  | 13             | 43 | 8              | 8  | 6  | 32,40       |
| SH M10x1.5x30(-C)  | 16             | 40 | 10             | 10 | 8  | 50, 63      |
| SH M12x1.75x35(-C) | 18             | 47 | 12             | 12 | 10 | 80          |
| SH M16x2x35(-C)    | 24             | 51 | 16             | 16 | 14 | 100         |
| SH M20x2.5x40(-C)  | 30             | 60 | 20             | 20 | 17 | 125         |

► "-C": Bolt with hole for internal coolant



SH

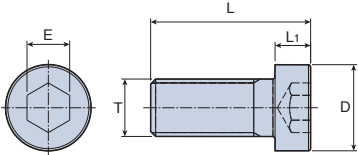


SH-C

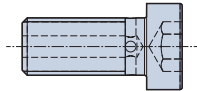
### LH type

| Description        | Dimension (mm) |      |                |    |    | Cutter size |
|--------------------|----------------|------|----------------|----|----|-------------|
|                    | D              | L    | L <sub>1</sub> | T  | E  |             |
| LH M10x1.5x25(-C)  | 16             | 31.5 | 6.5            | 10 | 8  | 50, 63      |
| LH M12x1.75x30(-C) | 18             | 36.9 | 6.9            | 12 | 8  | 80          |
| LH M16x2x35(-C)    | 24             | 45   | 10             | 16 | 12 | 100         |

► "-C": Bolt with hole for internal coolant



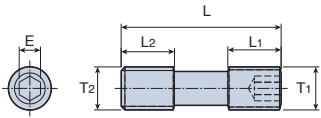
LH



LH-C

### KTB, TCS type

| Description | Dimension (mm) |                |                |                |                |   |
|-------------|----------------|----------------|----------------|----------------|----------------|---|
|             | L              | L <sub>1</sub> | L <sub>2</sub> | T <sub>1</sub> | T <sub>2</sub> | E |
| KTB 32B     | 30             | 10             | 10             | M8X1.0         | M8X1.25        | 4 |
| TCS10-40    | 40             | 10             | 15             | M10X1.25       | M10X1.5        | 5 |



KTB, TSC

## ► Recommended clamping torque for each screw

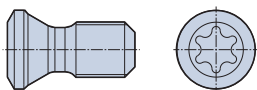


Fig.1

| Designation    | Thread | Length | Torx         | Tightening Torque | Fig. |
|----------------|--------|--------|--------------|-------------------|------|
| TS 18033/HG-P  | M1.8   | 3.3    | Torx Plus 6  | 0.5 Nm            | 1    |
| TS 18041/HG    | M1.8   | 4.09   | Torx Plus 6  | 0.5 Nm            | 1    |
| TS 18041/SG-P  | M1.8   | 4.09   | Torx Plus 6  | 0.5 Nm            | 1    |
| TS 200431/HG-P | M2     | 4.3    | Torx Plus 6  | 0.6 Nm            | 1    |
| TS 22046I      | M2.2   | 4.6    | Torx 7       | 0.9 Nm            | 1    |
| TS 22052I/HG   | M2.2   | 5.2    | Torx 7       | 0.9 Nm            | 1    |
| TS 25055I/HG   | M2.5   | 5.5    | Torx 8       | 1.2 Nm            | 1    |
| TS 25075I/HG   | M2.5   | 7.5    | Torx 8       | 1.2 Nm            | 1    |
| TS 25064I      | M2.5   | 6.4    | Torx 8       | 1.2 Nm            | 1    |
| TS 25064I/HG-P | M2.5   | 6.4    | Torx Plus 8  | 1.2 Nm            | 1    |
| TS 25B024I/HG  | M2.5   | 2.6    | Torx Plus 7  | 0.9 Nm            | 1    |
| TS 25B031I/HG  | M2.5   | 3.3    | Torx Plus 7  | 0.9 Nm            | 1    |
| TS 25B042I/HG  | M2.5   | 4.35   | Torx Plus 7  | 0.9 Nm            | 1    |
| TS 25B053I/HG  | M2.5   | 5.45   | Torx Plus 7  | 0.9 Nm            | 1    |
| TS 25C065I/HG  | M2.5   | 6.5    | Torx 8       | 1.2 Nm            | 2    |
| TS 30085I/HG   | M3     | 8.5    | Torx 9       | 2.0 Nm            | 1    |
| TS 30A060I/HG  | M3     | 6      | Torx 9       | 2.0 Nm            | 1    |
| TS 30B068I/HG  | M3     | 6.8    | Torx 8       | 1.2 Nm            | 1    |
| TS 30D082-P    | M3     | 8.2    | Torx Plus 8  | 1.2 Nm            | 1    |
| TS 35070I/HG   | M3.5   | 7      | Torx 15      | 3.0 Nm            | 1    |
| TS 35085I/HG   | M3.5   | 8.75   | Torx 15      | 3.0 Nm            | 1    |
| TS 35088I      | M3.5   | 8.75   | Torx 10      | 2.0 Nm            | 1    |
| TS 35A070I/HG  | M3.5   | 7      | Torx Plus 10 | 2.0 Nm            | 1    |
| TS 35A088I/HG  | M3.5   | 8.75   | Torx Plus 10 | 2.0 Nm            | 1    |
| TS 35C110I     | M3.5   | 11     | Torx 15      | 3.0 Nm            | 2    |
| TS 40085I/HG   | M4     | 8.5    | Torx 15      | 3.5 Nm            | 1    |

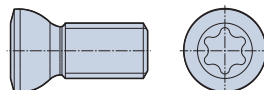
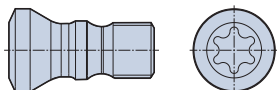
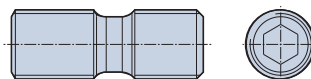


Fig.2

| Designation    | Thread | Length | Torx         | Tightening Torque | Fig. |
|----------------|--------|--------|--------------|-------------------|------|
| TS 40093I      | M4     | 9.3    | Torx 15      | 3.5 Nm            | 1    |
| TS 40093I/HG   | M4     | 9.3    | Torx 15      | 3.5 Nm            | 1    |
| TS 40097I      | M4     | 9.7    | Torx 15      | 3.5 Nm            | 1    |
| TS 40120I      | M4     | 12     | Torx 15      | 3.5 Nm            | 1    |
| TS 40120I/HG   | M4     | 12     | Torx 15      | 3.5 Nm            | 1    |
| TS 40A100I     | M4     | 10     | Torx 15      | 3.5 Nm            | 1    |
| TS 40A115I     | M4     | 11.5   | Torx 15      | 3.5 Nm            | 1    |
| TS 40B100I     | M4     | 10     | Torx 15      | 3.5 Nm            | 2    |
| TS 40G110I     | M4     | 11     | Torx 15      | 3.5 Nm            | 1    |
| TS 40M100/HG   | M4     | 10     | Torx 15      | 3.5 Nm            | 2    |
| TS 40K535I     | M4     | 5.35   | Torx 15      | 3.5 Nm            | 1    |
| TS 40K065I     | M4     | 6.5    | Torx 15      | 3.5 Nm            | 1    |
| TS 40K075I     | M4     | 7.5    | Torx 15      | 3.5 Nm            | 1    |
| TS 40K085I     | M4     | 8.5    | Torx 15      | 3.5 Nm            | 1    |
| TS 45120I      | M4.5   | 12     | Torx 20      | 5.0 Nm            | 2    |
| TS 50105I      | M5     | 10.5   | Torx 20      | 5.0 Nm            | 1    |
| TS 50115I      | M5     | 11.5   | Torx 20      | 5.0 Nm            | 1    |
| TS 50A140I     | M5     | 14     | Torx 20      | 5.0 Nm            | 1    |
| TS 50A121I/HG  | M5     | 12.1   | Torx 20      | 5.0 Nm            | 1    |
| TS 50B106I/HG  | M5     | 10.6   | Torx 20      | 5.0 Nm            | 1    |
| TS 50C130I/HG  | M5     | 13     | Torx 20      | 5.0 Nm            | 2    |
| TS 50D130/HG-P | M5     | 13     | Torx Plus 20 | 5.0 Nm            | 1    |
| TS 60A130I     | M6     | 13.5   | Torx 25      | 6.0 Nm            | 2    |
| TS 60A165I     | M6     | 16.5   | Torx 25      | 6.0 Nm            | 2    |
| TS 60170I      | M6     | 17     | Torx 25      | 6.0 Nm            | 1    |



| Designation | Thread | Length | Torx    | Tightening Torque |
|-------------|--------|--------|---------|-------------------|
| TS 20F060A  | M2     | 5      | Torx 6  | 0.7 Nm            |
| TS 25F080A  | M2.5   | 6.9    | Torx 8  | 1.1 Nm            |
| TS 30F100A  | M3     | 8.3    | Torx 10 | 2.0 Nm            |
| TS 40F120A  | M4     | 10.6   | Torx 15 | 4.0 Nm            |
| TS 50F160A  | M5     | 13.9   | Torx 20 | 5.0 Nm            |
| TS 60F200A  | M6     | 16.7   | Torx 25 | 6.0 Nm            |
| TS 70F250A  | M7     | 21     | Torx 25 | 7.0 Nm            |
| TS 80F300A  | M8     | 25     | Torx 30 | 8.0 Nm            |



| Designation | Thread | Length | Torx       | Tightening Torque |
|-------------|--------|--------|------------|-------------------|
| WS 4        | M4     | 12.5   | Hexa 2.0mm | 1.5 Nm            |
| WS 5        | M5     | 14     | Hexa 2.5mm | 3.3 Nm            |
| WS 6        | M6     | 15     | Hexa 3mm   | 5 Nm              |
| WS 8        | M8     | 21     | Hexa 4mm   | 7 Nm              |

► Quick change cutter adapter

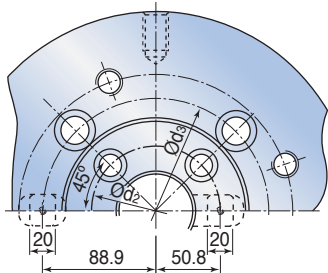


Fig.1

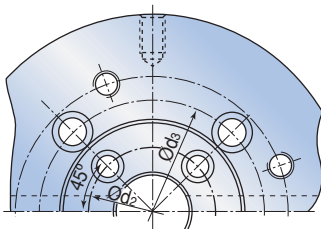
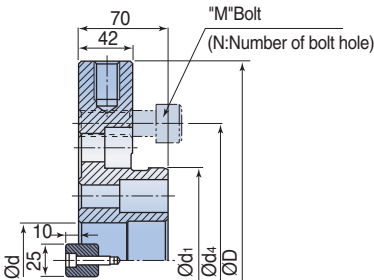
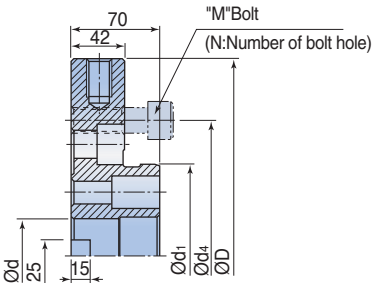


Fig.2

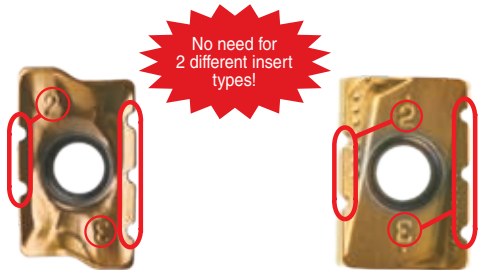


| Designation | Dimension (mm) |        |                |                |                |                |        |   | Weight (Kg) |
|-------------|----------------|--------|----------------|----------------|----------------|----------------|--------|---|-------------|
|             | D              | d      | d <sub>1</sub> | d <sub>2</sub> | d <sub>3</sub> | d <sub>4</sub> | M      | N |             |
| QA 08 K/M   | 198            | 47.625 | 63.5           | 101.6          | -              | 114.3          | M16x40 | 4 | 10          |
| QA 10 K/M   | 248            | 60     | 133.35         | 101.6          | -              | 177.8          | M16x50 | 4 | 15          |
| QA 12 K/M   | 313            | 60     | 146.05         | 101.6          | 177.8          | 215.9          | M20x50 | 4 | 19.7        |
| QA 14 K/M   | 353            | 60     | 215.9          | 101.6          | 177.8          | 260.4          | M20x50 | 6 | 24          |
| QA 16 K/M   | 398            | 60     | 254.0          | 101.6          | 177.8          | 304.8          | M20x50 | 6 | 29          |

- K: Adapter with setting key (Fig.1)  
M: Adapter without setting key (Fig.2)

## ► How to use splitter

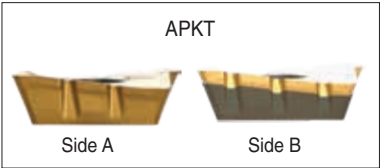
- 3 splitting grooves on one cutting edge and 2 splitting grooves on the opposite side



APKT

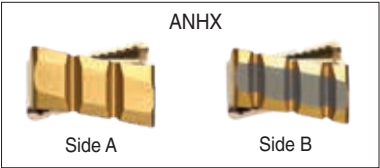
ANHX

- Full proof configuration-inserts have metal color appearance only on the 3 groove side for simplified mounting



Side A

Side B

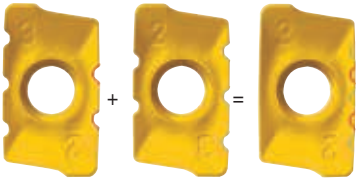


Side A

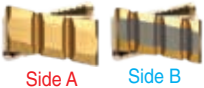
Side B

**Notice:** When insert mounting, ensure they are mounted in a staggered formation i.e. 1st tooth-2 groove side; 2nd tooth-3 groove side and repeat action for the remaining teeth

- Both cutting edges split chip to small pieces for cutting load reduction and create complete cutting edge when combined.



- For optimum machining efficiency, use even numbered flute type cutters



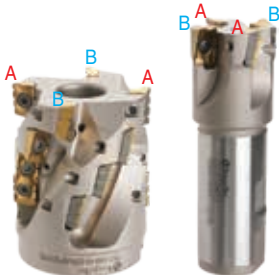
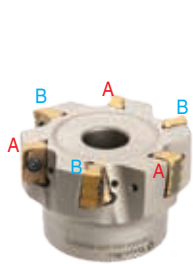
Side A

Side B



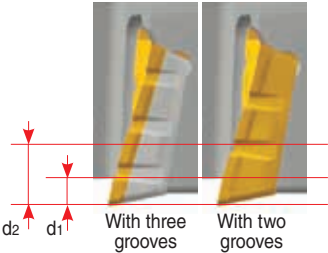
Side A

Side B

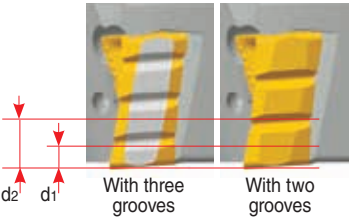


Also applicable to odd numbered flute type cutters

- The splitter inserts effective in axial depth of cuts  $\geq d_1$



| Depth of cut | APKT 17 | APKT 12 |
|--------------|---------|---------|
| d1           | 3mm     | 2.4mm   |
| d2           | 6.5mm   | 5.2mm   |



| Depth of cut | ANHX 16 |
|--------------|---------|
| d1           | 2.5mm   |
| d2           | 6mm     |

## ▶ Setting instructions

Height gauge

Insert

Insert screw

Adjust wedge

Wedge screw

T-Wrench



- 1 Move the adjust wedge to its bottom-most position by rotating the wedge screw clockwise.



\*Please avoid using too much force.

- 2 Mount new cutting edge of insert. Make sure that the insert pocket is thoroughly cleaned before mounting insert.



\*Please fix the insert screw completely as readjustment is not expected once it is done.

- 3 Measure the Runout of the cutter when all inserts are mounted and select the highest insert as a reference.



\*Please ensure that insert edge does not get damaged during setting. Use optimum dial pressure only.

- 4 Set the height of cutter, raising the reference insert by turning the wedge screw counter clockwise.



\*Increase height by 0.01mm at least from the highest insert.

- 5 -1 Adjust axial Runout of the remaining inserts with the same process as used with the reference insert.



\*Please note that max adjustment height should not exceed 0.1mm(.004")

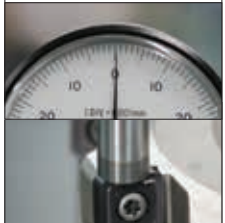
- 5 -2 Adjust Runout in the range of 0.005mm rotating the wrench gradually.



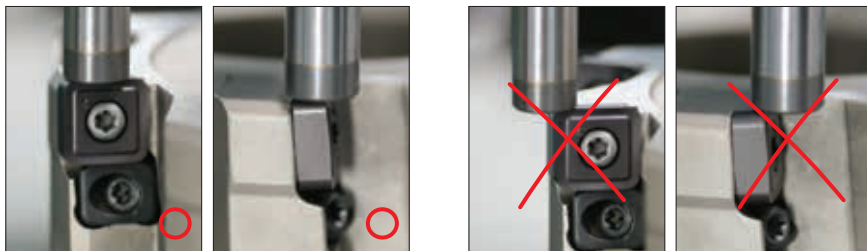
- 5 -3 If it is beyond the acceptable range, please reset it with the order of 1 - 2 - 5



- 6 Runout adjustment is completed.(you don't have to clamp the insert screw anymore once it is fixed.)

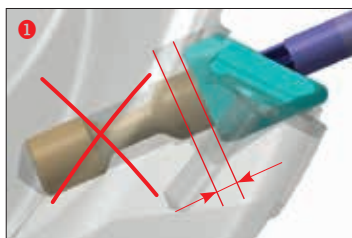


## ► Gauge user guide

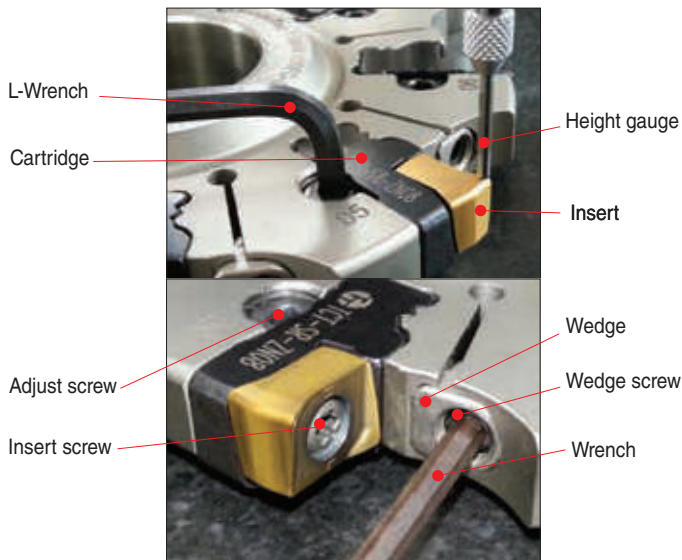


## ► Special precautions

- While loading a new insert corner, ensure that the adjust wedge is in the bottom-most position  
Bottom out the adjust wedge completely before unclamping the insert from cutter
- Clean the insert and pocket thoroughly before mounting fresh insert /corner
- While assembling adjust wedge onto cutter body, please ensure that the adjust wedge is tightened until it reaches the bottom



## ► TOPSLOT component names



## ► TOPSLOT setup instructions

### ■ Disk type



B=Cutting width (Target width)  
 H=Cutter height (Datum)  
 A=Width of cutter body  
 X=Distance between insert and cutter body

### ■ Flange type





## ► Setting procedure

### ■ Disk type

- 1 Index unused inserts firmly onto the cartridge.



- 2 Unfasten the wedge screw 1 turn counter-clockwise.



- 3 After fastening the wedge around 80%, adjust the cartridge to the desired "X" value after setting the datum zero point.



- 4 Follow the same method about other cartridges. (the same as opposite side)

- 5 After setting all cartridges, sequentially fasten the wedge 100% over two or three times.

- When adjusting cartridge to the "X" value, set the location of cartridge higher than "X" value and then adjust the cartridge to the "X" value.
- Clockwise rotation : cartridge descends.
- Counter-clockwise rotation : cartridge ascends.

### ■ Flange type

- 1 For setting of bottom face, repeat disk type steps 1-4. (The datum is bottom plane of flange type cutter.)



- 2 For top face set-up, the use of setting plate is mandatory and the height gauge must be reset to '0' for each insert.



- 3 Put the cutter bottom face on the setting plate and unfasten wedge screw 1 turn counter-clockwise



- 4 After fastening the wedge around 80%, adjust the cartridge to the desired (A+X) value.



- 5 Follow the same method about other cartridges.

- 6 After setting all cartridges, sequentially fasten the wedge 100% over two or three times.

- When adjusting cartridge to the "X" value, set the location of cartridge higher than "X" value and then adjust the cartridge to the "X" value.
- Clockwise rotation: cartridge descends.
- Counter-clockwise rotation: cartridge ascends.

## ► Setting notice

### ■ Important set-up points

- All adjustments must be done on a plane, flat surface.
- For improved accuracy, remove any foreign substances from the insert and insert pocket surfaces before clamping.
- During reassembly wedges and wedge screws, you must apply lubricant of the friction surface. (Fig.1)
- "X" value must be equal for both top and bottom faces when adjusting the width of slot. (Fig.2)
- Width of cut must be adjusted within the range of the laser marked on the cutter. (Fig.3)  
Ex) WIDTH 12-13 / WIDTH 20-23
- When adjusting cartridge to the "X" value, set the location of cartridge higher than "X" value and then adjust the cartridge to the "X" value.

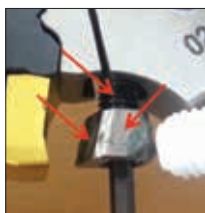


Fig.1 Lubricant

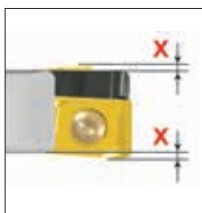


Fig.2 "X" setting



Fig.3 WIDTH

## ► Narrow width slotting cutters

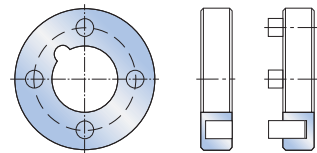
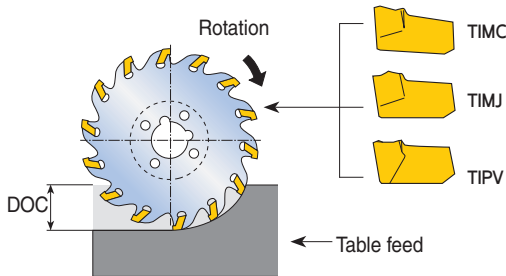


- Metric cutting diameters:  
75mm, 100mm, 125mm, 160mm, 250mm
- Cutting width ranges: 1.6mm - 6.35mm
- Geometry: Positive Rake
- Applications: Slotting and sawing
- Materials: Carbon steels, alloy steels, stainless steels, cast iron, aluminum and exotics

### ■ Features / Benefits of slotting cutters

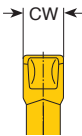
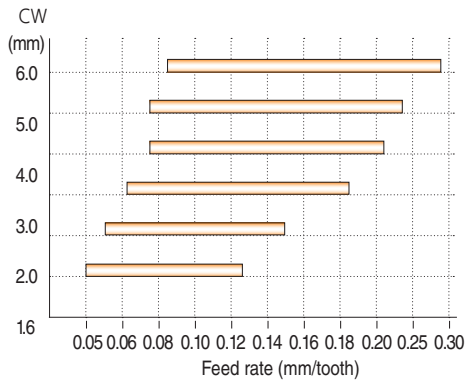
- Narrow width applications to 1.6mm
- Simple easy-to-mount inserts
- Secure insert retention self-positioning insert stopper for repeatability
- Drive flange mounting for extra stability
- Minimal radial runout
- Efficient chip evacuation
- Reduced cutting forces
- Improved tool life
- Economical

## ► Recommended feed rates for - TSC slotting cutters



Drive flange set  
recommended for  
style 2 cutters

► Recommended feed rates (Based on insert width)



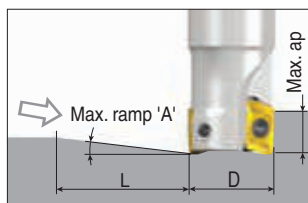
Feed rates are for radial  
D.O.C. => 1/4 the cutter diameter  
For radial DOC < 1/4 the cutter diameter  
increase feed rates by the following %

|                          |     |     |     |      |      |
|--------------------------|-----|-----|-----|------|------|
| DOC/Cutter diameter      | 1/4 | 1/6 | 1/8 | 1/10 | 1/20 |
| Increase feed rate by -> | 0%  | 15% | 30% | 45%  | 45%  |

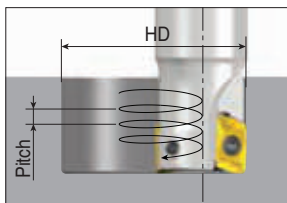
- Cutter entry  
Climb milling enters the workpiece with a thick chip and exits with a thin chip. Honed inserts are recommended.  
Conventional milling enters the workpiece with a thin chip and exits with a thick chip. Sharp inserts are recommended. Climb milling should be used whenever possible, especially when replacing high speed steel slotting cutters. On machines with backlash eliminators, climb milling is preferred.
- Cutter mounting  
The use of drive flange sets are recommended to prevent denting of arbor drive keys and to provide added stability during increased metal removal rates.
- Insert mounting  
Manually place insert in pocket and seat in place by using a wooden or plastic hammer. This will ensure self positioning for insert repeatability and minimal radial runout. Pockets must be clean and free of debris prior to installation.

# Ramping Data

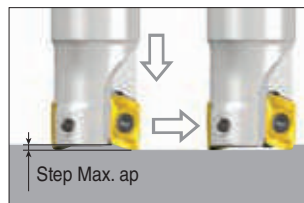
Straight ramping



Helical ramping



Step down

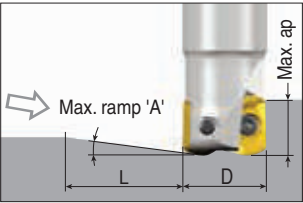


## AVKT 10

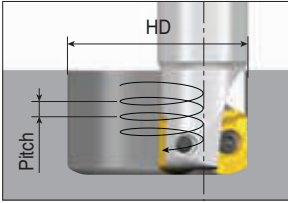
(unit: mm)

| Cutter dia. (D) | Straight ramp down |         |                 | Helical ramp down |                |                 | Step down |
|-----------------|--------------------|---------|-----------------|-------------------|----------------|-----------------|-----------|
|                 | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia. (HD)    | Max. dia. (HD) | Max. pitch/rev. | Max. ap   |
| Ø16             | 10.9               | 10      | 52              | 20                |                | 2.4             | 1.7       |
|                 |                    |         |                 |                   | 32             | 9.7             |           |
| Ø18             | 8.3                | 10      | 69              | 24                |                | 2.7             | 2.2       |
|                 |                    |         |                 |                   | 36             | 8.2             |           |
| Ø20             | 6.5                | 10      | 88              | 28                |                | 2.9             | 2.1       |
|                 |                    |         |                 |                   | 40             | 7.2             |           |
| Ø25             | 4.3                | 10      | 133             | 38                |                | 3.1             | 2.3       |
|                 |                    |         |                 |                   | 50             | 5.9             |           |
| Ø32             | 2.9                | 10      | 198             | 52                |                | 3.2             | 2.0       |
|                 |                    |         |                 |                   | 64             | 5.1             |           |
| Ø40             | 2.1                | 10      | 273             | 68                |                | 3.2             | 2.2       |
|                 |                    |         |                 |                   | 80             | 4.6             |           |
| Ø50             | 1.6                | 10      | 358             | 88                |                | 3.3             | 2.4       |
|                 |                    |         |                 |                   | 100            | 4.4             |           |
| Ø63             | 1.2                | 10      | 478             | 114               |                | 3.4             | 2.1       |
|                 |                    |         |                 |                   | 126            | 4.1             |           |

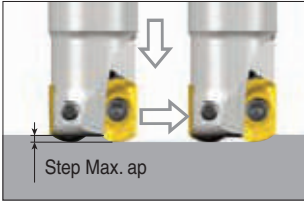
Straight ramping



Helical ramping



Step down

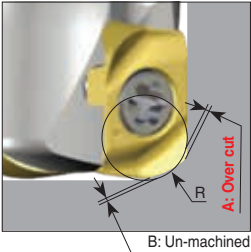


AVKT 1004R-HF

(unit: mm)

| Cutter dia. (D) | Straight ramp down |         |                 | Helical ramp down |                |                 | Step down |
|-----------------|--------------------|---------|-----------------|-------------------|----------------|-----------------|-----------|
|                 | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia. (HD)    | Max. dia. (HD) | Max. pitch/rev. | Max. ap   |
| Ø16             | 7.6                | 10      | 75              | 20.5              |                | 1.9             | 0.8       |
|                 |                    |         |                 |                   | 32             | 6.7             |           |
| Ø18             | 5.5                | 10      | 104             | 24.5              |                | 2.0             | 1.0       |
|                 |                    |         |                 |                   | 36             | 5.4             |           |
| Ø20             | 4.2                | 10      | 136             | 28.5              |                | 2.0             | 1.2       |
|                 |                    |         |                 |                   | 40             | 4.6             |           |
| Ø25             | 2.6                | 10      | 220             | 38.5              |                | 1.9             | 1.3       |
|                 |                    |         |                 |                   | 50             | 3.6             |           |
| Ø32             | 1.7                | 10      | 337             | 52.5              |                | 1.9             | 1.4       |
|                 |                    |         |                 |                   | 64             | 3.0             |           |
| Ø40             | 1.2                | 10      | 478             | 68.5              |                | 1.9             | 1.4       |
|                 |                    |         |                 |                   | 80             | 2.6             |           |
| Ø50             | 0.9                | 10      | 637             | 88.5              |                | 1.9             | 1.4       |
|                 |                    |         |                 |                   | 100            | 2.5             |           |
| Ø63             | 0.7                | 10      | 819             | 114.5             |                | 2.0             | 1.4       |
|                 |                    |         |                 |                   | 126            | 2.4             |           |

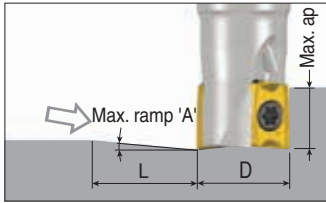
Programming technical data



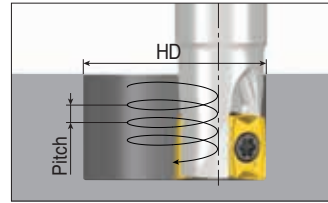
|               | R<br>Program | A<br>Over cut | B<br>Un machined |
|---------------|--------------|---------------|------------------|
| AVKT 1004R-HF | 1.7          | 0             | 0.49             |
|               | 1.9          | 0             | 0.43             |
|               | 2.0          | 0.01          | 0.40             |
|               | 2.5          | 0.13          | 0.24             |
|               | 3.0          | 0.30          | 0.11             |

Yellow background: Recommended program 'R'

Straight ramping



Helical ramping

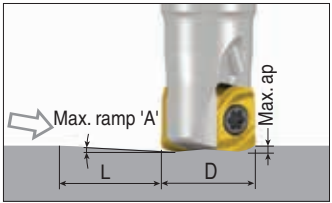


## CVK(H)T 05: R0.2

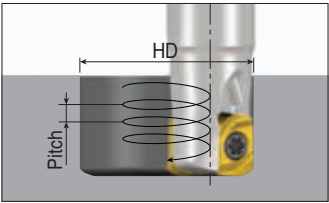
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø6             | 2.5                | 5.0     | 112             | 8                 |               | 0.2             |
|                |                    |         |                 |                   | 12            | 0.7             |
| Ø8             | 2.1                | 5.0     | 136             | 12                |               | 0.4             |
|                |                    |         |                 |                   | 16            | 0.8             |
| Ø9             | 1.7                | 5.0     | 164             | 14                |               | 0.4             |
|                |                    |         |                 |                   | 18            | 0.7             |
| Ø10            | 1.7                | 5.0     | 169             | 16                |               | 0.5             |
|                |                    |         |                 |                   | 20            | 0.8             |
| Ø11            | 1.3                | 5.0     | 212             | 18                |               | 0.4             |
|                |                    |         |                 |                   | 22            | 0.7             |
| Ø12            | 1.3                | 5.0     | 220             | 20                |               | 0.5             |
|                |                    |         |                 |                   | 24            | 0.7             |
| Ø13            | 1.1                | 5.0     | 249             | 22                |               | 0.5             |
|                |                    |         |                 |                   | 26            | 0.7             |
| Ø14            | 1.0                | 5.0     | 273             | 24                |               | 0.5             |
|                |                    |         |                 |                   | 28            | 0.7             |
| Ø16            | 0.9                | 5       | 302             | 28                |               | 0.5             |
|                |                    |         |                 |                   | 32            | 0.7             |
| Ø20            | 0.7                | 5       | 382             | 36                |               | 0.6             |
|                |                    |         |                 |                   | 40            | 0.7             |

Straight ramping



Helical ramping

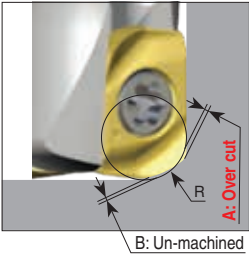


## CVKT 05-HF

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø6             | 0.20               | 0.5     | 143             | 8                 | 12            | 0.0             |
| Ø8             | 0.45               | 0.5     | 64              | 12                | 16            | 0.1             |
| Ø9             | 0.55               | 0.5     | 52              | 14                | 18            | 0.1             |
| Ø10            | 0.30               | 0.5     | 96              | 16                | 20            | 0.1             |
| Ø11            | 0.35               | 0.5     | 82              | 18                | 22            | 0.1             |
| Ø12            | 0.70               | 0.5     | 41              | 20                | 24            | 0.2             |
| Ø13            | 0.75               | 0.5     | 38              | 22                | 26            | 0.3             |
| Ø14            | 0.85               | 0.5     | 34              | 24                | 28            | 0.3             |
| Ø16            | 0.65               | 0.5     | 44              | 28                | 32            | 0.4             |
| Ø20            | 0.50               | 0.5     | 57              | 36                | 40            | 0.4             |

## Programming technical data

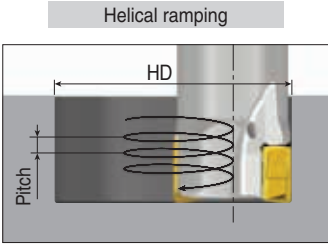
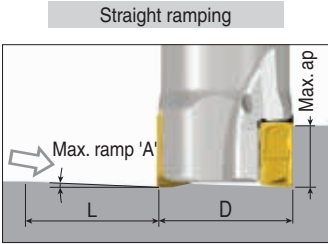


|            | R<br>Program | A<br>Over cut | B<br>Un-machined |
|------------|--------------|---------------|------------------|
| CVKT 05-HF | 0.8          | 0             | 0.21             |
|            | 0.9          | 0             | 0.18             |
|            | 1.0          | 0.02          | 0.14             |

**Yellow background:** Recommended program 'R'



# Ramping Data



## LPK(H)U 05

(unit: mm)

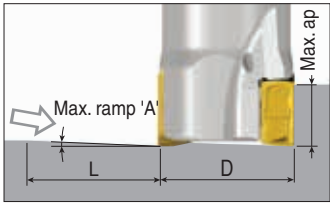
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø10            | 1.8                | 4.6     | 142             | 16.8              |               | 0.6             |
|                |                    |         |                 |                   | 20            | 0.9             |
| Ø11            | 1.6                | 4.6     | 160             | 18.8              |               | 0.6             |
|                |                    |         |                 |                   | 22            | 0.8             |
| Ø12            | 1.5                | 4.6     | 176             | 20.8              |               | 0.6             |
|                |                    |         |                 |                   | 24            | 0.8             |
| Ø13            | 1.3                | 4.6     | 195             | 22.8              |               | 0.6             |
|                |                    |         |                 |                   | 26            | 0.8             |
| Ø16            | 1.0                | 4.6     | 251             | 28.8              |               | 0.6             |
|                |                    |         |                 |                   | 32            | 0.8             |
| Ø20            | 0.8                | 4.6     | 330             | 36.8              |               | 0.6             |
|                |                    |         |                 |                   | 40            | 0.7             |
| Ø25            | 0.6                | 4.6     | 439             | 46.8              |               | 0.6             |
|                |                    |         |                 |                   | 50            | 0.7             |
| Ø32            | 0.4                | 4.6     | 586             | 60.8              |               | 0.6             |
|                |                    |         |                 |                   | 64            | 0.7             |

## LPK(H)U 09

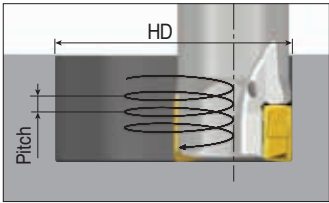
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø20            | 1.4                | 8.3     | 328             | 33                |               | 1.0             |
|                |                    |         |                 |                   | 40            | 1.5             |
| Ø25            | 1.1                | 8.3     | 432             | 43                |               | 1.0             |
|                |                    |         |                 |                   | 50            | 1.5             |
| Ø32            | 0.8                | 8.3     | 594             | 57                |               | 1.1             |
|                |                    |         |                 |                   | 64            | 1.4             |
| Ø40            | 0.6                | 8.3     | 793             | 73                |               | 1.0             |
|                |                    |         |                 |                   | 80            | 1.3             |
| Ø50            | 0.4                | 8.3     | 1057            | 93                |               | 1.0             |
|                |                    |         |                 |                   | 100           | 1.2             |
| Ø63            | 0.3                | 8.3     | 1359            | 119               |               | 1.0             |
|                |                    |         |                 |                   | 126           | 1.2             |

Straight ramping



Helical ramping

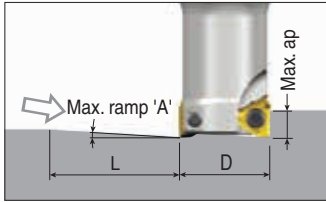


## LPKU 14

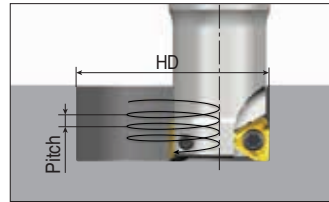
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø40            | 0.9                | 12.5    | 754             | 69                |               | 1.5             |
|                |                    |         |                 |                   | 80            | 2.0             |
| Ø50            | 0.7                | 12.5    | 1023            | 89                |               | 1.5             |
|                |                    |         |                 |                   | 100           | 1.9             |
| Ø63            | 0.5                | 12.5    | 1302            | 115               |               | 1.5             |
|                |                    |         |                 |                   | 126           | 1.9             |
| Ø80            | 0.4                | 12.5    | 1790            | 149               |               | 1.5             |
|                |                    |         |                 |                   | 160           | 1.7             |
| Ø100           | 0.3                | 12.5    | 2387            | 189               |               | 1.4             |
|                |                    |         |                 |                   | 200           | 1.6             |
| Ø125           | 0.2                | 12.5    | 2865            | 239               |               | 1.5             |
|                |                    |         |                 |                   | 250           | 1.7             |
| Ø160           | 0.2                | 12.5    | 3581            | 309               |               | 1.6             |
|                |                    |         |                 |                   | 320           | 1.7             |
| Ø200           | 0.1                | 12.5    | 4775            | 389               |               | 1.5             |
|                |                    |         |                 |                   | 400           | 1.6             |

Straight ramping



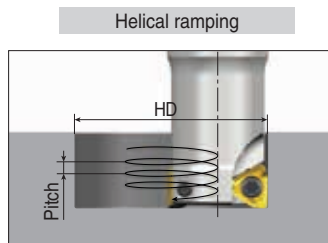
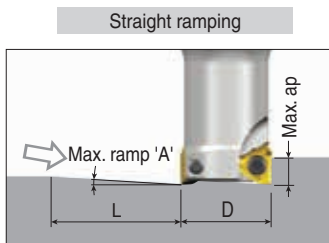
Helical ramping



## 3PKT 04

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø8             | 2.1                | 3.5     | 95              | 13.2              |               | 0.6             |
|                |                    |         |                 |                   | 16            | 0.9             |
| Ø10            | 2.2                | 3.5     | 91              | 17.2              |               | 0.8             |
|                |                    |         |                 |                   | 20            | 1.2             |
| Ø11            | 3.6                | 3.5     | 56              | 19.2              |               | 1.6             |
|                |                    |         |                 |                   | 22            | 2.1             |
| Ø12            | 3.3                | 3.5     | 61              | 21.2              |               | 1.6             |
|                |                    |         |                 |                   | 24            | 2.1             |
| Ø13            | 2.5                | 3.5     | 80              | 23.2              |               | 1.4             |
|                |                    |         |                 |                   | 26            | 1.7             |
| Ø14            | 2.2                | 3.5     | 91              | 25.2              |               | 1.3             |
|                |                    |         |                 |                   | 28            | 1.6             |
| Ø16            | 1.6                | 3.5     | 125             | 29.2              |               | 1.1             |
|                |                    |         |                 |                   | 32            | 1.4             |



## 3PK(H)T 06

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø12            | 3.7                | 4.7     | 73              | 19.5              | 24            | 1.3             |
|                |                    |         |                 | 23.5              | 28            | 2.1             |
| Ø14            | 2.8                | 4.7     | 96              | 27.5              | 32            | 1.2             |
|                |                    |         |                 | 29.5              | 34            | 1.8             |
| Ø16            | 2.3                | 4.7     | 117             | 31.5              | 36            | 1.2             |
|                |                    |         |                 | 35.5              | 40            | 1.7             |
| Ø17            | 2.0                | 4.7     | 135             | 37.5              | 42            | 1.2             |
|                |                    |         |                 | 39.5              | 44            | 1.6             |
| Ø18            | 2.0                | 4.7     | 135             | 45.5              | 50            | 1.3             |
|                |                    |         |                 | 55.5              | 60            | 1.7             |
| Ø20            | 1.6                | 4.7     | 168             | 59.5              | 64            | 1.2             |
|                |                    |         |                 | 65.5              | 70            | 1.5             |
| Ø21            | 1.5                | 4.7     | 180             | 75.5              | 80            | 1.2             |
|                |                    |         |                 |                   |               | 1.8             |
| Ø22            | 1.5                | 4.7     | 180             |                   |               | 1.4             |
|                |                    |         |                 |                   |               | 1.7             |
| Ø25            | 1.5                | 4.7     | 180             |                   |               | 1.5             |
|                |                    |         |                 |                   |               | 1.8             |
| Ø30            | 1.2                | 4.7     | 224             |                   |               | 1.2             |
|                |                    |         |                 |                   |               | 1.5             |
| Ø32            | 1.2                | 4.7     | 224             |                   |               | 1.6             |
|                |                    |         |                 |                   |               | 1.8             |
| Ø35            | 1.0                | 4.7     | 269             |                   |               | 1.4             |
|                |                    |         |                 |                   |               | 1.7             |
| Ø40            | 0.7                | 4.7     | 385             |                   |               | 1.2             |
|                |                    |         |                 |                   |               | 1.6             |

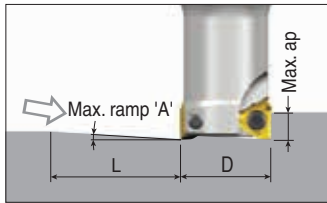
## 3PK(H)T 10

(unit: mm)

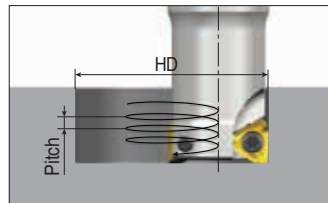
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø16            | 7.0                | 7.0     | 57              | 24.7              | 32            | 2.8             |
|                |                    |         |                 | 33.9              | 40            | 5.2             |
| Ø20            | 3.3                | 7.0     | 121             | 35.9              | 42            | 2.1             |
|                |                    |         |                 | 37.9              | 44            | 3.1             |
| Ø21            | 3.2                | 7.0     | 125             | 43.5              | 50            | 2.2             |
|                |                    |         |                 | 45.9              | 52            | 3.1             |
| Ø22            | 3.2                | 7.0     | 125             | 53.9              | 60            | 2.4             |
|                |                    |         |                 | 57.5              | 64            | 3.3             |
| Ø25            | 2.8                | 7.0     | 143             | 59.9              | 66            | 2.4             |
|                |                    |         |                 | 73.7              | 80            | 3.3             |
| Ø26            | 2.6                | 7.0     | 154             | 93.7              | 100           | 2.4             |
|                |                    |         |                 | 119.7             | 126           | 3.1             |
| Ø30            | 2.0                | 7.0     | 201             |                   |               | 2.0             |
|                |                    |         |                 |                   |               | 2.3             |
| Ø32            | 1.8                | 7.0     | 223             |                   |               | 2.1             |
|                |                    |         |                 |                   |               | 2.6             |
| Ø33            | 1.7                | 7.0     | 236             |                   |               | 2.0             |
|                |                    |         |                 |                   |               | 2.4             |
| Ø40            | 1.3                | 7.0     | 309             |                   |               | 2.0             |
|                |                    |         |                 |                   |               | 2.3             |
| Ø50            | 1.0                | 7.0     | 401             |                   |               | 2.1             |
|                |                    |         |                 |                   |               | 2.6             |
| Ø63            | 0.8                | 7.0     | 502             |                   |               | 2.0             |
|                |                    |         |                 |                   |               | 2.3             |

# Ramping Data

Straight ramping



Helical ramping



## 3PK(H)T 15

(unit: mm)

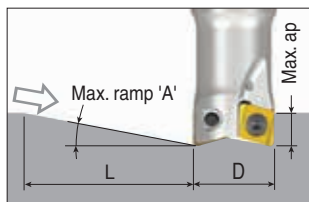
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø32            | 3.2                | 11.0    | 197             | 53.5              | 64            | 3.2             |
| Ø33            | 3.1                | 11.0    | 203             | 55.5              | 66            | 4.8             |
|                |                    |         |                 |                   |               | 3.3             |
| Ø35            | 3.1                | 11.0    | 203             | 59.5              | 70            | 4.8             |
|                |                    |         |                 |                   |               | 3.5             |
| Ø40            | 2.0                | 11.0    | 315             | 70.1              | 80            | 5.1             |
|                |                    |         |                 |                   |               | 2.8             |
| Ø50            | 1.5                | 11.0    | 420             | 90.1              | 100           | 3.7             |
|                |                    |         |                 |                   |               | 2.8             |
| Ø63            | 1.1                | 11.0    | 573             | 116.1             | 126           | 3.5             |
|                |                    |         |                 |                   |               | 2.7             |
| Ø80            | 0.8                | 11.0    | 788             | 150.3             | 160           | 3.2             |
|                |                    |         |                 |                   |               | 2.6             |
| Ø100           | 0.6                | 11.0    | 1051            | 190.5             | 200           | 3.0             |
|                |                    |         |                 |                   |               | 2.5             |
| Ø125           | 0.5                | 11.0    | 1261            | 240.3             | 250           | 2.8             |
|                |                    |         |                 |                   |               | 2.7             |
| Ø160           | 0.3                | 11.0    | 2102            | 310.3             | 320           | 2.9             |
|                |                    |         |                 |                   |               | 2.1             |
| Ø200           | 0.2                | 11.0    | 3153            | 390.3             | 400           | 2.2             |
|                |                    |         |                 |                   |               | 1.8             |
|                |                    |         |                 |                   |               | 1.9             |

## 3PK(H)T 19

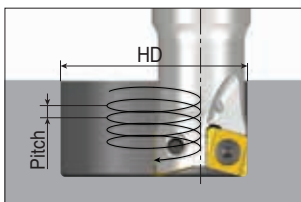
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø40            | 3.6                | 15.0    | 239             | 66.7              | 80            | 4.5             |
| Ø50            | 2.2                | 15.0    | 391             | 87.9              | 100           | 6.7             |
|                |                    |         |                 |                   |               | 3.9             |
| Ø63            | 1.7                | 15.0    | 506             | 113.9             | 126           | 5.1             |
|                |                    |         |                 |                   |               | 4               |
| Ø80            | 1.3                | 15.0    | 661             | 147.9             | 160           | 5               |
|                |                    |         |                 |                   |               | 4.1             |
| Ø100           | 1.0                | 15.0    | 860             | 187.9             | 200           | 4.8             |
|                |                    |         |                 |                   |               | 4.1             |
| Ø125           | 0.8                | 15.0    | 1075            | 237.9             | 250           | 4.7             |
|                |                    |         |                 |                   |               | 4.2             |
| Ø160           | 0.6                | 15.0    | 1433            | 307.9             | 320           | 4.7             |
|                |                    |         |                 |                   |               | 4.1             |
| Ø200           | 0.4                | 15.0    | 2150            | 387.9             | 400           | 4.5             |
|                |                    |         |                 |                   |               | 3.5             |
| Ø250           | 0.3                | 15.0    | 2866            | 487.9             | 500           | 3.7             |
|                |                    |         |                 |                   |               | 3.3             |
|                |                    |         |                 |                   |               | 3.5             |

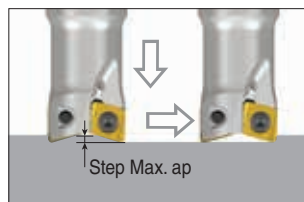
Straight ramping



Helical ramping



Step down



## 4NKT 04: R0.2

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø8             | 4.2                | 3.5     | 48              | 9.9               |               | 0.4             | 0.4       |
|                |                    |         |                 |                   | 16            | 3.1             |           |
| Ø10            | 4.6                | 3.5     | 44              | 13.9              |               | 0.8             | 0.6       |
|                |                    |         |                 |                   | 20            | 2.1             |           |
| Ø11            | 5.2                | 3.5     | 38              | 15.9              |               | 1.2             | 0.7       |
|                |                    |         |                 |                   | 22            | 2.7             |           |
| Ø12            | 4.8                | 3.5     | 42              | 17.9              |               | 1.3             | 0.8       |
|                |                    |         |                 |                   | 24            | 2.7             |           |
| Ø13            | 5.1                | 3.5     | 39              | 19.9              |               | 1.6             | 0.8       |
|                |                    |         |                 |                   | 26            | 3.1             |           |
| Ø16            | 4.4                | 3.5     | 46              | 25.9              |               | 2.0             | 1.0       |
|                |                    |         |                 |                   | 32            | 3.3             |           |
| Ø20            | 3.3                | 3.5     | 61              | 33.9              |               | 2.1             | 1.0       |
|                |                    |         |                 |                   | 40            | 3.1             |           |
| Ø25            | 2.5                | 3.5     | 80              | 43.9              |               | 2.2             | 1.0       |
|                |                    |         |                 |                   | 50            | 2.9             |           |
| Ø32            | 1.9                | 3.5     | 106             | 57.9              |               | 2.3             | 1.0       |
|                |                    |         |                 |                   | 64            | 2.8             |           |
| Ø40            | 1.4                | 3.5     | 138             | 73.9              |               | 2.3             | 1.0       |
|                |                    |         |                 |                   | 80            | 2.7             |           |

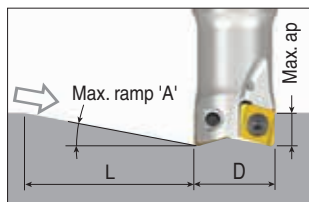
## 4NKT 04: R0.4

(unit: mm)

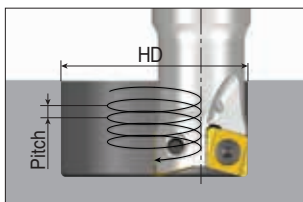
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø8             | 3.7                | 3.5     | 54              | 9.9               |               | 0.3             | 0.4       |
|                |                    |         |                 |                   | 16            | 2.8             |           |
| Ø10            | 4.2                | 3.5     | 48              | 13.9              |               | 0.8             | 0.5       |
|                |                    |         |                 |                   | 20            | 2.0             |           |
| Ø11            | 4.8                | 3.5     | 42              | 15.9              |               | 1.1             | 0.6       |
|                |                    |         |                 |                   | 22            | 2.5             |           |
| Ø12            | 4.5                | 3.5     | 44              | 17.9              |               | 1.2             | 0.7       |
|                |                    |         |                 |                   | 24            | 2.5             |           |
| Ø13            | 4.7                | 3.5     | 43              | 19.9              |               | 1.5             | 0.8       |
|                |                    |         |                 |                   | 26            | 2.9             |           |
| Ø16            | 4.1                | 3.5     | 49              | 25.9              |               | 1.9             | 0.9       |
|                |                    |         |                 |                   | 32            | 3.1             |           |
| Ø20            | 3.1                | 3.5     | 65              | 33.9              |               | 2.0             | 0.9       |
|                |                    |         |                 |                   | 40            | 2.9             |           |
| Ø25            | 2.3                | 3.5     | 85              | 43.9              |               | 2.1             | 0.9       |
|                |                    |         |                 |                   | 50            | 2.7             |           |
| Ø32            | 1.7                | 3.5     | 115             | 57.9              |               | 2.1             | 0.9       |
|                |                    |         |                 |                   | 64            | 2.6             |           |
| Ø40            | 1.3                | 3.5     | 149             | 73.9              |               | 2.1             | 0.9       |
|                |                    |         |                 |                   | 80            | 2.5             |           |

# Ramping Data

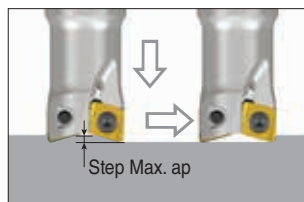
Straight ramping



Helical ramping



Step down

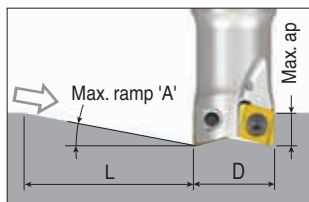


## 4NKT 04: R0.8

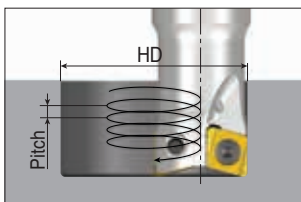
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø8             | 2.2                | 3.5     | 91              | 9.9               |               | 0.2             | 0.2       |
|                |                    |         |                 |                   | 16            | 1.6             |           |
| Ø10            | 3.0                | 3.5     | 67              | 13.9              |               | 0.5             | 0.4       |
|                |                    |         |                 |                   | 20            | 1.4             |           |
| Ø11            | 3.7                | 3.5     | 54              | 15.9              |               | 0.8             | 0.5       |
|                |                    |         |                 |                   | 22            | 1.9             |           |
| Ø12            | 3.5                | 3.5     | 57              | 17.9              |               | 1.0             | 0.5       |
|                |                    |         |                 |                   | 24            | 2.0             |           |
| Ø13            | 3.9                | 3.5     | 51              | 19.9              |               | 1.3             | 0.6       |
|                |                    |         |                 |                   | 26            | 2.4             |           |
| Ø16            | 3.5                | 3.5     | 57              | 25.9              |               | 1.6             | 0.7       |
|                |                    |         |                 |                   | 32            | 2.6             |           |
| Ø20            | 2.6                | 3.5     | 77              | 33.9              |               | 1.7             | 0.7       |
|                |                    |         |                 |                   | 40            | 2.4             |           |
| Ø25            | 1.9                | 3.5     | 103             | 43.9              |               | 1.7             | 0.7       |
|                |                    |         |                 |                   | 50            | 2.3             |           |
| Ø32            | 1.5                | 3.5     | 134             | 57.9              |               | 1.8             | 0.7       |
|                |                    |         |                 |                   | 64            | 2.2             |           |
| Ø40            | 1.1                | 3.5     | 174             | 73.9              |               | 1.8             | 0.7       |
|                |                    |         |                 |                   | 80            | 2.1             |           |

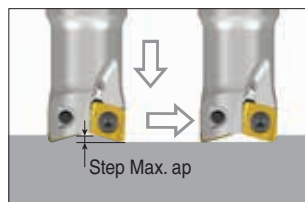
Straight ramping



Helical ramping



Step down



## 4NKT 06: R0.4

(unit: mm)

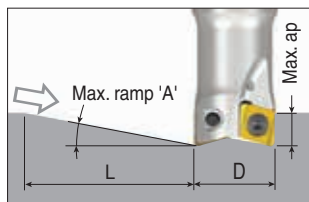
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø16            | 4.3                | 6.0     | 80              | 21.5              |               | 1.1             | 0.9       |
|                |                    |         |                 |                   | 32            | 3.2             |           |
| Ø17            | 4.3                | 6.0     | 80              | 23.5              |               | 1.3             | 1.0       |
|                |                    |         |                 |                   | 34            | 3.4             |           |
| Ø18            | 4.7                | 6.0     | 73              | 25.5              |               | 1.6             | 1.1       |
|                |                    |         |                 |                   | 36            | 3.9             |           |
| Ø20            | 4.9                | 6.0     | 70              | 29.5              |               | 2.2             | 1.3       |
|                |                    |         |                 |                   | 40            | 4.6             |           |
| Ø21            | 5.0                | 6.0     | 69              | 31.5              |               | 2.5             | 1.4       |
|                |                    |         |                 |                   | 42            | 4.9             |           |
| Ø25            | 4.9                | 6.0     | 70              | 39.5              |               | 3.3             | 1.6       |
|                |                    |         |                 |                   | 50            | 5.7             |           |
| Ø26            | 4.6                | 6.0     | 75              | 41.5              |               | 3.3             | 1.6       |
|                |                    |         |                 |                   | 52            | 5.6             |           |
| Ø32            | 3.5                | 6.0     | 98              | 53.5              |               | 3.5             | 1.7       |
|                |                    |         |                 |                   | 64            | 5.2             |           |
| Ø33            | 3.4                | 6.0     | 101             | 55.5              |               | 3.6             | 1.7       |
|                |                    |         |                 |                   | 66            | 5.2             |           |
| Ø35            | 3.1                | 6.0     | 111             | 59.5              |               | 3.5             | 1.7       |
|                |                    |         |                 |                   | 70            | 5.1             |           |
| Ø36            | 3.0                | 6.0     | 115             | 61.5              |               | 3.6             | 1.7       |
|                |                    |         |                 |                   | 72            | 5.0             |           |
| Ø38            | 2.8                | 6.0     | 123             | 65.5              |               | 3.6             | 1.7       |
|                |                    |         |                 |                   | 76            | 5.0             |           |
| Ø40            | 2.6                | 6.0     | 130             | 69.5              |               | 3.6             | 1.7       |
|                |                    |         |                 |                   | 80            | 4.9             |           |
| Ø43            | 2.4                | 6.0     | 143             | 75.5              |               | 3.6             | 1.7       |
|                |                    |         |                 |                   | 86            | 4.8             |           |
| Ø50            | 2.0                | 6.0     | 168             | 89.5              |               | 3.8             | 1.7       |
|                |                    |         |                 |                   | 100           | 4.8             |           |
| Ø63            | 1.6                | 6.0     | 215             | 115.5             |               | 3.9             | 1.7       |
|                |                    |         |                 |                   | 126           | 4.7             |           |



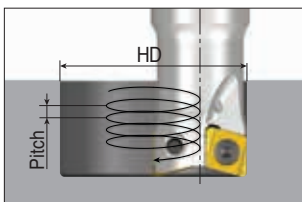
# Ramping Data



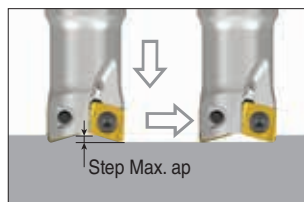
Straight ramping



Helical ramping



Step down

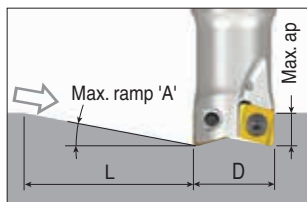


## 4NKT 06: R0.8

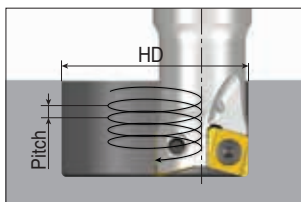
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø16            | 3.7                | 6.0     | 93              | 21.5              |               | 0.9             | 0.8       |
|                |                    |         |                 |                   | 32            | 2.8             |           |
| Ø17            | 3.8                | 6.0     | 90              | 23.5              |               | 1.2             | 0.8       |
|                |                    |         |                 |                   | 34            | 3.0             |           |
| Ø18            | 4.2                | 6.0     | 82              | 25.5              |               | 1.5             | 1.0       |
|                |                    |         |                 |                   | 36            | 3.5             |           |
| Ø20            | 4.4                | 6.0     | 78              | 29.5              |               | 2.0             | 1.1       |
|                |                    |         |                 |                   | 40            | 4.1             |           |
| Ø21            | 4.6                | 6.0     | 75              | 31.5              |               | 2.3             | 1.2       |
|                |                    |         |                 |                   | 42            | 4.5             |           |
| Ø25            | 4.6                | 6.0     | 75              | 39.5              |               | 3.1             | 1.5       |
|                |                    |         |                 |                   | 50            | 5.4             |           |
| Ø26            | 4.3                | 6.0     | 80              | 41.5              |               | 3.1             | 1.5       |
|                |                    |         |                 |                   | 52            | 5.2             |           |
| Ø32            | 3.2                | 6.0     | 107             | 53.5              |               | 3.2             | 1.5       |
|                |                    |         |                 |                   | 64            | 4.8             |           |
| Ø33            | 3.1                | 6.0     | 111             | 55.5              |               | 3.3             | 1.5       |
|                |                    |         |                 |                   | 66            | 4.8             |           |
| Ø35            | 2.8                | 6.0     | 121             | 59.5              |               | 3.3             | 1.5       |
|                |                    |         |                 |                   | 70            | 4.6             |           |
| Ø36            | 2.7                | 6.0     | 125             | 61.5              |               | 3.3             | 1.5       |
|                |                    |         |                 |                   | 72            | 4.6             |           |
| Ø38            | 2.5                | 6.0     | 135             | 65.5              |               | 3.3             | 1.5       |
|                |                    |         |                 |                   | 76            | 4.5             |           |
| Ø40            | 2.4                | 6.0     | 140             | 69.5              |               | 3.4             | 1.5       |
|                |                    |         |                 |                   | 80            | 4.6             |           |
| Ø43            | 2.2                | 6.0     | 153             | 75.5              |               | 3.4             | 1.5       |
|                |                    |         |                 |                   | 86            | 4.5             |           |
| Ø50            | 1.9                | 6.0     | 181             | 89.5              |               | 3.5             | 1.5       |
|                |                    |         |                 |                   | 100           | 4.4             |           |
| Ø63            | 1.4                | 6.0     | 237             | 115.5             |               | 3.5             | 1.6       |
|                |                    |         |                 |                   | 126           | 4.3             |           |

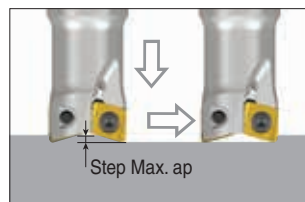
Straight ramping



Helical ramping



Step down



## 4NKT 06: R1.2

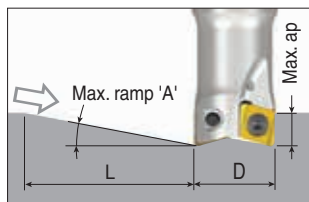
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø16            | 3.0                | 6.0     | 115             | 21.5              | 32            | 0.8             | 0.5       |
|                |                    |         |                 |                   |               | 2.2             |           |
| Ø17            | 3.2                | 6.0     | 107             | 23.5              | 34            | 1.0             | 0.7       |
|                |                    |         |                 |                   |               | 2.5             |           |
| Ø18            | 3.6                | 6.0     | 95              | 25.5              | 36            | 1.3             | 0.8       |
|                |                    |         |                 |                   |               | 3.0             |           |
| Ø20            | 3.9                | 6.0     | 88              | 29.5              | 40            | 1.7             | 1.0       |
|                |                    |         |                 |                   |               | 3.6             |           |
| Ø21            | 4.1                | 6.0     | 84              | 31.5              | 42            | 2.0             | 1.1       |
|                |                    |         |                 |                   |               | 4.0             |           |
| Ø25            | 4.2                | 6.0     | 82              | 39.5              | 50            | 2.8             | 1.3       |
|                |                    |         |                 |                   |               | 4.9             |           |
| Ø26            | 3.9                | 6.0     | 88              | 41.5              | 52            | 2.8             | 1.3       |
|                |                    |         |                 |                   |               | 4.7             |           |
| Ø32            | 2.9                | 6.0     | 119             | 53.5              | 64            | 2.9             | 1.4       |
|                |                    |         |                 |                   |               | 4.3             |           |
| Ø33            | 2.8                | 6.0     | 123             | 55.5              | 66            | 2.9             | 1.4       |
|                |                    |         |                 |                   |               | 4.3             |           |
| Ø35            | 2.6                | 6.0     | 132             | 59.5              | 70            | 3.0             | 1.4       |
|                |                    |         |                 |                   |               | 4.2             |           |
| Ø36            | 2.5                | 6.0     | 137             | 61.5              | 72            | 3.0             | 1.4       |
|                |                    |         |                 |                   |               | 4.2             |           |
| Ø38            | 2.3                | 6.0     | 146             | 65.5              | 76            | 3.0             | 1.4       |
|                |                    |         |                 |                   |               | 4.2             |           |
| Ø40            | 2.2                | 6.0     | 156             | 69.5              | 80            | 3.0             | 1.4       |
|                |                    |         |                 |                   |               | 4.1             |           |
| Ø43            | 2.0                | 6.0     | 168             | 75.5              | 86            | 3.1             | 1.4       |
|                |                    |         |                 |                   |               | 4.1             |           |
| Ø50            | 1.7                | 6.0     | 202             | 89.5              | 100           | 3.1             | 1.4       |
|                |                    |         |                 |                   |               | 4.0             |           |
| Ø63            | 1.3                | 6.0     | 265             | 115.5             | 126           | 3.2             | 1.4       |
|                |                    |         |                 |                   |               | 3.8             |           |

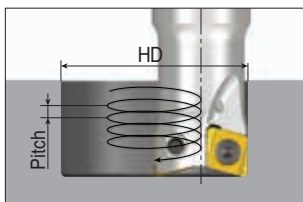
# Ramping Data



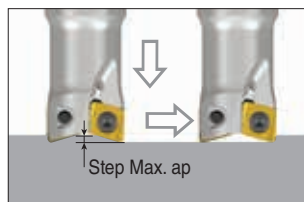
Straight ramping



Helical ramping



Step down

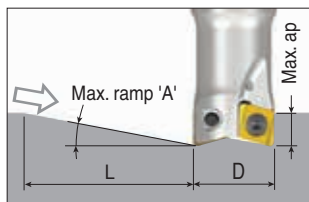


## 4NKT 06: R1.6

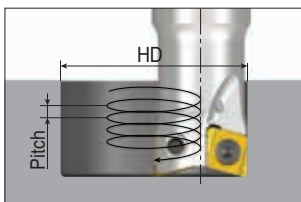
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø16            | 2.2                | 6.0     | 156             | 21.5              |               | 0.6             | 0.4       |
|                |                    |         |                 |                   | 32            | 1.6             |           |
| Ø17            | 2.4                | 6.0     | 143             | 23.5              |               | 0.7             | 0.5       |
|                |                    |         |                 |                   | 34            | 1.9             |           |
| Ø18            | 2.8                | 6.0     | 123             | 25.5              |               | 1.0             | 0.6       |
|                |                    |         |                 |                   | 36            | 2.3             |           |
| Ø20            | 3.2                | 6.0     | 107             | 29.5              |               | 1.4             | 0.8       |
|                |                    |         |                 |                   | 40            | 3.0             |           |
| Ø21            | 3.4                | 6.0     | 101             | 31.5              |               | 1.7             | 0.9       |
|                |                    |         |                 |                   | 42            | 3.3             |           |
| Ø25            | 3.7                | 6.0     | 93              | 39.5              |               | 2.5             | 1.1       |
|                |                    |         |                 |                   | 50            | 4.3             |           |
| Ø26            | 3.4                | 6.0     | 101             | 41.5              |               | 2.5             | 1.1       |
|                |                    |         |                 |                   | 52            | 4.1             |           |
| Ø32            | 2.5                | 6.0     | 135             | 53.5              |               | 2.6             | 1.2       |
|                |                    |         |                 |                   | 64            | 3.8             |           |
| Ø33            | 2.4                | 6.0     | 140             | 55.5              |               | 2.6             | 1.2       |
|                |                    |         |                 |                   | 66            | 3.8             |           |
| Ø35            | 2.3                | 6.0     | 149             | 59.5              |               | 2.6             | 1.2       |
|                |                    |         |                 |                   | 70            | 3.8             |           |
| Ø36            | 2.2                | 6.0     | 156             | 61.5              |               | 2.6             | 1.2       |
|                |                    |         |                 |                   | 72            | 3.7             |           |
| Ø38            | 2.0                | 6.0     | 168             | 65.5              |               | 2.6             | 1.2       |
|                |                    |         |                 |                   | 76            | 3.6             |           |
| Ø40            | 1.9                | 6.0     | 176             | 69.5              |               | 2.7             | 1.2       |
|                |                    |         |                 |                   | 80            | 3.6             |           |
| Ø43            | 1.8                | 6.0     | 191             | 75.5              |               | 2.7             | 1.2       |
|                |                    |         |                 |                   | 86            | 3.6             |           |
| Ø50            | 1.5                | 6.0     | 229             | 89.5              |               | 2.8             | 1.2       |
|                |                    |         |                 |                   | 100           | 3.5             |           |
| Ø63            | 1.1                | 6.0     | 299             | 115.5             |               | 2.8             | 1.2       |
|                |                    |         |                 |                   | 126           | 3.4             |           |

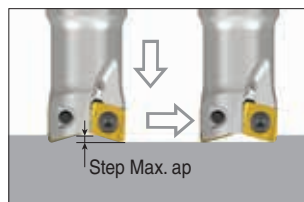
Straight ramping



Helical ramping



Step down



## 4NKT 06: R2.0

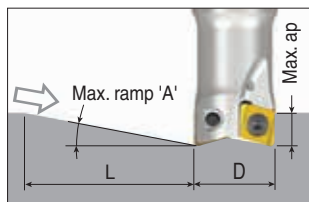
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø16            | 1.6                | 6.0     | 215             | 21.5              | 32            | 0.4             | 0.3       |
|                |                    |         |                 |                   |               | 1.2             |           |
| Ø17            | 1.8                | 6.0     | 191             | 23.5              | 34            | 0.5             | 0.3       |
|                |                    |         |                 |                   |               | 1.4             |           |
| Ø18            | 2.3                | 6.0     | 149             | 25.5              | 36            | 0.8             | 0.5       |
|                |                    |         |                 |                   |               | 1.9             |           |
| Ø20            | 2.7                | 6.0     | 125             | 29.5              | 40            | 1.2             | 0.6       |
|                |                    |         |                 |                   |               | 2.6             |           |
| Ø21            | 3.0                | 6.0     | 115             | 31.5              | 42            | 1.5             | 0.7       |
|                |                    |         |                 |                   |               | 2.9             |           |
| Ø25            | 3.3                | 6.0     | 104             | 39.5              | 50            | 2.2             | 1.0       |
|                |                    |         |                 |                   |               | 3.8             |           |
| Ø26            | 3.1                | 6.0     | 111             | 41.5              | 52            | 2.2             | 1.0       |
|                |                    |         |                 |                   |               | 3.8             |           |
| Ø32            | 2.3                | 6.0     | 149             | 53.5              | 64            | 2.3             | 1.0       |
|                |                    |         |                 |                   |               | 3.4             |           |
| Ø33            | 2.2                | 6.0     | 156             | 55.5              | 66            | 2.3             | 1.0       |
|                |                    |         |                 |                   |               | 3.4             |           |
| Ø35            | 2.0                | 6.0     | 168             | 59.5              | 70            | 2.3             | 1.0       |
|                |                    |         |                 |                   |               | 3.3             |           |
| Ø36            | 2.0                | 6.0     | 172             | 61.5              | 72            | 2.4             | 1.0       |
|                |                    |         |                 |                   |               | 3.4             |           |
| Ø38            | 1.8                | 6.0     | 186             | 65.5              | 76            | 2.4             | 1.0       |
|                |                    |         |                 |                   |               | 3.3             |           |
| Ø40            | 1.7                | 6.0     | 196             | 69.5              | 80            | 2.4             | 1.0       |
|                |                    |         |                 |                   |               | 3.3             |           |
| Ø43            | 1.3                | 6.0     | 265             | 75.5              | 86            | 2.0             | 1.0       |
|                |                    |         |                 |                   |               | 2.6             |           |
| Ø50            | 1.3                | 6.0     | 255             | 89.5              | 100           | 2.5             | 1.0       |
|                |                    |         |                 |                   |               | 3.1             |           |
| Ø63            | 1.0                | 6.0     | 328             | 115.5             | 126           | 2.6             | 1.0       |
|                |                    |         |                 |                   |               | 3.1             |           |

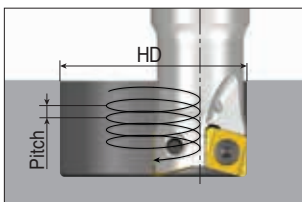
# Ramping Data



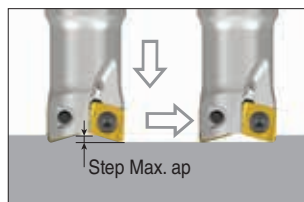
Straight ramping



Helical ramping



Step down



## 4NHT 04: R0.5-F

(unit: mm)

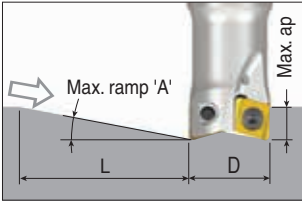
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø8             | 3.4                | 2.2     | 37              | 9.9               |               | 0.3             | 0.3       |
|                |                    |         |                 |                   | 16            | 1.3             |           |
| Ø10            | 4.0                | 2.2     | 31              | 13.9              |               | 0.7             | 0.5       |
|                |                    |         |                 |                   | 20            | 1.9             |           |
| Ø11            | 4.6                | 2.2     | 27              | 15.9              |               | 1.1             | 0.6       |
|                |                    |         |                 |                   | 22            | 2.4             |           |
| Ø12            | 4.3                | 2.2     | 29              | 17.9              |               | 1.2             | 0.7       |
|                |                    |         |                 |                   | 24            | 2.4             |           |
| Ø13            | 4.6                | 2.2     | 27              | 19.9              |               | 1.5             | 0.8       |
|                |                    |         |                 |                   | 26            | 2.8             |           |
| Ø16            | 3.9                | 2.2     | 32              | 25.9              |               | 1.8             | 0.9       |
|                |                    |         |                 |                   | 32            | 2.9             |           |
| Ø20            | 2.9                | 2.2     | 43              | 33.9              |               | 1.9             | 0.9       |
|                |                    |         |                 |                   | 40            | 2.7             |           |
| Ø25            | 2.2                | 2.2     | 57              | 43.9              |               | 1.9             | 0.9       |
|                |                    |         |                 |                   | 50            | 2.6             |           |
| Ø32            | 1.6                | 2.2     | 76              | 57.9              |               | 2.0             | 0.9       |
|                |                    |         |                 |                   | 64            | 2.5             |           |
| Ø40            | 1.3                | 2.2     | 97              | 73.9              |               | 2.1             | 0.9       |
|                |                    |         |                 |                   | 80            | 2.4             |           |

## 4NHT 04: R1.0-F

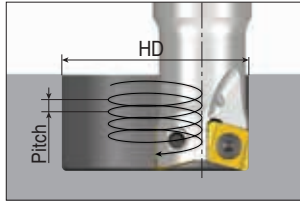
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø8             | 1.5                | 2.0     | 74              | 9.9               |               | 0.1             | 0.1       |
|                |                    |         |                 |                   | 16            | 0.6             |           |
| Ø10            | 2.5                | 2.0     | 45              | 13.9              |               | 0.5             | 0.3       |
|                |                    |         |                 |                   | 20            | 1.2             |           |
| Ø11            | 3.3                | 2.0     | 35              | 15.9              |               | 0.8             | 0.4       |
|                |                    |         |                 |                   | 22            | 1.7             |           |
| Ø12            | 3.1                | 2.0     | 37              | 17.9              |               | 0.9             | 0.5       |
|                |                    |         |                 |                   | 24            | 1.7             |           |
| Ø13            | 3.5                | 2.0     | 33              | 19.9              |               | 1.1             | 0.5       |
|                |                    |         |                 |                   | 26            | 2.1             |           |
| Ø16            | 3.0                | 2.0     | 38              | 25.9              |               | 1.4             | 0.6       |
|                |                    |         |                 |                   | 32            | 2.2             |           |
| Ø20            | 2.2                | 2.0     | 51              | 33.9              |               | 1.5             | 0.7       |
|                |                    |         |                 |                   | 40            | 2.1             |           |
| Ø25            | 1.7                | 2.0     | 65              | 43.9              |               | 1.5             | 0.7       |
|                |                    |         |                 |                   | 50            | 2.0             |           |
| Ø32            | 1.3                | 2.0     | 88              | 57.9              |               | 1.6             | 0.7       |
|                |                    |         |                 |                   | 64            | 1.9             |           |
| Ø40            | 1.0                | 2.0     | 115             | 73.9              |               | 1.6             | 0.7       |
|                |                    |         |                 |                   | 80            | 1.9             |           |

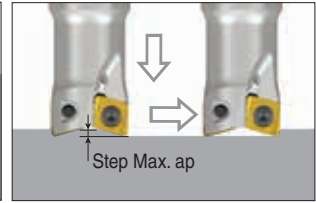
Straight ramping



Helical ramping



Step down



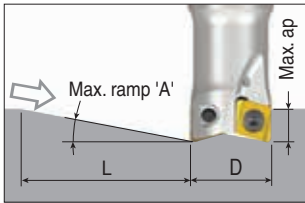
## 4NHT 06: R0.4

(unit: mm)

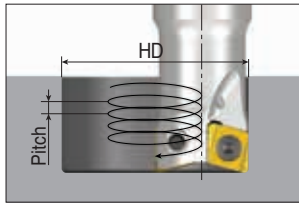
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø16            | 2.9                | 6.0     | 119             | 21.5              | 32            | 0.7             | 0.6       |
|                |                    |         |                 |                   |               | 2.2             |           |
| Ø17            | 3.0                | 6.0     | 115             | 23.5              | 34            | 0.9             | 0.6       |
|                |                    |         |                 |                   |               | 2.4             |           |
| Ø18            | 3.4                | 6.0     | 101             | 25.5              | 36            | 1.2             | 0.8       |
|                |                    |         |                 |                   |               | 2.9             |           |
| Ø20            | 3.8                | 6.0     | 90              | 29.5              | 40            | 1.7             | 0.9       |
|                |                    |         |                 |                   |               | 3.5             |           |
| Ø21            | 4.0                | 6.0     | 86              | 31.5              | 42            | 2.0             | 1.0       |
|                |                    |         |                 |                   |               | 3.9             |           |
| Ø25            | 4.1                | 6.0     | 84              | 39.5              | 50            | 2.8             | 1.3       |
|                |                    |         |                 |                   |               | 4.8             |           |
| Ø26            | 3.8                | 6.0     | 90              | 41.5              | 52            | 2.7             | 1.3       |
|                |                    |         |                 |                   |               | 4.6             |           |
| Ø32            | 2.8                | 6.0     | 123             | 53.5              | 64            | 2.8             | 1.3       |
|                |                    |         |                 |                   |               | 4.2             |           |
| Ø33            | 2.7                | 6.0     | 127             | 55.5              | 66            | 2.8             | 1.3       |
|                |                    |         |                 |                   |               | 4.2             |           |
| Ø35            | 2.5                | 6.0     | 135             | 59.5              | 70            | 2.9             | 1.3       |
|                |                    |         |                 |                   |               | 4.2             |           |
| Ø36            | 2.4                | 6.0     | 140             | 61.5              | 72            | 2.9             | 1.3       |
|                |                    |         |                 |                   |               | 4.1             |           |
| Ø38            | 2.3                | 6.0     | 149             | 65.5              | 76            | 2.9             | 1.3       |
|                |                    |         |                 |                   |               | 4.1             |           |
| Ø40            | 2.1                | 6.0     | 160             | 69.5              | 80            | 3.0             | 1.3       |
|                |                    |         |                 |                   |               | 4.0             |           |
| Ø43            | 1.9                | 6.0     | 176             | 75.5              | 86            | 3.0             | 1.3       |
|                |                    |         |                 |                   |               | 3.9             |           |
| Ø50            | 1.6                | 6.0     | 208             | 89.5              | 100           | 3.0             | 1.3       |
|                |                    |         |                 |                   |               | 3.8             |           |
| Ø63            | 1.2                | 6.0     | 275             | 115.5             | 126           | 3.1             | 1.3       |
|                |                    |         |                 |                   |               | 3.7             |           |

# Ramping Data

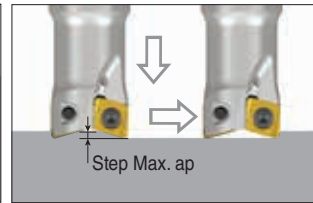
Straight ramping



Helical ramping



Step down

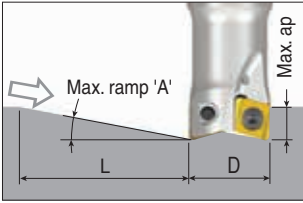


## 4NHT 06: R0.8

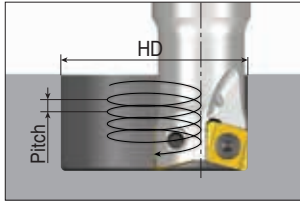
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø16            | 2.9                | 6.0     | 119             | 21.5              |               | 0.7             | 0.6       |
|                |                    |         |                 |                   | 32            | 2.2             |           |
| Ø17            | 3.0                | 6.0     | 115             | 23.5              |               | 0.9             | 0.6       |
|                |                    |         |                 |                   | 34            | 2.4             |           |
| Ø18            | 3.5                | 6.0     | 98              | 25.5              |               | 1.2             | 0.8       |
|                |                    |         |                 |                   | 36            | 2.9             |           |
| Ø20            | 3.8                | 6.0     | 90              | 29.5              |               | 1.7             | 0.9       |
|                |                    |         |                 |                   | 40            | 3.5             |           |
| Ø21            | 4.0                | 6.0     | 86              | 31.5              |               | 2.0             | 1.0       |
|                |                    |         |                 |                   | 42            | 3.9             |           |
| Ø25            | 4.1                | 6.0     | 84              | 39.5              |               | 2.8             | 1.3       |
|                |                    |         |                 |                   | 50            | 4.8             |           |
| Ø26            | 3.8                | 6.0     | 90              | 41.5              |               | 2.7             | 1.3       |
|                |                    |         |                 |                   | 52            | 4.6             |           |
| Ø32            | 2.8                | 6.0     | 123             | 53.5              |               | 2.8             | 1.3       |
|                |                    |         |                 |                   | 64            | 4.2             |           |
| Ø33            | 2.7                | 6.0     | 127             | 55.5              |               | 2.8             | 1.3       |
|                |                    |         |                 |                   | 66            | 4.2             |           |
| Ø35            | 2.5                | 6.0     | 135             | 59.5              |               | 2.9             | 1.3       |
|                |                    |         |                 |                   | 70            | 4.2             |           |
| Ø36            | 2.4                | 6.0     | 140             | 61.5              |               | 2.9             | 1.3       |
|                |                    |         |                 |                   | 72            | 4.1             |           |
| Ø38            | 2.3                | 6.0     | 149             | 65.5              |               | 2.9             | 1.3       |
|                |                    |         |                 |                   | 76            | 4.1             |           |
| Ø40            | 2.1                | 6.0     | 160             | 69.5              |               | 3.0             | 1.3       |
|                |                    |         |                 |                   | 80            | 4.0             |           |
| Ø43            | 1.9                | 6.0     | 176             | 75.5              |               | 3.0             | 1.3       |
|                |                    |         |                 |                   | 86            | 3.9             |           |
| Ø50            | 1.6                | 6.0     | 208             | 89.5              |               | 3.0             | 1.3       |
|                |                    |         |                 |                   | 100           | 3.8             |           |
| Ø63            | 1.25               | 6.0     | 275             | 115.5             |               | 3.1             | 1.3       |
|                |                    |         |                 |                   | 126           | 3.7             |           |

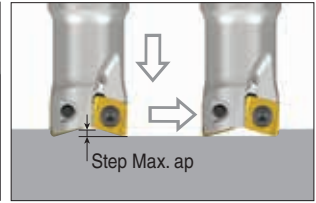
Straight ramping



Helical ramping



Step down



## 4NHT 06: R0.5-F

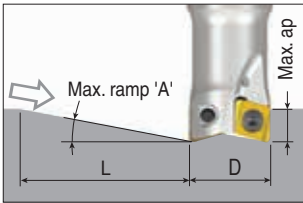
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø16            | 3.5                | 2.3     | 38              | 21.5              | 32            | 0.9             | 0.8       |
|                |                    |         |                 |                   |               | 2.6             |           |
| Ø17            | 3.6                | 2.3     | 37              | 23.5              | 34            | 1.1             | 0.8       |
|                |                    |         |                 |                   |               | 2.9             |           |
| Ø18            | 4.0                | 2.3     | 33              | 25.5              | 36            | 1.4             | 1.0       |
|                |                    |         |                 |                   |               | 3.4             |           |
| Ø20            | 4.3                | 2.3     | 31              | 29.5              | 40            | 1.9             | 1.2       |
|                |                    |         |                 |                   |               | 4.0             |           |
| Ø21            | 4.4                | 2.3     | 30              | 31.5              | 42            | 2.2             | 1.2       |
|                |                    |         |                 |                   |               | 4.3             |           |
| Ø25            | 4.9                | 2.3     | 27              | 39.5              | 50            | 3.3             | 1.6       |
|                |                    |         |                 |                   |               | 5.7             |           |
| Ø26            | 4.6                | 2.3     | 29              | 41.5              | 52            | 3.3             | 1.6       |
|                |                    |         |                 |                   |               | 5.6             |           |
| Ø32            | 3.5                | 2.3     | 38              | 53.5              | 64            | 3.5             | 1.6       |
|                |                    |         |                 |                   |               | 5.2             |           |
| Ø33            | 3.3                | 2.3     | 40              | 55.5              | 66            | 3.5             | 1.6       |
|                |                    |         |                 |                   |               | 5.1             |           |
| Ø35            | 3.1                | 2.3     | 42              | 59.5              | 70            | 3.5             | 1.6       |
|                |                    |         |                 |                   |               | 5.1             |           |
| Ø36            | 3.0                | 2.3     | 44              | 61.5              | 72            | 3.6             | 1.6       |
|                |                    |         |                 |                   |               | 5.0             |           |
| Ø38            | 2.8                | 2.3     | 47              | 65.5              | 76            | 3.6             | 1.7       |
|                |                    |         |                 |                   |               | 5.0             |           |
| Ø40            | 2.6                | 2.3     | 51              | 69.5              | 80            | 3.6             | 1.7       |
|                |                    |         |                 |                   |               | 4.8             |           |
| Ø43            | 2.4                | 2.3     | 55              | 75.5              | 86            | 3.6             | 1.7       |
|                |                    |         |                 |                   |               | 4.8             |           |
| Ø50            | 2.0                | 2.3     | 64              | 89.5              | 100           | 3.8             | 1.7       |
|                |                    |         |                 |                   |               | 4.8             |           |
| Ø63            | 1.7                | 2.3     | 78              | 115.5             | 126           | 4.2             | 1.7       |
|                |                    |         |                 |                   |               | 5.0             |           |

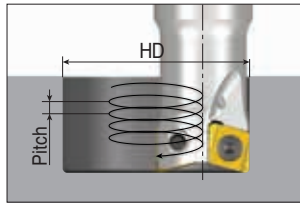


# Ramping Data

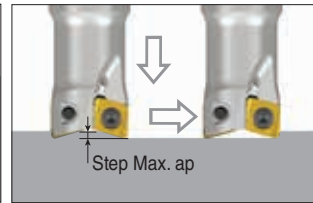
Straight ramping



Helical ramping



Step down



## 4NHT 06: R0.8-F

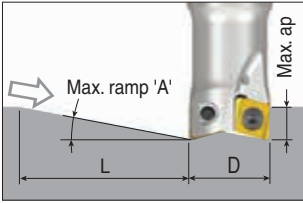
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø16            | 3.1                | 1.9     | 35              | 21.5              |               | 0.8             | 0.7       |
|                |                    |         |                 |                   | 32            | 2.3             |           |
| Ø17            | 3.2                | 1.9     | 34              | 23.5              |               | 1.0             | 0.7       |
|                |                    |         |                 |                   | 34            | 2.5             |           |
| Ø18            | 3.6                | 1.9     | 30              | 25.5              |               | 1.3             | 0.9       |
|                |                    |         |                 |                   | 36            | 3.0             |           |
| Ø20            | 3.9                | 1.9     | 28              | 29.5              |               | 1.7             | 1.0       |
|                |                    |         |                 |                   | 40            | 3.6             |           |
| Ø21            | 4.1                | 1.9     | 27              | 31.5              |               | 2.0             | 1.1       |
|                |                    |         |                 |                   | 42            | 4.0             |           |
| Ø25            | 4.6                | 1.9     | 24              | 39.5              |               | 3.1             | 1.5       |
|                |                    |         |                 |                   | 50            | 5.4             |           |
| Ø26            | 4.4                | 1.9     | 25              | 41.5              |               | 3.2             | 1.5       |
|                |                    |         |                 |                   | 52            | 5.3             |           |
| Ø32            | 3.3                | 1.9     | 33              | 53.5              |               | 3.3             | 1.5       |
|                |                    |         |                 |                   | 64            | 4.9             |           |
| Ø33            | 3.1                | 1.9     | 35              | 55.5              |               | 3.3             | 1.5       |
|                |                    |         |                 |                   | 66            | 4.8             |           |
| Ø35            | 2.9                | 1.9     | 38              | 59.5              |               | 3.3             | 1.5       |
|                |                    |         |                 |                   | 70            | 4.7             |           |
| Ø36            | 2.8                | 1.9     | 39              | 61.5              |               | 3.3             | 1.5       |
|                |                    |         |                 |                   | 72            | 4.7             |           |
| Ø38            | 2.6                | 1.9     | 41              | 65.5              |               | 3.4             | 1.5       |
|                |                    |         |                 |                   | 76            | 4.7             |           |
| Ø40            | 2.4                | 1.9     | 44              | 69.5              |               | 3.4             | 1.5       |
|                |                    |         |                 |                   | 80            | 4.6             |           |
| Ø43            | 2.2                | 1.9     | 48              | 75.5              |               | 3.4             | 1.5       |
|                |                    |         |                 |                   | 86            | 4.5             |           |
| Ø50            | 1.9                | 1.9     | 57              | 89.5              |               | 3.5             | 1.6       |
|                |                    |         |                 |                   | 100           | 4.4             |           |
| Ø63            | 1.4                | 1.9     | 75              | 115.5             |               | 3.5             | 1.6       |
|                |                    |         |                 |                   | 126           | 4.3             |           |

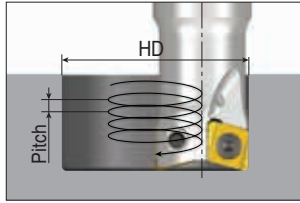
# Ramping Data



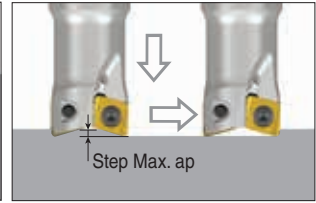
Straight ramping



Helical ramping



Step down



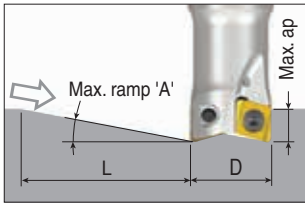
## 4NHT 06: R1.0-F

(unit: mm)

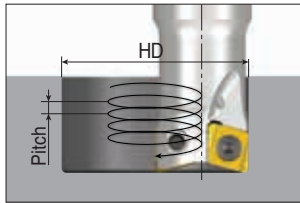
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø16            | 2.7                | 2.1     | 44              | 21.5              |               | 0.7             | 0.6       |
|                |                    |         |                 |                   | 32            | 2.1             |           |
| Ø17            | 2.9                | 2.1     | 41              | 23.5              |               | 0.9             | 0.7       |
|                |                    |         |                 |                   | 34            | 2.3             |           |
| Ø18            | 3.3                | 2.1     | 36              | 25.5              |               | 1.2             | 0.8       |
|                |                    |         |                 |                   | 36            | 2.8             |           |
| Ø20            | 3.6                | 2.1     | 33              | 29.5              |               | 1.6             | 1.0       |
|                |                    |         |                 |                   | 40            | 3.4             |           |
| Ø21            | 3.8                | 2.1     | 32              | 31.5              |               | 1.9             | 1.0       |
|                |                    |         |                 |                   | 42            | 3.7             |           |
| Ø25            | 4.4                | 2.1     | 27              | 39.5              |               | 3.0             | 1.4       |
|                |                    |         |                 |                   | 50            | 5.1             |           |
| Ø26            | 4.2                | 2.1     | 29              | 41.5              |               | 3.0             | 1.4       |
|                |                    |         |                 |                   | 52            | 5.1             |           |
| Ø32            | 3.1                | 2.1     | 39              | 53.5              |               | 3.1             | 1.4       |
|                |                    |         |                 |                   | 64            | 4.6             |           |
| Ø33            | 3.0                | 2.1     | 40              | 55.5              |               | 3.1             | 1.4       |
|                |                    |         |                 |                   | 66            | 4.6             |           |
| Ø35            | 2.8                | 2.1     | 43              | 59.5              |               | 3.2             | 1.4       |
|                |                    |         |                 |                   | 70            | 4.6             |           |
| Ø36            | 2.6                | 2.1     | 45              | 61.5              |               | 3.1             | 1.4       |
|                |                    |         |                 |                   | 72            | 4.4             |           |
| Ø38            | 2.5                | 2.1     | 48              | 65.5              |               | 3.2             | 1.5       |
|                |                    |         |                 |                   | 76            | 4.4             |           |
| Ø40            | 2.3                | 2.1     | 51              | 69.5              |               | 3.2             | 1.5       |
|                |                    |         |                 |                   | 80            | 4.4             |           |
| Ø43            | 2.1                | 2.1     | 56              | 75.5              |               | 3.3             | 1.5       |
|                |                    |         |                 |                   | 86            | 4.3             |           |
| Ø50            | 1.8                | 2.1     | 67              | 89.5              |               | 3.3             | 1.5       |
|                |                    |         |                 |                   | 100           | 4.2             |           |
| Ø63            | 1.4                | 2.1     | 86              | 115.5             |               | 3.4             | 1.5       |
|                |                    |         |                 |                   | 126           | 4.1             |           |

# Ramping Data

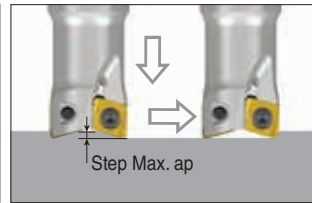
Straight ramping



Helical ramping



Step down



## 4NHT 06: R1.5-F

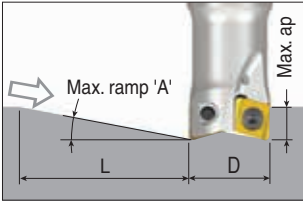
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø16            | 1.9                | 3.3     | 97              | 21.5              |               | 0.5             | 0.4       |
|                |                    |         |                 |                   | 32            | 1.5             |           |
| Ø17            | 2.1                | 3.3     | 88              | 23.5              |               | 0.7             | 0.5       |
|                |                    |         |                 |                   | 34            | 1.7             |           |
| Ø18            | 2.6                | 3.3     | 73              | 25.5              |               | 0.9             | 0.6       |
|                |                    |         |                 |                   | 36            | 2.2             |           |
| Ø20            | 3.0                | 3.3     | 63              | 29.5              |               | 1.3             | 0.8       |
|                |                    |         |                 |                   | 40            | 2.8             |           |
| Ø21            | 3.2                | 3.3     | 59              | 31.5              |               | 1.6             | 0.9       |
|                |                    |         |                 |                   | 42            | 3.1             |           |
| Ø25            | 3.9                | 3.3     | 48              | 39.5              |               | 2.6             | 1.2       |
|                |                    |         |                 |                   | 50            | 4.5             |           |
| Ø26            | 3.7                | 3.3     | 51              | 41.5              |               | 2.7             | 1.2       |
|                |                    |         |                 |                   | 52            | 4.5             |           |
| Ø32            | 2.7                | 3.3     | 70              | 53.5              |               | 2.7             | 1.2       |
|                |                    |         |                 |                   | 64            | 4.0             |           |
| Ø33            | 2.6                | 3.3     | 71              | 55.5              |               | 2.8             | 1.2       |
|                |                    |         |                 |                   | 66            | 4.1             |           |
| Ø35            | 2.4                | 3.3     | 77              | 59.5              |               | 2.8             | 1.3       |
|                |                    |         |                 |                   | 70            | 4.0             |           |
| Ø36            | 2.3                | 3.3     | 80              | 61.5              |               | 2.8             | 1.3       |
|                |                    |         |                 |                   | 72            | 3.9             |           |
| Ø38            | 2.2                | 3.3     | 86              | 65.5              |               | 2.8             | 1.3       |
|                |                    |         |                 |                   | 76            | 3.9             |           |
| Ø40            | 2.1                | 3.3     | 90              | 69.5              |               | 2.9             | 1.3       |
|                |                    |         |                 |                   | 80            | 3.9             |           |
| Ø43            | 1.9                | 3.3     | 100             | 75.5              |               | 2.9             | 1.3       |
|                |                    |         |                 |                   | 86            | 3.8             |           |
| Ø50            | 1.6                | 3.3     | 118             | 89.5              |               | 2.9             | 1.3       |
|                |                    |         |                 |                   | 100           | 3.7             |           |
| Ø63            | 1.2                | 3.3     | 151             | 115.5             |               | 3.1             | 1.3       |
|                |                    |         |                 |                   | 126           | 3.7             |           |

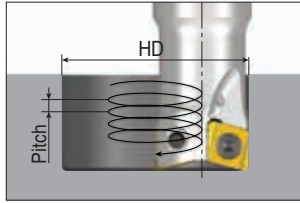
# Ramping Data



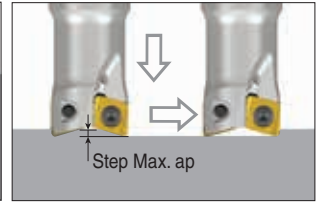
Straight ramping



Helical ramping



Step down



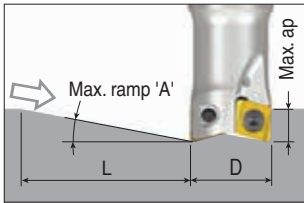
## 4NHT 06: R2.0-F

(unit: mm)

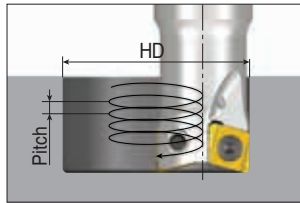
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø16            | 0.8                | 2.1     | 142             | 21.5              |               | 0.2             | 0.1       |
|                |                    |         |                 |                   | 32            | 0.6             |           |
| Ø17            | 1.1                | 2.1     | 109             | 23.5              |               | 0.3             | 0.2       |
|                |                    |         |                 |                   | 34            | 0.9             |           |
| Ø18            | 1.6                | 2.1     | 75              | 25.5              |               | 0.6             | 0.3       |
|                |                    |         |                 |                   | 36            | 1.3             |           |
| Ø20            | 2.1                | 2.1     | 57              | 29.5              |               | 0.9             | 0.5       |
|                |                    |         |                 |                   | 40            | 2.0             |           |
| Ø21            | 2.3                | 2.1     | 51              | 31.5              |               | 1.1             | 0.6       |
|                |                    |         |                 |                   | 42            | 2.3             |           |
| Ø25            | 3.2                | 2.1     | 38              | 39.5              |               | 2.2             | 0.9       |
|                |                    |         |                 |                   | 50            | 3.7             |           |
| Ø26            | 3.0                | 2.1     | 40              | 41.5              |               | 2.2             | 1.0       |
|                |                    |         |                 |                   | 52            | 3.6             |           |
| Ø32            | 2.2                | 2.1     | 53              | 53.5              |               | 2.3             | 1.0       |
|                |                    |         |                 |                   | 64            | 3.4             |           |
| Ø33            | 2.1                | 2.1     | 56              | 55.5              |               | 2.3             | 1.0       |
|                |                    |         |                 |                   | 66            | 3.3             |           |
| Ø35            | 2.0                | 2.1     | 60              | 59.5              |               | 2.3             | 1.0       |
|                |                    |         |                 |                   | 70            | 3.3             |           |
| Ø36            | 1.9                | 2.1     | 62              | 61.5              |               | 2.3             | 1.0       |
|                |                    |         |                 |                   | 72            | 3.3             |           |
| Ø38            | 1.8                | 2.1     | 67              | 65.5              |               | 2.3             | 1.0       |
|                |                    |         |                 |                   | 76            | 3.2             |           |
| Ø40            | 1.7                | 2.1     | 71              | 69.5              |               | 2.3             | 1.0       |
|                |                    |         |                 |                   | 80            | 3.2             |           |
| Ø43            | 1.5                | 2.1     | 78              | 75.5              |               | 2.3             | 1.0       |
|                |                    |         |                 |                   | 86            | 3.1             |           |
| Ø50            | 1.3                | 2.1     | 93              | 89.5              |               | 2.4             | 1.0       |
|                |                    |         |                 |                   | 100           | 3.0             |           |
| Ø63            | 1.0                | 2.1     | 120             | 115.5             |               | 2.4             | 1.0       |
|                |                    |         |                 |                   | 126           | 2.9             |           |

# Ramping Data

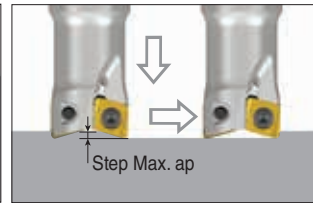
Straight ramping



Helical ramping



Step down



## 4NKT 09: R0.8

(unit: mm)

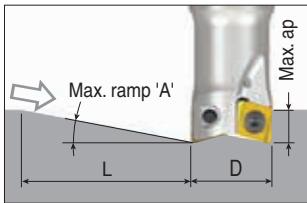
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø20            | 3.7                | 8.0     | 124             | 25.5              |               | 0.9             | 1.0       |
|                |                    |         |                 |                   | 40            | 3.5             |           |
| Ø25            | 4.9                | 8.0     | 93              | 35.5              |               | 2.4             | 1.6       |
|                |                    |         |                 |                   | 50            | 5.7             |           |
| Ø32            | 4.9                | 8.0     | 93              | 49.5              |               | 4.0             | 2.1       |
|                |                    |         |                 |                   | 64            | 7.3             |           |
| Ø40            | 3.6                | 8.0     | 127             | 65.5              |               | 4.3             | 2.1       |
|                |                    |         |                 |                   | 80            | 6.7             |           |
| Ø50            | 2.7                | 8.0     | 170             | 85.5              |               | 4.5             | 2.1       |
|                |                    |         |                 |                   | 100           | 6.3             |           |
| Ø63            | 2.0                | 8.0     | 224             | 111.5             |               | 4.6             | 2.1       |
|                |                    |         |                 |                   | 126           | 6.0             |           |
| Ø80            | 1.5                | 8.0     | 296             | 145.5             |               | 4.7             | 2.1       |
|                |                    |         |                 |                   | 160           | 5.8             |           |

## 4NKT 09: R1.6

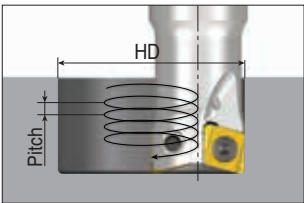
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø20            | 2.7                | 8.0     | 167             | 25.5              |               | 0.7             | 0.7       |
|                |                    |         |                 |                   | 40            | 2.6             |           |
| Ø25            | 4.1                | 8.0     | 112             | 35.5              |               | 2.0             | 1.3       |
|                |                    |         |                 |                   | 50            | 4.8             |           |
| Ø32            | 4.4                | 8.0     | 104             | 49.5              |               | 3.6             | 1.8       |
|                |                    |         |                 |                   | 64            | 6.6             |           |
| Ø40            | 3.1                | 8.0     | 148             | 65.5              |               | 3.7             | 1.8       |
|                |                    |         |                 |                   | 80            | 5.8             |           |
| Ø50            | 2.3                | 8.0     | 195             | 85.5              |               | 3.9             | 1.8       |
|                |                    |         |                 |                   | 100           | 5.5             |           |
| Ø63            | 1.8                | 8.0     | 255             | 111.5             |               | 4.1             | 1.8       |
|                |                    |         |                 |                   | 126           | 5.3             |           |
| Ø80            | 1.3                | 8.0     | 340             | 145.5             |               | 4.1             | 1.8       |
|                |                    |         |                 |                   | 160           | 5.0             |           |

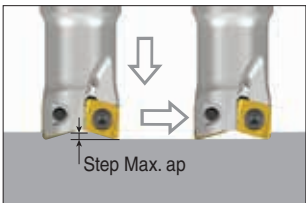
Straight ramping



Helical ramping



Step down



## 4NHT 09: R0.4

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø20            | 2.9                | 8.0     | 155             | 25.5              | 40            | 0.8             | 0.8       |
|                |                    |         |                 |                   |               | 2.7             |           |
| Ø25            | 4.3                | 8.0     | 106             | 35.5              | 50            | 2.1             | 1.3       |
|                |                    |         |                 |                   |               | 5.0             |           |
| Ø32            | 4.5                | 8.0     | 102             | 49.5              | 64            | 3.7             | 1.8       |
|                |                    |         |                 |                   |               | 6.7             |           |
| Ø40            | 3.2                | 8.0     | 143             | 65.5              | 80            | 3.8             | 1.8       |
|                |                    |         |                 |                   |               | 6.0             |           |
| Ø50            | 2.4                | 8.0     | 191             | 85.5              | 100           | 4.0             | 1.8       |
|                |                    |         |                 |                   |               | 5.6             |           |
| Ø63            | 1.8                | 8.0     | 255             | 111.5             | 126           | 4.1             | 1.8       |
|                |                    |         |                 |                   |               | 5.3             |           |
| Ø80            | 1.3                | 8.0     | 340             | 145.5             | 160           | 4.1             | 1.8       |
|                |                    |         |                 |                   |               | 5.0             |           |

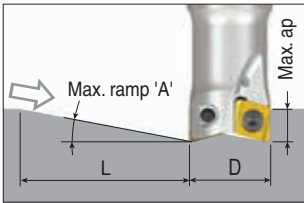
## 4NHT 09: R0.8

(unit: mm)

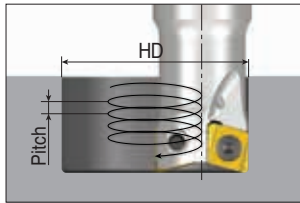
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø20            | 2.9                | 8.0     | 155             | 25.5              | 40            | 0.8             | 0.8       |
|                |                    |         |                 |                   |               | 2.7             |           |
| Ø25            | 4.3                | 8.0     | 106             | 35.5              | 50            | 2.1             | 1.3       |
|                |                    |         |                 |                   |               | 5.0             |           |
| Ø32            | 4.5                | 8.0     | 102             | 49.5              | 64            | 3.7             | 1.8       |
|                |                    |         |                 |                   |               | 6.7             |           |
| Ø40            | 3.2                | 8.0     | 143             | 65.5              | 80            | 3.8             | 1.8       |
|                |                    |         |                 |                   |               | 6.0             |           |
| Ø50            | 2.4                | 8.0     | 191             | 85.5              | 100           | 4.0             | 1.8       |
|                |                    |         |                 |                   |               | 5.6             |           |
| Ø63            | 1.8                | 8.0     | 255             | 111.5             | 126           | 4.1             | 1.8       |
|                |                    |         |                 |                   |               | 5.3             |           |
| Ø80            | 1.3                | 8.0     | 340             | 145.5             | 160           | 4.1             | 1.8       |
|                |                    |         |                 |                   |               | 5.0             |           |

# Ramping Data

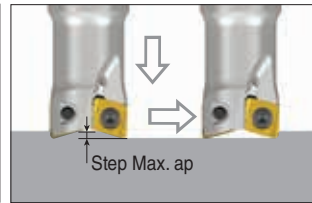
Straight ramping



Helical ramping



Step down



## 4NKT 11: R0.8

(unit: mm)

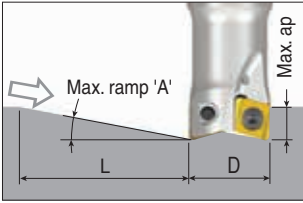
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø25            | 5.1                | 10.3    | 115             | 31.5              | 1.5           |                 | 1.7       |
|                |                    |         |                 |                   | 50            | 6.0             |           |
| Ø32            | 5.3                | 10.3    | 111             | 45.5              | 3.3           |                 | 2.4       |
|                |                    |         |                 |                   | 64            | 7.9             |           |
| Ø40            | 5.0                | 10.3    | 118             | 61.5              | 5.0           |                 | 2.7       |
|                |                    |         |                 |                   | 80            | 9.3             |           |
| Ø50            | 3.7                | 10.3    | 159             | 81.5              | 5.4           |                 | 2.7       |
|                |                    |         |                 |                   | 100           | 8.6             |           |
| Ø63            | 2.7                | 10.3    | 219             | 107.5             | 5.6           |                 | 2.7       |
|                |                    |         |                 |                   | 126           | 7.9             |           |
| Ø80            | 2.0                | 10.3    | 288             | 141.5             | 5.9           |                 | 2.7       |
|                |                    |         |                 |                   | 160           | 7.6             |           |

## 4NKT 14: R0.8

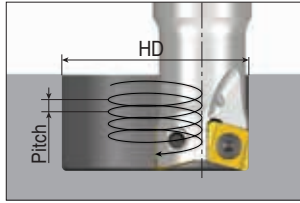
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø32            | 5.2                | 13.5    | 148             | 39.5              | 1.8           |                 | 2.3       |
|                |                    |         |                 |                   | 64            | 7.8             |           |
| Ø40            | 5.2                | 13.5    | 148             | 55.5              | 3.8           |                 | 3.0       |
|                |                    |         |                 |                   | 80            | 9.7             |           |
| Ø50            | 5.5                | 13.5    | 140             | 75.5              | 6.6           |                 | 3.3       |
|                |                    |         |                 |                   | 100           | 12.8            |           |
| Ø63            | 4.0                | 13.5    | 193             | 101.5             | 7.2           |                 | 3.3       |
|                |                    |         |                 |                   | 126           | 11.8            |           |
| Ø80            | 2.9                | 13.5    | 267             | 135.5             | 7.5           |                 | 3.3       |
|                |                    |         |                 |                   | 160           | 10.8            |           |

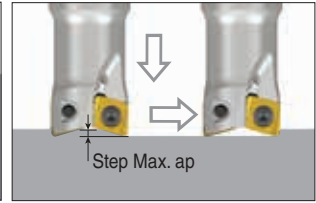
Straight ramping



Helical ramping



Step down



## 4NKT 11 PNR: R0.8

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø25            | 4.0                | 10.3    | 147             | 31.5              |               | 1.2             | 1.1       |
|                |                    |         |                 |                   | 50            | 4.7             |           |
| Ø32            | 4.3                | 10.3    | 135             | 45.5              |               | 2.7             | 1.0       |
|                |                    |         |                 |                   | 64            | 6.5             |           |
| Ø40            | 4.5                | 10.3    | 131             | 61.5              |               | 4.5             | 0.9       |
|                |                    |         |                 |                   | 80            | 8.4             |           |
| Ø50            | 3.2                | 10.3    | 184             | 81.5              |               | 4.7             | 0.9       |
|                |                    |         |                 |                   | 100           | 7.5             |           |
| Ø63            | 2.4                | 10.3    | 246             | 107.5             |               | 5.0             | 0.9       |
|                |                    |         |                 |                   | 126           | 7.0             |           |
| Ø80            | 1.8                | 10.3    | 328             | 141.5             |               | 5.2             | 0.9       |
|                |                    |         |                 |                   | 160           | 6.7             |           |

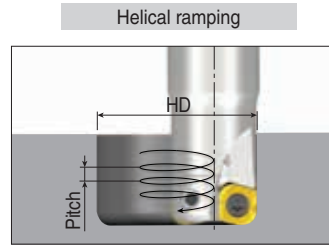
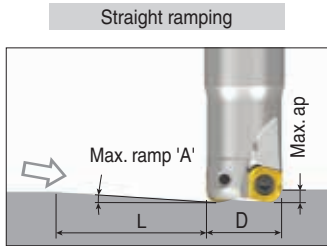
## 4NKT 14 PNR: R0.8

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø32            | 4.1                | 13.5    | 188             | 39.5              |               | 1.4             | 1.1       |
|                |                    |         |                 |                   | 64            | 6.1             |           |
| Ø40            | 4.3                | 13.5    | 180             | 55.5              |               | 3.1             | 0.9       |
|                |                    |         |                 |                   | 80            | 8.0             |           |
| Ø50            | 4.7                | 13.5    | 163             | 75.5              |               | 5.7             | 0.9       |
|                |                    |         |                 |                   | 100           | 11.1            |           |
| Ø63            | 3.5                | 13.5    | 221             | 101.5             |               | 6.3             | 0.9       |
|                |                    |         |                 |                   | 126           | 10.3            |           |
| Ø80            | 2.6                | 13.5    | 297             | 135.5             |               | 6.7             | 0.9       |
|                |                    |         |                 |                   | 160           | 9.7             |           |



# Ramping Data



## 4NKT 04-HF: R1.2

(unit: mm)

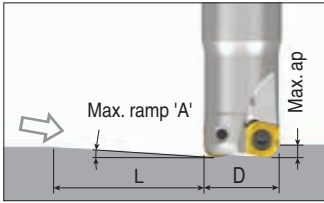
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø8             | 0.1                | 0.5     | 191             | 9.9               | 16            | 0.0             |
|                |                    |         |                 | 13.9              | 20            | 0.1             |
| Ø10            | 0.8                | 0.5     | 34              | 15.9              | 22            | 0.2             |
|                |                    |         |                 | 17.9              | 24            | 0.4             |
| Ø11            | 1.6                | 0.5     | 18              | 19.9              | 26            | 0.4             |
|                |                    |         |                 | 25.9              | 32            | 0.5             |
| Ø12            | 1.6                | 0.5     | 18              | 33.9              | 40            | 0.4             |
|                |                    |         |                 | 43.9              | 50            | 0.5             |
| Ø13            | 2.0                | 0.5     | 14              | 57.9              | 64            | 0.5             |
|                |                    |         |                 | 73.9              | 80            | 0.5             |
| Ø16            | 1.9                | 0.5     | 15              |                   |               | 0.5             |
|                |                    |         |                 |                   |               | 0.5             |
| Ø20            | 2.3                | 0.5     | 12              |                   |               | 0.5             |
|                |                    |         |                 |                   |               | 0.5             |
| Ø25            | 1.7                | 0.5     | 16              |                   |               | 0.5             |
|                |                    |         |                 |                   |               | 0.5             |
| Ø32            | 1.3                | 0.5     | 22              |                   |               | 0.5             |
|                |                    |         |                 |                   |               | 0.5             |
| Ø40            | 1.0                | 0.5     | 29              |                   |               | 0.5             |
|                |                    |         |                 |                   |               | 0.5             |

## 4NKT 06-HF: R2.0

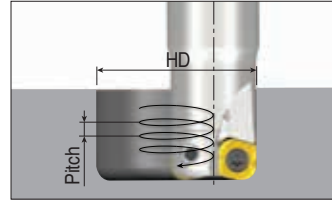
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø16            | 0.6                | 1.0     | 88              | 21.4              | 32            | 0.2             |
|                |                    |         |                 | 23.4              | 34            | 0.5             |
| Ø17            | 0.7                | 1.0     | 76              | 25.4              | 36            | 0.2             |
|                |                    |         |                 | 29.4              | 40            | 0.6             |
| Ø18            | 1.1                | 1.0     | 50              | 31.4              | 42            | 0.4             |
|                |                    |         |                 | 39.4              | 50            | 1.0             |
| Ø20            | 1.7                | 1.0     | 34              | 41.4              | 52            | 0.7             |
|                |                    |         |                 | 53.4              | 64            | 1.0             |
| Ø21            | 1.9                | 1.0     | 29              | 69.4              | 80            | 1.0             |
|                |                    |         |                 | 89.4              | 100           | 1.0             |
| Ø25            | 2.3                | 1.0     | 24              | 115.4             | 126           | 1.0             |
|                |                    |         |                 |                   |               | 1.0             |
| Ø26            | 3.2                | 1.0     | 18              |                   |               | 1.0             |
|                |                    |         |                 |                   |               | 1.0             |
| Ø32            | 2.4                | 1.0     | 24              |                   |               | 1.0             |
|                |                    |         |                 |                   |               | 1.0             |
| Ø40            | 1.8                | 1.0     | 32              |                   |               | 1.0             |
|                |                    |         |                 |                   |               | 1.0             |
| Ø50            | 1.4                | 1.0     | 41              |                   |               | 1.0             |
|                |                    |         |                 |                   |               | 1.0             |
| Ø63            | 1.1                | 1.0     | 52              |                   |               | 1.0             |
|                |                    |         |                 |                   |               | 1.0             |

Straight ramping



Helical ramping



## 4NKT 09-HF: R3.2

(unit: mm)

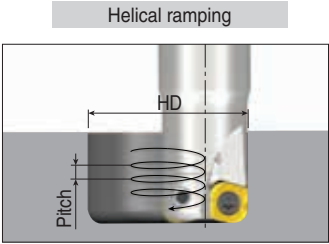
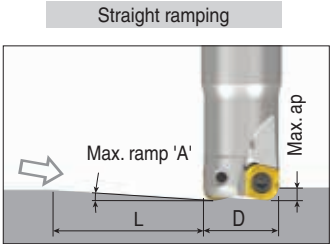
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø20            | 0.3                | 1.5     | 287             | 25                |               | 0.1             |
|                |                    |         |                 |                   | 40            | 0.3             |
| Ø25            | 1.2                | 1.5     | 69              | 35                |               | 0.6             |
|                |                    |         |                 |                   | 50            | 1.5             |
| Ø32            | 2.4                | 1.5     | 35              | 49                |               | 1.5             |
|                |                    |         |                 |                   | 64            | 1.5             |
| Ø40            | 2.3                | 1.5     | 37              | 65                |               | 1.5             |
|                |                    |         |                 |                   | 80            | 1.5             |
| Ø50            | 1.7                | 1.5     | 49              | 85                |               | 1.5             |
|                |                    |         |                 |                   | 100           | 1.5             |
| Ø63            | 1.3                | 1.5     | 66              | 111               |               | 1.5             |
|                |                    |         |                 |                   | 126           | 1.5             |
| Ø80            | 1.0                | 1.5     | 86              | 145               |               | 1.5             |
|                |                    |         |                 |                   | 160           | 1.5             |

## 4NKT 11-HF: R4.0

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø25            | 0.8                | 2.0     | 143             | 31                |               | 0.2             |
|                |                    |         |                 |                   | 50            | 0.9             |
| Ø32            | 2.0                | 2.0     | 57              | 45                |               | 1.2             |
|                |                    |         |                 |                   | 64            | 2.0             |
| Ø40            | 3.4                | 2.0     | 34              | 61                |               | 2.0             |
|                |                    |         |                 |                   | 80            | 2.0             |
| Ø50            | 2.4                | 2.0     | 48              | 81                |               | 2.0             |
|                |                    |         |                 |                   | 100           | 2.0             |
| Ø63            | 1.8                | 2.0     | 64              | 107               |               | 2.0             |
|                |                    |         |                 |                   | 126           | 2.0             |
| Ø80            | 1.3                | 2.0     | 85              | 141               |               | 2.0             |
|                |                    |         |                 |                   | 160           | 2.0             |

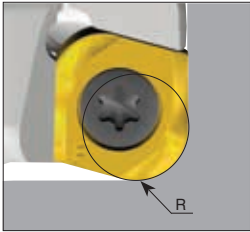
# Ramping Data



**4NKT 14-HF: R5.0** (unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø32            | 1.0                | 3.0     | 172             | 39                | 64            | 0.3             |
| Ø40            | 1.8                | 3.0     | 96              | 55                | 80            | 1.5             |
|                |                    |         |                 |                   |               | 1.3             |
| Ø50            | 3.9                | 3.0     | 44              | 75                | 100           | 3.0             |
|                |                    |         |                 |                   |               | 3.0             |
| Ø63            | 2.7                | 3.0     | 64              | 101               | 126           | 3.0             |
|                |                    |         |                 |                   |               | 3.0             |
| Ø80            | 1.9                | 3.0     | 88              | 135               | 160           | 3.0             |
|                |                    |         |                 |                   |               | 3.0             |

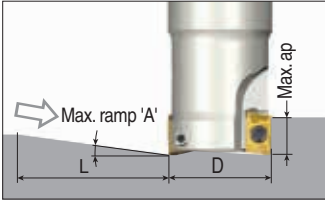
## Programming technical data



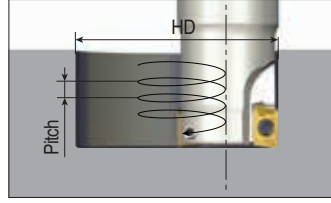
|                 | R<br>Program | A<br>Over cut | B<br>Un-machined |
|-----------------|--------------|---------------|------------------|
| 4NKT 040212R-HF | 1.2          | 0             | 0                |
| 4NKT 060320R-HF | 2.0          | 0             | 0                |
| 4NKT 090432R-HF | 3.2          | 0             | 0                |
| 4NKT 110640R-HF | 4.0          | 0             | 0                |
| 4NKT 140750R-HF | 5.0          | 0             | 0                |

# Ramping Data

Straight ramping



Helical ramping



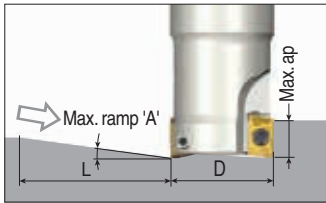
## AXMT 06

(unit: mm)

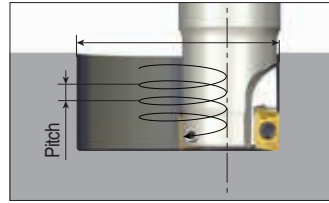
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø8             | 1.0                | 5.0     | 287             | 9                 |               | 0.0             |
|                |                    |         |                 |                   | 16            | 0.4             |
| Ø10            | 8.0                | 5.0     | 36              | 13                |               | 1.1             |
|                |                    |         |                 |                   | 20            | 3.7             |
| Ø11            | 6.0                | 5.0     | 48              | 15                |               | 1.1             |
|                |                    |         |                 |                   | 22            | 3.1             |
| Ø12            | 6.0                | 5.0     | 48              | 17                |               | 1.4             |
|                |                    |         |                 |                   | 24            | 3.4             |
| Ø13            | 5.5                | 5.0     | 52              | 19                |               | 1.5             |
|                |                    |         |                 |                   | 26            | 3.3             |
| Ø14            | 4.8                | 5.0     | 60              | 21                |               | 1.6             |
|                |                    |         |                 |                   | 28            | 3.1             |
| Ø15            | 4.3                | 5.0     | 67              | 23                |               | 1.6             |
|                |                    |         |                 |                   | 30            | 3.0             |
| Ø16            | 4.0                | 5.0     | 72              | 25                |               | 1.7             |
|                |                    |         |                 |                   | 32            | 3.0             |
| Ø17            | 3.5                | 5.0     | 82              | 27                |               | 1.6             |
|                |                    |         |                 |                   | 34            | 2.8             |
| Ø18            | 5.0                | 5.0     | 57              | 29                |               | 2.6             |
|                |                    |         |                 |                   | 36            | 4.2             |
| Ø19            | 4.8                | 5.0     | 60              | 31                |               | 2.7             |
|                |                    |         |                 |                   | 38            | 4.3             |
| Ø20            | 4.0                | 5.0     | 72              | 33                |               | 2.4             |
|                |                    |         |                 |                   | 40            | 3.7             |
| Ø21            | 3.5                | 5.0     | 82              | 35                |               | 2.3             |
|                |                    |         |                 |                   | 42            | 3.4             |
| Ø25            | 3.0                | 5.0     | 95              | 43                |               | 2.5             |
|                |                    |         |                 |                   | 50            | 3.5             |
| Ø32            | 2.0                | 5.0     | 143             | 57                |               | 2.3             |
|                |                    |         |                 |                   | 64            | 3.0             |
| Ø40            | 1.5                | 5.0     | 191             | 73                |               | 2.3             |
|                |                    |         |                 |                   | 80            | 2.8             |

# Ramping Data

Straight ramping



Helical ramping

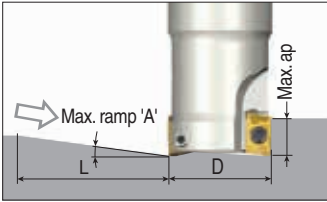


## APKT 09

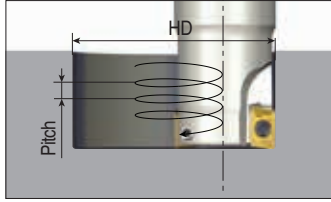
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø10            | 7.5                | 9.0     | 68              | 14                | 20            | 1.4             |
| Ø12            | 7.3                | 9.0     | 70              | 16                | 24            | 1.4             |
| Ø14            | 6.0                | 9.0     | 86              | 18                | 28            | 1.1             |
| Ø16            | 4.9                | 9.0     | 105             | 21.08             | 32            | 1.2             |
| Ø17            | 4.4                | 9.0     | 117             | 23.08             | 34            | 1.2             |
| Ø18            | 4.0                | 9.0     | 129             | 25.08             | 36            | 1.3             |
| Ø20            | 3.4                | 9.0     | 152             | 29.08             | 40            | 1.4             |
| Ø21            | 3.1                | 9.0     | 166             | 31.08             | 42            | 1.5             |
| Ø22            | 2.8                | 9.0     | 184             | 33.08             | 44            | 1.4             |
| Ø25            | 1.8                | 9.0     | 287             | 39.08             | 50            | 1.2             |
| Ø26            | 2.0                | 9.0     | 258             | 41.08             | 52            | 1.4             |
| Ø30            | 2.2                | 9.0     | 234             | 49.08             | 60            | 2.0             |
| Ø32            | 2.0                | 9.0     | 258             | 53.08             | 64            | 2.0             |
| Ø33            | 1.7                | 9.0     | 303             | 55.08             | 66            | 1.7             |
| Ø40            | 1.5                | 9.0     | 344             | 69.08             | 80            | 2.0             |
| Ø50            | 1.1                | 9.0     | 469             | 89.08             | 100           | 2.0             |
| Ø63            | 0.8                | 9.0     | 645             | 115.08            | 126           | 1.9             |
| Ø80            | 0.5                | 9.0     | 1032            | 149.08            | 160           | 1.6             |

Straight ramping



Helical ramping



## APKT 12

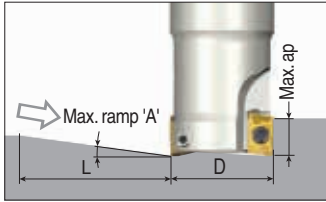
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø16            | 12.5               | 12.0    | 54              | 17.5              |               | 0.5             |
|                |                    |         |                 |                   | 32            | 9.5             |
| Ø18            | 9.7                | 12.0    | 70              | 20.9              |               | 1.3             |
|                |                    |         |                 |                   | 36            | 8.2             |
| Ø20            | 6.8                | 12.0    | 101             | 24.9              |               | 1.6             |
|                |                    |         |                 |                   | 40            | 6.4             |
| Ø21            | 6.2                | 12.0    | 111             | 26.9              |               | 1.7             |
|                |                    |         |                 |                   | 42            | 6.1             |
| Ø25            | 8.0                | 12.0    | 85              | 34.9              |               | 3.7             |
|                |                    |         |                 |                   | 50            | 9.4             |
| Ø26            | 7.5                | 12.0    | 91              | 36.9              |               | 3.8             |
|                |                    |         |                 |                   | 52            | 9.1             |
| Ø32            | 5.0                | 12.0    | 137             | 48.9              |               | 3.9             |
|                |                    |         |                 |                   | 64            | 7.5             |
| Ø33            | 4.6                | 12.0    | 149             | 50.9              |               | 3.8             |
|                |                    |         |                 |                   | 66            | 7.1             |
| Ø40            | 3.5                | 12.0    | 196             | 64.9              |               | 4.1             |
|                |                    |         |                 |                   | 80            | 6.5             |
| Ø50            | 2.5                | 12.0    | 275             | 84.9              |               | 4.8             |
|                |                    |         |                 |                   | 100           | 5.8             |
| Ø63            | 1.7                | 12.0    | 405             | 110.9             |               | 4.5             |
|                |                    |         |                 |                   | 126           | 5.0             |
| Ø80            | 1.3                | 12.0    | 529             | 144.9             |               | 4.6             |
|                |                    |         |                 |                   | 160           | 4.8             |

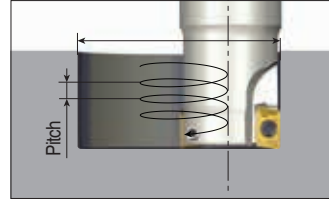
# Ramping Data



Straight ramping



Helical ramping



## APKT 17

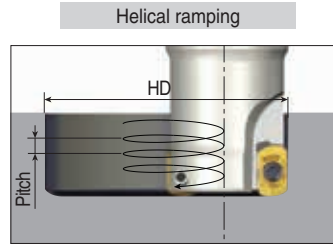
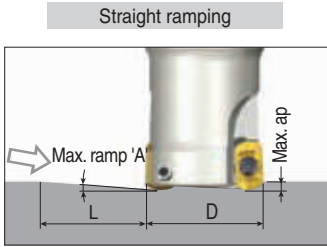
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø20            | 8.0                | 16.1    | 115             | 22                | 40            | 0.7             |
|                |                    |         |                 | 30.6              | 50            | 7.5             |
| Ø25            | 5.0                | 16.1    | 184             | 32.6              | 52            | 1.3             |
|                |                    |         |                 | 44.6              | 64            | 5.8             |
| Ø26            | 4.0                | 16.1    | 230             | 46.6              | 66            | 1.2             |
|                |                    |         |                 | 60.6              | 80            | 4.9             |
| Ø32            | 9.0                | 16.1    | 102             | 80.6              | 100           | 5.3             |
|                |                    |         |                 | 106.6             | 126           | 13.5            |
| Ø33            | 9.0                | 16.1    | 102             | 140.6             | 160           | 5.7             |
|                |                    |         |                 | 180.6             | 200           | 13.9            |
| Ø40            | 5.0                | 16.1    | 184             | 230.6             | 250           | 4.8             |
|                |                    |         |                 | 300.6             | 320           | 9.3             |
| Ø50            | 4.4                | 16.1    | 209             | 380.6             | 400           | 6.3             |
|                |                    |         |                 |                   |               | 10.3            |
| Ø63            | 3.2                | 16.1    | 288             |                   |               | 6.5             |
|                |                    |         |                 |                   |               | 9.4             |
| Ø80            | 2.3                | 16.1    | 401             |                   |               | 6.5             |
|                |                    |         |                 |                   |               | 8.6             |
| Ø100           | 1.8                | 16.1    | 513             |                   |               | 6.8             |
|                |                    |         |                 |                   |               | 8.4             |
| Ø125           | 1.4                | 16.1    | 659             |                   |               | 6.9             |
|                |                    |         |                 |                   |               | 8.1             |
| Ø160           | 1.0                | 16.1    | 923             |                   |               | 6.5             |
|                |                    |         |                 |                   |               | 7.5             |
| Ø200           | 0.7                | 16.1    | 1318            |                   |               | 5.9             |
|                |                    |         |                 |                   |               | 6.5             |

## APKT 19

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø40            | 6.0                | 17.5    | 167             | 56                | 80            | 4.5             |
|                |                    |         |                 | 76                | 100           | 11.2            |
| Ø50            | 4.0                | 17.5    | 250             | 102               | 126           | 4.9             |
|                |                    |         |                 | 136               | 160           | 9.3             |
| Ø63            | 2.9                | 17.5    | 346             | 176               | 200           | 5.3             |
|                |                    |         |                 | 226               | 250           | 8.5             |
| Ø80            | 2.1                | 17.5    | 477             | 296               | 320           | 5.5             |
|                |                    |         |                 | 376               | 400           | 7.8             |
| Ø100           | 1.6                | 17.5    | 627             |                   |               | 5.7             |
|                |                    |         |                 |                   |               | 7.5             |
| Ø125           | 1.2                | 17.5    | 736             |                   |               | 5.6             |
|                |                    |         |                 |                   |               | 7.0             |
| Ø160           | 0.9                | 17.5    | 1115            |                   |               | 5.7             |
|                |                    |         |                 |                   |               | 6.7             |
| Ø200           | 0.7                | 17.5    | 1433            |                   |               | 5.7             |
|                |                    |         |                 |                   |               | 6.5             |

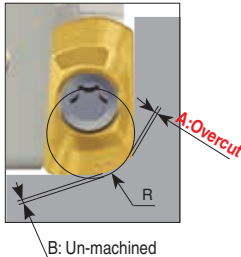


## AXMT 0602R-HF

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø8             | 0.3                | 0.5     | 96              | 14                | 16            | 0.1             |
|                |                    |         |                 | 14                | 20            | 0.1             |
| Ø10            | 0.5                | 0.5     | 57              | 18                | 22            | 0.2             |
|                |                    |         |                 | 18                | 24            | 0.3             |
| Ø11            | 1.0                | 0.5     | 29              | 18                | 26            | 0.5             |
|                |                    |         |                 | 18                | 28            | 0.5             |
| Ø12            | 2.3                | 0.5     | 12              | 26                | 30            | 0.5             |
|                |                    |         |                 | 26                | 32            | 0.5             |
| Ø13            | 4.5                | 0.5     | 6               | 26                | 34            | 0.5             |
|                |                    |         |                 | 26                | 36            | 0.5             |
| Ø14            | 3.5                | 0.5     | 8               | 34                | 40            | 0.5             |
|                |                    |         |                 | 34                | 42            | 0.5             |
| Ø15            | 3.0                | 0.5     | 10              | 44                | 50            | 0.5             |
|                |                    |         |                 | 44                | 58            | 0.5             |
| Ø16            | 2.8                | 0.5     | 10              | 58                | 64            | 0.5             |
|                |                    |         |                 | 74                | 80            | 0.5             |
| Ø17            | 2.5                | 0.5     | 11              |                   |               | 0.5             |
|                |                    |         |                 |                   |               | 0.5             |
| Ø18            | 2.3                | 0.5     | 12              |                   |               | 0.5             |
|                |                    |         |                 |                   |               | 0.5             |
| Ø19            | 2.2                | 0.5     | 13              |                   |               | 0.5             |
|                |                    |         |                 |                   |               | 0.5             |
| Ø20            | 1.9                | 0.5     | 15              |                   |               | 0.5             |
|                |                    |         |                 |                   |               | 0.5             |
| Ø21            | 1.7                | 0.5     | 17              |                   |               | 0.5             |
|                |                    |         |                 |                   |               | 0.5             |
| Ø25            | 1.4                | 0.5     | 20              |                   |               | 0.5             |
|                |                    |         |                 |                   |               | 0.5             |
| Ø32            | 1.0                | 0.5     | 29              |                   |               | 0.5             |
|                |                    |         |                 |                   |               | 0.5             |
| Ø40            | 0.7                | 0.5     | 41              |                   |               | 0.5             |
|                |                    |         |                 |                   |               | 0.5             |

## Programming technical data

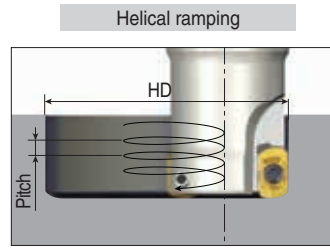
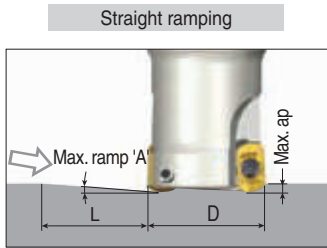


|               | R<br>Program | A<br>Over cut | B<br>Un-machined |
|---------------|--------------|---------------|------------------|
| AXMT 0602R-HF | 0.9          | 0             | 0.22             |
|               | 1.0          | 0.01          | 0.19             |
|               | 1.5          | 0.16          | 0.05             |
|               | 2.0          | 0.35          | 0                |
| APKT 09T3R-HF | 1.5          | 0             | 0.47             |
|               | 1.7          | 0             | 0.29             |
|               | 2.0          | 0.04          | 0.3              |
|               | 2.5          | 0.18          | 0.15             |
| APKT 1204R-HF | 3.0          | 0.36          | 0.04             |
|               | 2            | 0             | 0.57             |
|               | 2.5          | 0.07          | 0.42             |
|               | 3            | 0.21          | 0.28             |
|               | 3.5          | 0.39          | 0.15             |
|               | 4            | 0.58          | 0.06             |

Yellow background: Recommended program 'R'



# Ramping Data



## APKT 09T3R-HF

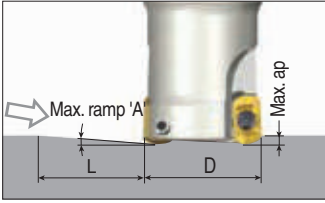
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø16            | 3.8                | 1.0     | 15              | 22                | 32            | 1.0             |
|                |                    |         |                 | 24                | 34            | 1.0             |
| Ø17            | 3.5                | 1.0     | 16              | 26                | 36            | 1.0             |
|                |                    |         |                 | 30                | 40            | 1.0             |
| Ø18            | 3.4                | 1.0     | 17              | 32                | 42            | 1.0             |
|                |                    |         |                 | 34                | 44            | 1.0             |
| Ø20            | 3.0                | 1.0     | 19              | 40                | 50            | 1.0             |
|                |                    |         |                 | 42                | 52            | 1.0             |
| Ø21            | 2.3                | 1.0     | 25              | 50                | 60            | 1.0             |
|                |                    |         |                 | 54                | 64            | 1.0             |
| Ø22            | 2.0                | 1.0     | 29              | 56                | 66            | 1.0             |
|                |                    |         |                 | 70                | 80            | 1.0             |
| Ø25            | 2.1                | 1.0     | 27              | 90                | 100           | 1.0             |
|                |                    |         |                 | 116               | 126           | 1.0             |
| Ø26            | 2.0                | 1.0     | 29              | 150               | 160           | 1.0             |
|                |                    |         |                 |                   |               |                 |
| Ø30            | 1.8                | 1.0     | 32              |                   |               |                 |
|                |                    |         |                 |                   |               |                 |
| Ø32            | 1.6                | 1.0     | 36              |                   |               |                 |
|                |                    |         |                 |                   |               |                 |
| Ø33            | 1.5                | 1.0     | 38              |                   |               |                 |
|                |                    |         |                 |                   |               |                 |
| Ø40            | 1.2                | 1.0     | 48              |                   |               |                 |
|                |                    |         |                 |                   |               |                 |
| Ø50            | 0.9                | 1.0     | 64              |                   |               |                 |
|                |                    |         |                 |                   |               |                 |
| Ø63            | 0.5                | 1.0     | 115             |                   |               |                 |
|                |                    |         |                 |                   |               |                 |
| Ø80            | 0.4                | 1.0     | 143             |                   |               |                 |
|                |                    |         |                 |                   |               |                 |

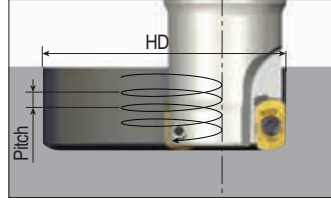
# Ramping Data



Straight ramping



Helical ramping

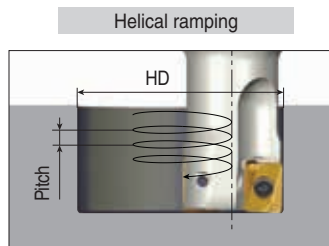
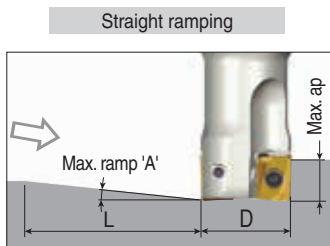


## APKT 1204R-HF

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø16            | 3.8                | 1.2     | 18              | 21                | 32            | 0.8             |
|                |                    |         |                 |                   |               | 1.2             |
| Ø18            | 4.0                | 1.2     | 17              | 24                | 36            | 1.1             |
|                |                    |         |                 |                   |               | 1.2             |
| Ø20            | 4.0                | 1.2     | 17              | 27                | 40            | 1.2             |
|                |                    |         |                 |                   |               | 1.2             |
| Ø21            | 3.5                | 1.2     | 20              | 29                | 42            | 1.2             |
|                |                    |         |                 |                   |               | 1.2             |
| Ø25            | 2.5                | 1.2     | 27              | 37                | 50            | 1.2             |
|                |                    |         |                 |                   |               | 1.2             |
| Ø26            | 2.3                | 1.2     | 30              | 39                | 52            | 1.2             |
|                |                    |         |                 |                   |               | 1.2             |
| Ø32            | 1.7                | 1.2     | 40              | 51                | 64            | 1.2             |
|                |                    |         |                 |                   |               | 1.2             |
| Ø33            | 1.7                | 1.2     | 40              | 53                | 66            | 1.2             |
|                |                    |         |                 |                   |               | 1.2             |
| Ø40            | 1.5                | 1.2     | 46              | 67                | 80            | 1.2             |
|                |                    |         |                 |                   |               | 1.2             |
| Ø50            | 1.1                | 1.2     | 63              | 86                | 100           | 1.2             |
|                |                    |         |                 |                   |               | 1.2             |
| Ø63            | 1.0                | 1.2     | 69              | 112               | 126           | 1.2             |
|                |                    |         |                 |                   |               | 1.2             |
| Ø80            | 0.8                | 1.2     | 86              | 146               | 160           | 1.2             |
|                |                    |         |                 |                   |               | 1.2             |

# Ramping Data



## ANH(M)X 11

(unit: mm)

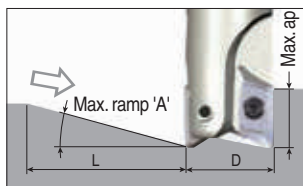
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø25            | 1.5                | 11.0    | 420             | 30                |               | 0.3             |
|                |                    |         |                 |                   | 50            | 1.7             |
| Ø26            | 1.4                | 11.0    | 450             | 32                |               | 0.4             |
|                |                    |         |                 |                   | 52            | 1.7             |
| Ø32            | 1.1                | 11.0    | 573             | 44                |               | 0.6             |
|                |                    |         |                 |                   | 64            | 1.6             |
| Ø33            | 1.0                | 11.0    | 631             | 46                |               | 0.6             |
|                |                    |         |                 |                   | 66            | 1.5             |
| Ø40            | 0.8                | 11.0    | 788             | 60                |               | 0.7             |
|                |                    |         |                 |                   | 80            | 1.5             |
| Ø50            | 0.6                | 11.0    | 1051            | 80                |               | 0.8             |
|                |                    |         |                 |                   | 100           | 1.4             |
| Ø63            | 0.4                | 11.0    | 1576            | 106               |               | 0.8             |
|                |                    |         |                 |                   | 126           | 1.2             |
| Ø80            | 0.3                | 11.0    | 2102            | 140               |               | 0.8             |
|                |                    |         |                 |                   | 160           | 1.1             |
| Ø100           | 0.2                | 11.0    | 3153            | 180               |               | 0.7             |
|                |                    |         |                 |                   | 200           | 0.9             |
| Ø125           | 0.2                | 11.0    | 3153            | 230               |               | 1.0             |
|                |                    |         |                 |                   | 250           | 1.2             |

## ANH(M)X 16

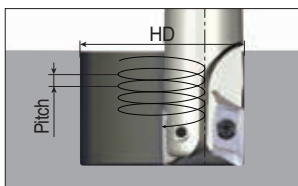
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø32            | 1.2                | 15.0    | 716             | 44                |               | 0.7             |
|                |                    |         |                 |                   | 64            | 1.8             |
| Ø33            | 1.0                | 15.0    | 560             | 46                |               | 0.6             |
|                |                    |         |                 |                   | 66            | 1.5             |
| Ø40            | 0.9                | 15.0    | 955             | 60                |               | 0.8             |
|                |                    |         |                 |                   | 80            | 1.7             |
| Ø50            | 0.8                | 15.0    | 1075            | 80                |               | 1.1             |
|                |                    |         |                 |                   | 100           | 1.9             |
| Ø63            | 0.6                | 15.0    | 1433            | 106               |               | 1.2             |
|                |                    |         |                 |                   | 126           | 1.8             |
| Ø80            | 0.45               | 15.0    | 1911            | 140               |               | 1.3             |
|                |                    |         |                 |                   | 160           | 1.7             |
| Ø100           | 0.35               | 15.0    | 2457            | 180               |               | 1.3             |
|                |                    |         |                 |                   | 200           | 1.6             |
| Ø125           | 0.25               | 15.0    | 3439            | 230               |               | 1.2             |
|                |                    |         |                 |                   | 250           | 1.5             |
| Ø160           | 0.15               | 15.0    | 5732            | 300               |               | 1.0             |
|                |                    |         |                 |                   | 320           | 1.1             |
| Ø200           | 0.1                | 15.0    | 8599            | 380               |               | 0.8             |
|                |                    |         |                 |                   | 400           | 0.9             |

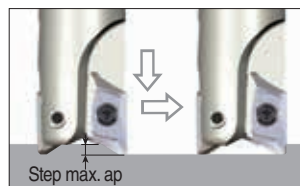
Straight ramping



Helical ramping



Step down



## XEVT 16: 0.4R-1.6R

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø25            | 20.5               | 16      | 43              | 29.1              |               | 4.1             | 4         |
|                |                    |         |                 |                   | 50            | 13.6            | 4         |
| Ø32            | 17.5               | 16      | 51              | 43.1              |               | 9.3             | 4         |
|                |                    |         |                 |                   | 64            | 13.6            | 4         |
| Ø40            | 11.0               | 16      | 82              | 59.1              |               | 9.9             | 4         |
|                |                    |         |                 |                   | 80            | 13.6            | 4         |
| Ø50            | 8.5                | 16      | 107             | 79.1              |               | 11.6            | 4         |
|                |                    |         |                 |                   | 100           | 13.6            | 4         |
| Ø63            | 5.5                | 16      | 166             | 105.1             |               | 10.8            | 4         |
|                |                    |         |                 |                   | 126           | 13.6            | 4         |
| Ø80            | 4.3                | 16      | 213             | 139.1             |               | 11.9            | 4         |
|                |                    |         |                 |                   | 160           | 13.6            | 4         |
| Ø100           | 3.3                | 16      | 278             | 179.1             |               | 12.2            | 4         |
|                |                    |         |                 |                   | 200           | 13.6            | 4         |
| Ø125           | 2.5                | 16      | 367             | 229.1             |               | 12.1            | 4         |
|                |                    |         |                 |                   | 250           | 13.6            | 4         |
| Ø160           | 1.9                | 16      | 483             | 299.1             |               | 12.3            | 4         |
|                |                    |         |                 |                   | 320           | 13.6            | 4         |
| Ø200           | 1.5                | 16      | 611             | 379.1             |               | 12.5            | 4         |
|                |                    |         |                 |                   | 400           | 13.6            | 4         |

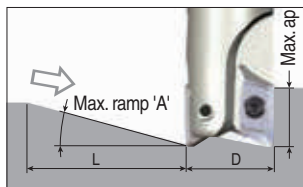
## XEVT 16: 2.0R-2.4R

(unit: mm)

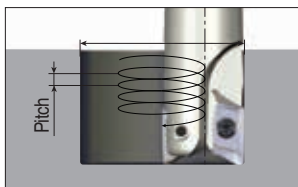
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø25            | 19.5               | 15.5    | 44              | 29.1              |               | 3.9             | 3.5       |
|                |                    |         |                 |                   | 50            | 13.2            | 3.5       |
| Ø32            | 16.5               | 15.5    | 52              | 43.1              |               | 8.8             | 3.5       |
|                |                    |         |                 |                   | 64            | 13.2            | 3.5       |
| Ø40            | 10.5               | 15.5    | 84              | 59.1              |               | 9.4             | 3.5       |
|                |                    |         |                 |                   | 80            | 13.2            | 3.5       |
| Ø50            | 8.0                | 15.5    | 110             | 79.1              |               | 10.9            | 3.5       |
|                |                    |         |                 |                   | 100           | 13.2            | 3.5       |
| Ø63            | 5.0                | 15.5    | 177             | 105.1             |               | 9.8             | 3.5       |
|                |                    |         |                 |                   | 126           | 13.2            | 3.5       |
| Ø80            | 3.9                | 15.5    | 227             | 139.1             |               | 10.7            | 3.5       |
|                |                    |         |                 |                   | 160           | 13.2            | 3.5       |
| Ø100           | 3.0                | 15.5    | 296             | 179.1             |               | 11.1            | 3.5       |
|                |                    |         |                 |                   | 200           | 13.2            | 3.5       |
| Ø125           | 2.3                | 15.5    | 386             | 229.1             |               | 11.2            | 3.5       |
|                |                    |         |                 |                   | 250           | 13.2            | 3.5       |
| Ø160           | 1.7                | 15.5    | 523             | 299.1             |               | 11.0            | 3.5       |
|                |                    |         |                 |                   | 320           | 12.7            | 3.5       |
| Ø200           | 1.3                | 15.5    | 683             | 379.1             |               | 10.8            | 3.5       |
|                |                    |         |                 |                   | 400           | 12.1            | 3.5       |

# Ramping Data

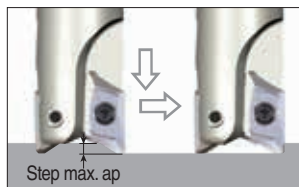
Straight ramping



Helical ramping



Step down



## XEVT 16: 3.0R-3.2R

(unit: mm)

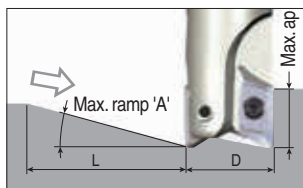
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø25            | 18.5               | 14.5    | 43              | 29.1              | 50            | 3.7             | 2.8       |
|                |                    |         |                 | 43.1              | 64            | 12.3            | 2.8       |
| Ø32            | 16.0               | 14.5    | 51              | 59.1              | 80            | 8.5             | 2.8       |
|                |                    |         |                 | 79.1              | 100           | 12.3            | 2.8       |
| Ø40            | 9.5                | 14.5    | 87              | 105.1             | 126           | 9.5             | 2.8       |
|                |                    |         |                 | 139.1             | 160           | 12.3            | 2.8       |
| Ø50            | 7.0                | 14.5    | 118             | 179.1             | 200           | 10.2            | 2.8       |
|                |                    |         |                 | 229.1             | 250           | 12.3            | 2.8       |
| Ø63            | 5.0                | 14.5    | 166             | 299.1             | 320           | 10.2            | 2.8       |
|                |                    |         |                 | 379.1             | 400           | 12.2            | 2.8       |
| Ø80            | 3.7                | 14.5    | 224             |                   |               | 9.7             | 2.8       |
|                |                    |         |                 |                   |               | 11.2            | 2.8       |
| Ø100           | 2.8                | 14.5    | 297             |                   |               | 10.0            | 2.8       |
|                |                    |         |                 |                   |               | 11.2            | 2.8       |
| Ø125           | 2.1                | 14.5    | 396             |                   |               |                 | 2.8       |
|                |                    |         |                 |                   |               |                 | 2.8       |
| Ø160           | 1.5                | 14.5    | 554             |                   |               |                 | 2.8       |
|                |                    |         |                 |                   |               |                 | 2.8       |
| Ø200           | 1.2                | 14.5    | 693             |                   |               |                 | 2.8       |
|                |                    |         |                 |                   |               |                 | 2.8       |

## XEVT 16: 4.0R-5.0R

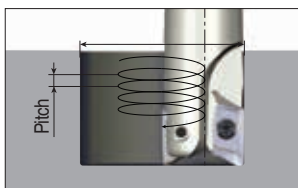
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø25            | 17.5               | 14.5    | 46              | 29.1              | 50            | 3.4             | 2.5       |
|                |                    |         |                 | 43.1              | 64            | 12.3            | 2.5       |
| Ø32            | 15.0               | 14.5    | 54              | 59.1              | 80            | 7.9             | 2.5       |
|                |                    |         |                 | 79.1              | 100           | 12.3            | 2.5       |
| Ø40            | 8.5                | 14.5    | 97              | 105.1             | 126           | 7.6             | 2.5       |
|                |                    |         |                 | 139.1             | 160           | 12.3            | 2.5       |
| Ø50            | 6.5                | 14.5    | 127             | 179.1             | 200           | 8.8             | 2.5       |
|                |                    |         |                 | 229.1             | 250           | 12.3            | 2.5       |
| Ø63            | 4.5                | 14.5    | 184             | 299.1             | 320           | 8.8             | 2.5       |
|                |                    |         |                 | 379.1             | 400           | 10.2            | 2.5       |
| Ø80            | 3.3                | 14.5    | 252             |                   |               | 9.1             | 2.5       |
|                |                    |         |                 |                   |               | 12.3            | 2.5       |
| Ø100           | 2.4                | 14.5    | 346             |                   |               | 8.8             | 2.5       |
|                |                    |         |                 |                   |               | 11.2            | 2.5       |
| Ø125           | 1.8                | 14.5    | 462             |                   |               | 8.7             | 2.5       |
|                |                    |         |                 |                   |               | 10.5            | 2.5       |
| Ø160           | 1.4                | 14.5    | 594             |                   |               | 9.1             | 2.5       |
|                |                    |         |                 |                   |               | 10.4            | 2.5       |
| Ø200           | 1.1                | 14.5    | 756             |                   |               | 9.2             | 2.5       |
|                |                    |         |                 |                   |               | 10.2            | 2.5       |

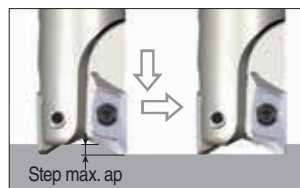
Straight ramping



Helical ramping



Step down



## XEVT 22: 0.5R-0.8R

(unit: mm)

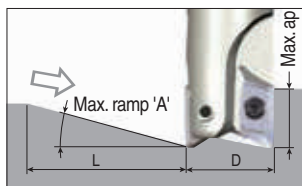
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø32            | 21.0               | 21.2    | 55              | 38.5              | 64            | 6.7             | 5.5       |
|                |                    |         |                 |                   |               | 18.0            | 5.5       |
| Ø40            | 14.0               | 21.0    | 84              | 54.5              | 80            | 9.6             | 5.5       |
|                |                    |         |                 |                   |               | 17.9            | 5.5       |
| Ø50            | 9.5                | 21.0    | 126             | 74.5              | 100           | 10.9            | 5.5       |
|                |                    |         |                 |                   |               | 17.9            | 5.5       |
| Ø63            | 7.0                | 21.0    | 171             | 100.5             | 126           | 12.3            | 5.5       |
|                |                    |         |                 |                   |               | 17.9            | 5.5       |
| Ø80            | 5.0                | 20.9    | 239             | 134.5             | 160           | 12.7            | 5.5       |
|                |                    |         |                 |                   |               | 17.8            | 5.5       |
| Ø100           | 3.7                | 20.9    | 323             | 174.5             | 200           | 12.9            | 5.5       |
|                |                    |         |                 |                   |               | 17.3            | 5.5       |
| Ø125           | 2.6                | 20.9    | 460             | 224.5             | 250           | 12.1            | 5.5       |
|                |                    |         |                 |                   |               | 15.1            | 5.5       |
| Ø200           | 1.6                | 20.9    | 749             | 374.5             |               | 13.0            | 5.5       |
|                |                    |         |                 |                   | 400           | 14.9            | 5.5       |

## XEVT 22: 1.6R-2.0R

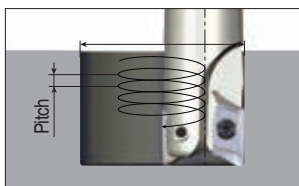
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø32            | 20.5               | 21.0    | 56              | 38.5              | 64            | 6.5             | 5.0       |
|                |                    |         |                 |                   |               | 17.9            | 5.0       |
| Ø40            | 13.5               | 20.9    | 87              | 54.5              | 80            | 9.3             | 5.0       |
|                |                    |         |                 |                   |               | 17.8            | 5.0       |
| Ø50            | 9.5                | 20.9    | 125             | 74.5              | 100           | 10.9            | 5.0       |
|                |                    |         |                 |                   |               | 17.8            | 5.0       |
| Ø63            | 6.7                | 20.9    | 178             | 100.5             | 126           | 11.8            | 5.0       |
|                |                    |         |                 |                   |               | 17.8            | 5.0       |
| Ø80            | 4.7                | 20.8    | 253             | 134.5             | 160           | 12.0            | 5.0       |
|                |                    |         |                 |                   |               | 17.5            | 5.0       |
| Ø100           | 3.5                | 20.8    | 340             | 174.5             | 200           | 12.2            | 5.0       |
|                |                    |         |                 |                   |               | 16.3            | 5.0       |
| Ø125           | 2.5                | 20.8    | 477             | 224.5             | 250           | 11.6            | 5.0       |
|                |                    |         |                 |                   |               | 14.6            | 5.0       |
| Ø200           | 1.5                | 20.8    | 795             | 374.5             |               | 12.2            | 5.0       |
|                |                    |         |                 |                   | 400           | 14.0            | 5.0       |

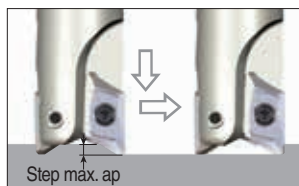
Straight ramping



Helical ramping



Step down



## XEVT 22: 3.0R-4.0R

(unit: mm)

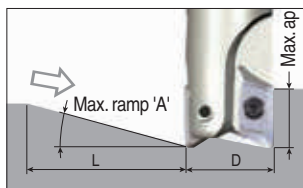
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø32            | 20.0               | 20.0    | 55              | 38.5              | 64            | 6.3             | 4.0       |
|                |                    |         |                 |                   |               | 17.0            | 4.0       |
| Ø40            | 12.3               | 19.9    | 91              | 54.5              | 80            | 8.4             | 4.0       |
|                |                    |         |                 |                   |               | 16.9            | 4.0       |
| Ø50            | 8.5                | 19.9    | 133             | 74.5              | 100           | 9.8             | 4.0       |
|                |                    |         |                 |                   |               | 16.9            | 4.0       |
| Ø63            | 5.5                | 19.9    | 207             | 100.5             | 126           | 9.6             | 4.0       |
|                |                    |         |                 |                   |               | 16.2            | 4.0       |
| Ø80            | 4.0                | 19.8    | 283             | 134.5             | 160           | 10.2            | 4.0       |
|                |                    |         |                 |                   |               | 14.9            | 4.0       |
| Ø100           | 3.0                | 19.8    | 378             | 174.5             | 200           | 10.4            | 4.0       |
|                |                    |         |                 |                   |               | 14.0            | 4.0       |
| Ø125           | 2.0                | 19.8    | 567             | 224.5             | 250           | 9.3             | 4.0       |
|                |                    |         |                 |                   |               | 11.6            | 4.0       |
| Ø200           | 1.0                | 19.8    | 1135            | 374.5             | 400           | 8.1             | 4.0       |
|                |                    |         |                 |                   |               | 9.3             | 4.0       |

## XEVT 22: 5.0R

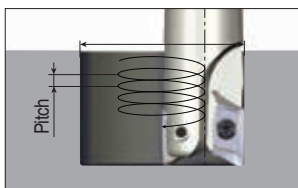
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø32            | 19.0               | 19.5    | 57              | 38.5              | 64            | 6.0             | 3.5       |
|                |                    |         |                 |                   |               | 16.6            | 3.5       |
| Ø40            | 11.4               | 19.4    | 96              | 54.5              | 80            | 7.8             | 3.5       |
|                |                    |         |                 |                   |               | 16.5            | 3.5       |
| Ø50            | 7.5                | 19.4    | 147             | 74.5              | 100           | 8.6             | 3.5       |
|                |                    |         |                 |                   |               | 16.5            | 3.5       |
| Ø63            | 5.0                | 19.4    | 222             | 100.5             | 126           | 8.8             | 3.5       |
|                |                    |         |                 |                   |               | 14.7            | 3.5       |
| Ø80            | 3.5                | 19.3    | 316             | 134.5             | 160           | 8.9             | 3.5       |
|                |                    |         |                 |                   |               | 13.1            | 3.5       |
| Ø100           | 2.5                | 19.3    | 442             | 174.5             | 200           | 8.7             | 3.5       |
|                |                    |         |                 |                   |               | 11.6            | 3.5       |
| Ø125           | 1.7                | 19.3    | 651             | 224.5             | 250           | 7.9             | 3.5       |
|                |                    |         |                 |                   |               | 9.9             | 3.5       |
| Ø200           | 0.8                | 19.3    | 1383            | 374.5             | 400           | 6.5             | 3.5       |
|                |                    |         |                 |                   |               | 7.4             | 3.5       |

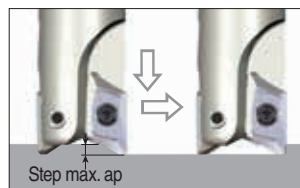
Straight ramping



Helical ramping



Step down

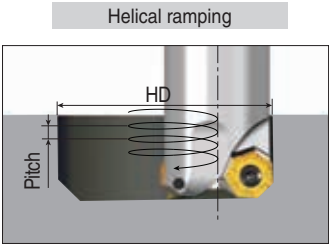
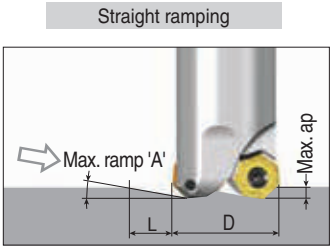


## XEVT 22: 6.4R

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 | Step down |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|-----------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. | Max. ap   |
| Ø32            | 18.0               | 18.8    | 58              | 38.5              | 64            | 5.6             | 3.0       |
|                |                    |         |                 | 54.5              | 80            | 6.8             | 3.0       |
| Ø40            | 10.0               | 18.7    | 106             | 74.5              | 100           | 15.9            | 3.0       |
|                |                    |         |                 | 100.5             | 126           | 7.4             | 3.0       |
| Ø50            | 6.5                | 18.7    | 164             | 134.5             | 160           | 15.2            | 3.0       |
|                |                    |         |                 | 174.5             | 200           | 7.9             | 3.0       |
| Ø63            | 4.5                | 18.6    | 238             | 224.5             | 250           | 11.2            | 3.0       |
|                |                    |         |                 | 374.5             | 400           | 6.9             | 3.0       |
| Ø80            | 3.0                | 18.6    | 353             | 574.5             | 600           | 9.3             | 3.0       |
|                |                    |         |                 | 774.5             | 800           | 7.0             | 3.0       |
| Ø100           | 2.0                | 18.6    | 533             | 1174.5            | 1200          | 8.7             | 3.0       |
|                |                    |         |                 | 1574.5            | 1600          | 5.7             | 3.0       |
| Ø125           | 1.5                | 18.6    | 711             | 2174.5            | 2200          | 6.5             | 3.0       |
|                |                    |         |                 | 2574.5            | 2600          | 5.7             | 3.0       |
| Ø200           | 0.7                | 18.6    | 1523            | 4174.5            | 4200          | 5.7             | 3.0       |
|                |                    |         |                 | 4574.5            | 4600          | 6.5             | 3.0       |



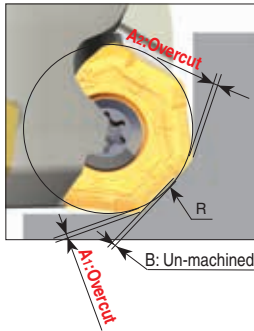


7EMT 06

(unit: mm)

| Cutter dia. (D) | Straight ramp down |         |                 | Helical ramp down |                |                 |
|-----------------|--------------------|---------|-----------------|-------------------|----------------|-----------------|
|                 | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia. (HD)    | Max. dia. (HD) | Max. pitch/rev. |
| Ø32             | 29                 | 3.2     | 6               | 45.5              | 64             | 3.2             |
|                 |                    |         |                 | 61.5              | 80             | 3.2             |
| Ø40             | 15.5               | 3.2     | 12              | 81.5              | 100            | 3.2             |
|                 |                    |         |                 | 107.5             | 126            | 3.2             |
| Ø50             | 9.5                | 3.2     | 19              | 141.5             | 160            | 3.2             |
|                 |                    |         |                 | 181.5             | 200            | 3.2             |
| Ø63             | 5.5                | 3.2     | 33              | 231.5             | 250            | 3.2             |
|                 |                    |         |                 |                   |                |                 |
| Ø80             | 4.0                | 3.2     | 46              |                   |                |                 |
|                 |                    |         |                 |                   |                |                 |
| Ø100            | 3.0                | 3.2     | 61              |                   |                |                 |
|                 |                    |         |                 |                   |                |                 |
| Ø125            | 2.0                | 2.3     | 66              |                   |                |                 |
|                 |                    |         |                 |                   |                |                 |

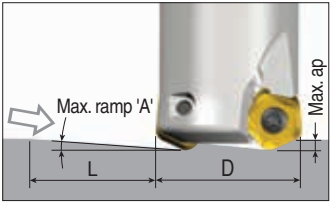
Programming technical data



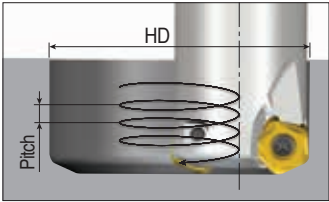
|         | R<br>Program | A<br>Over cut |      | B<br>Un-machined |
|---------|--------------|---------------|------|------------------|
|         |              | A1            | A2   | B                |
| 7EMT 06 | 3            | 0             | 0    | 1.77             |
|         | 4.5          | 0             | 0    | 1.51             |
|         | 5            | 0.03          | 0.02 | 0.94             |
|         | 6            | 0.21          | 0.19 | 0.53             |

**Yellow background** : Recommended program 'R'

Straight ramping



Helical ramping

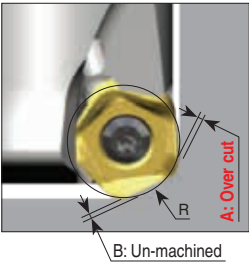


## PTKU 05

(unit: mm)

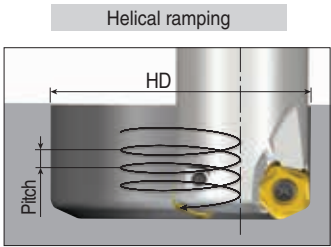
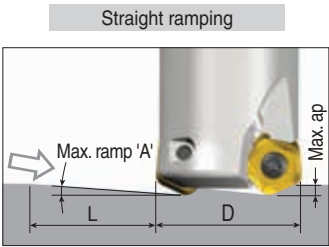
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø20            | 1.3                | 1.5     | 66              | 33                |               | 0.7             |
|                |                    |         |                 |                   | 40            | 0.9             |
| Ø25            | 1.1                | 1.5     | 78              | 43                |               | 0.8             |
|                |                    |         |                 |                   | 50            | 1.0             |
| Ø26            | 1.0                | 1.5     | 86              | 45                |               | 0.8             |
|                |                    |         |                 |                   | 52            | 0.9             |
| Ø32            | 1.0                | 1.5     | 86              | 57                |               | 1.0             |
|                |                    |         |                 |                   | 64            | 1.1             |
| Ø33            | 1.0                | 1.5     | 86              | 59                |               | 1.0             |
|                |                    |         |                 |                   | 66            | 1.2             |
| Ø40            | 0.8                | 1.5     | 101             | 73                |               | 1.1             |
|                |                    |         |                 |                   | 80            | 1.2             |
| Ø50            | 0.7                | 1.5     | 123             | 93                |               | 1.1             |
|                |                    |         |                 |                   | 100           | 1.2             |
| Ø52            | 0.7                | 1.5     | 123             | 97                |               | 1.2             |
|                |                    |         |                 |                   | 104           | 1.3             |
| Ø63            | 0.6                | 1.5     | 132             | 119               |               | 1.3             |
|                |                    |         |                 |                   | 126           | 1.4             |
| Ø66            | 0.6                | 1.5     | 143             | 125               |               | 1.3             |
|                |                    |         |                 |                   | 132           | 1.4             |

## Programming technical data



|         | R<br>Program | A<br>Over cut | B<br>Un-machined |
|---------|--------------|---------------|------------------|
| PTKU 05 | 2.5          | 0.00          | 0.83             |
|         | 2.7          | 0.00          | 0.76             |
|         | 3.0          | 0.04          | 0.66             |

    : Recommended program 'R'

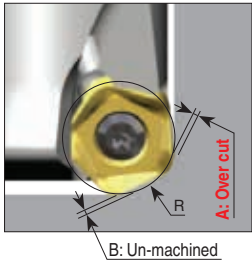


## PTKU 10

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø40            | 1.5                | 3.0     | 111             | 63                | 80            | 1.7             |
| Ø50            | 1.9                | 3.0     | 88              | 83                | 100           | 2.2             |
| Ø63            | 1.7                | 3.0     | 101             | 109               | 126           | 2.8             |
| Ø66            | 2.2                | 3.0     | 78              | 115               | 132           | 3.0             |
| Ø80            | 1.5                | 3.0     | 115             | 143               | 160           | 3.0             |
| Ø100           | 1.1                | 3.0     | 150             | 183               | 200           | 3.0             |
| Ø125           | 0.8                | 3.0     | 202             | 233               | 250           | 3.0             |
| Ø160           | 0.6                | 3.0     | 265             | 303               | 320           | 3.0             |
| Ø200           | 0.5                | 3.0     | 344             | 383               | 400           | 3.0             |

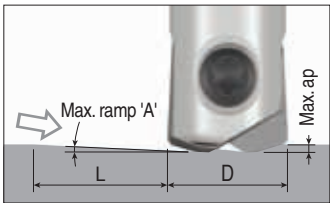
## Programming technical data



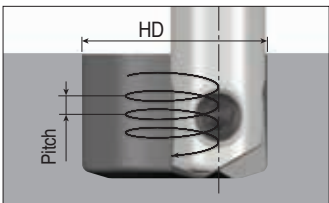
|         | R<br>Program | A<br>Over cut | B<br>Un-machined |
|---------|--------------|---------------|------------------|
| PTKU 10 | 5.5          | 0.00          | 1.45             |
|         | 6.0          | 0.09          | 1.28             |
|         | 6.5          | 0.21          | 1.11             |

     : Recommended program 'R'

Straight ramping



Helical ramping

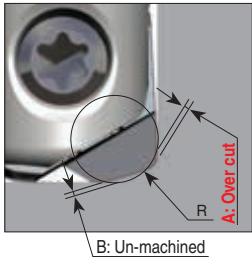


## HFN

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø6             | 2.0                | 0.3     | 9               | 9.6               |               | 0.3             |
|                |                    |         |                 |                   | 11            | 0.3             |
| Ø8             | 2.5                | 0.5     | 11              | 12                |               | 0.5             |
|                |                    |         |                 |                   | 15            | 0.5             |

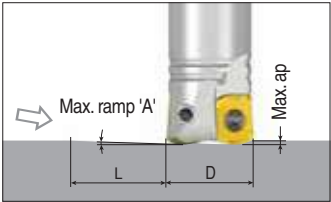
## Programming technical data



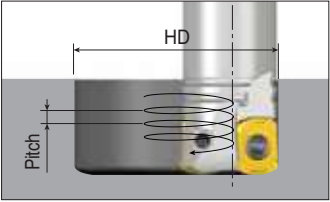
|         | R<br>Program | A<br>Over cut | B<br>Un-machined |
|---------|--------------|---------------|------------------|
| HFN 060 | 0.8          | 0.00          | 0.21             |
|         | 1.0          | 0.03          | 0.16             |
| HFN 080 | 0.8          | 0.00          | 0.38             |
|         | 1.0          | 0.00          | 0.32             |
|         | 1.2          | 0.02          | 0.27             |

  : Recommended program 'R'

Straight ramping



Helical ramping

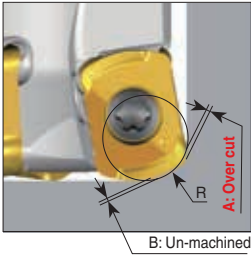


BLMV 06

(unit: mm)

| Cutter dia. (D) | Straight ramp down |         |                 | Helical ramp down |                |                 |
|-----------------|--------------------|---------|-----------------|-------------------|----------------|-----------------|
|                 | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia. (HD)    | Max. dia. (HD) | Max. pitch/rev. |
| Ø16             | 5.1                | 0.7     | 8               | 27                | 32             | 0.7             |
| Ø17             | 4.5                | 0.7     | 9               | 29                | 34             | 0.7             |
|                 |                    |         |                 |                   |                | 0.7             |
| Ø18             | 4.4                | 0.7     | 10              | 31                | 36             | 0.7             |
| Ø20             | 2.5                | 1.0     | 23              | 34                | 40             | 1.0             |
|                 |                    |         |                 |                   |                | 1.0             |
| Ø21             | 2.3                | 1.0     | 25              | 35                | 42             | 1.0             |
| Ø22             | 2.7                | 1.0     | 22              | 39                | 44             | 1.0             |
|                 |                    |         |                 |                   |                | 1.0             |
| Ø25             | 2.5                | 1.0     | 23              | 43                | 50             | 1.0             |
|                 |                    |         |                 |                   |                | 1.0             |
| Ø26             | 2.2                | 1.0     | 26              | 45                | 52             | 1.0             |
| Ø30             | 1.6                | 1.0     | 35              | 55                | 60             | 1.0             |
|                 |                    |         |                 |                   |                | 1.0             |
| Ø32             | 1.4                | 1.0     | 40              | 57                | 64             | 1.0             |
| Ø33             | 1.3                | 1.0     | 43              | 59                | 66             | 1.0             |
|                 |                    |         |                 |                   |                | 1.0             |
| Ø35             | 1.2                | 1.0     | 46              | 63                | 70             | 1.0             |
|                 |                    |         |                 |                   |                | 1.0             |
| Ø40             | 1.0                | 1.0     | 55              | 73                | 80             | 1.0             |
| Ø42             | 1.0                | 1.0     | 58              | 79                | 84             | 1.0             |
|                 |                    |         |                 |                   |                | 1.0             |
| Ø50             | 0.8                | 1.0     | 72              | 93                | 100            | 1.0             |
|                 |                    |         |                 |                   |                | 1.0             |
| Ø52             | 0.8                | 1.0     | 77              | 97                | 104            | 1.0             |
| Ø63             | 0.6                | 1.0     | 96              | 119               | 126            | 1.0             |
|                 |                    |         |                 |                   |                | 1.0             |
| Ø66             | 0.6                | 1.0     | 96              | 127               | 132            | 1.0             |

Programming technical data



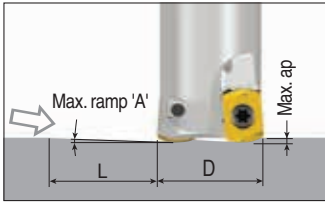
|                       | R<br>Program | A<br>Over cut | B<br>Un-machined |
|-----------------------|--------------|---------------|------------------|
| BLMV 06<br>(Ø16, Ø17) | 1.5          | 0             | 0.36             |
|                       | 2.0          | 0.09          | 0.22             |
|                       | 2.5          | 0.27          | 0.10             |
| BLMV 06<br>(Ø20~)     | 1.5          | 0             | 0.58             |
|                       | 2.0          | 0             | 0.41             |
|                       | 2.5          | 0.12          | 0.26             |
|                       | 3.0          | 0.29          | 0.12             |

Recommended program 'R'

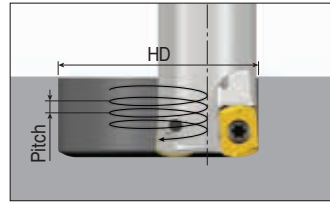
# Ramping Data



Straight ramping



Helical ramping

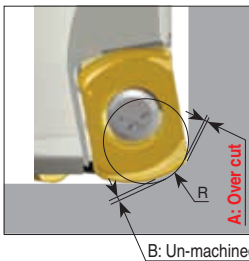


## BLMP 04

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø8             | 0.4                | 0.5     | 72              | 12.6              | 16            | 0.1             |
| Ø10            | 0.6                | 0.5     | 44              | 16.6              | 20            | 0.2             |
| Ø11            | 0.7                | 0.5     | 38              | 18.6              | 22            | 0.2             |
| Ø12            | 1.0                | 0.5     | 29              | 20.6              | 24            | 0.3             |
| Ø13            | 1.1                | 0.5     | 25              | 22.6              | 26            | 0.4             |
| Ø16            | 1.0                | 0.5     | 29              | 28.6              | 32            | 0.5             |
| Ø17            | 1.1                | 0.5     | 26              | 30.6              | 34            | 0.5             |
| Ø20            | 1.0                | 0.5     | 27              | 36.6              | 40            | 0.5             |
| Ø21            | 0.7                | 0.5     | 38              | 38.6              | 42            | 0.5             |
| Ø25            | 0.7                | 0.5     | 38              | 46.6              | 50            | 0.5             |
| Ø32            | 0.6                | 0.5     | 48              | 60.6              | 64            | 0.5             |

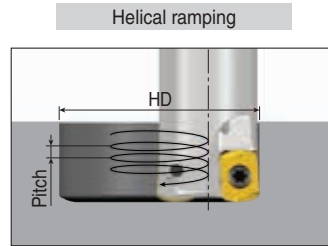
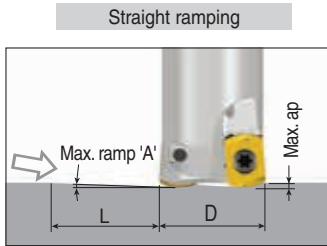
## Programming technical data



|         | R<br>Program | A<br>Over cut | B<br>Un-machined |
|---------|--------------|---------------|------------------|
| BLMP 04 | 0.8          | 0.00          | 0.28             |
|         | 0.9          | 0.00          | 0.25             |
|         | 1.0          | 0.08          | 0.22             |

Yellow background: Recommended program 'R'

# Ramping Data

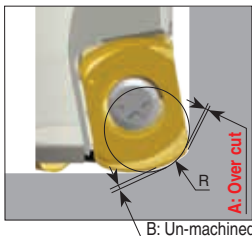


## BLMP 06

(unit: mm)

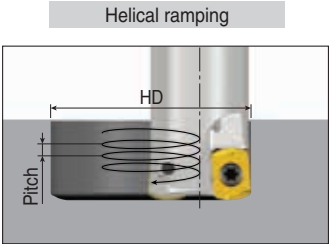
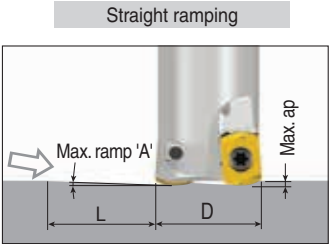
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø16            | 2.0                | 0.7     | 13              | 23                | 32            | 0.7             |
| Ø17            | 2.0                | 0.7     | 15              | 25                | 34            | 0.7             |
| Ø18            | 2.3                | 0.7     | 16              | 27                | 36            | 0.7             |
| Ø20            | 1.5                | 1.0     | 38              | 31                | 40            | 0.8             |
| Ø21            | 1.5                | 1.0     | 38              | 33                | 42            | 1.0             |
| Ø22            | 1.5                | 1.0     | 38              | 35                | 44            | 1.0             |
| Ø25            | 1.3                | 1.0     | 41              | 41                | 50            | 1.0             |
| Ø26            | 1.2                | 1.0     | 44              | 43                | 52            | 1.0             |
| Ø30            | 1.0                | 1.0     | 52              | 51                | 60            | 1.0             |
| Ø32            | 0.9                | 1.0     | 57              | 55                | 64            | 1.0             |
| Ø33            | 0.9                | 1.0     | 57              | 57                | 66            | 1.0             |
| Ø35            | 0.8                | 1.0     | 57              | 61                | 70            | 1.0             |
| Ø40            | 0.7                | 1.0     | 64              | 71                | 80            | 1.0             |
| Ø42            | 0.7                | 1.0     | 72              | 75                | 84            | 1.0             |
| Ø50            | 0.6                | 1.0     | 96              | 91                | 100           | 1.0             |
| Ø52            | 0.6                | 1.0     | 96              | 95                | 104           | 1.0             |
| Ø63            | 0.5                | 1.0     | 115             | 117               | 126           | 1.0             |
| Ø66            | 0.5                | 1.0     | 115             | 123               | 132           | 1.0             |

## Programming technical data



|                            | R<br>Program | A<br>Over cut | B<br>Un-machined |
|----------------------------|--------------|---------------|------------------|
| BLMP 06<br>(Ø16, Ø17, Ø18) | 1.5          | 0             | 0.35             |
|                            | 2.0          | 0.1           | 0.22             |
|                            | 2.5          | 0.27          | 0.1              |
| BLMP 06<br>(Ø20- )         | 2.0          | 0             | 0.42             |
|                            | 2.5          | 0.12          | 0.26             |
|                            | 3.0          | 0.29          | 0.17             |

    : Recommended program 'R'

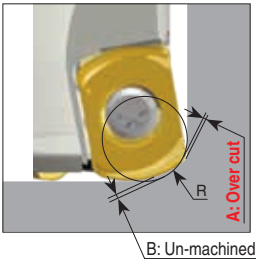


BLMP 09

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø25            | 2.2                | 1.5     | 39              | 42                | 50            | 1.5             |
| Ø26            | 2.2                | 1.5     | 39              | 44                | 52            | 1.5             |
| Ø30            | 2.0                | 1.5     | 43              | 52                | 60            | 1.5             |
| Ø32            | 2.0                | 1.5     | 43              | 56                | 64            | 1.5             |
| Ø33            | 2.0                | 1.5     | 43              | 58                | 66            | 1.5             |
| Ø35            | 2.0                | 1.5     | 43              | 60                | 70            | 1.5             |
| Ø40            | 1.5                | 1.5     | 57              | 72                | 80            | 1.5             |
| Ø42            | 1.5                | 1.5     | 57              | 76                | 84            | 1.5             |
| Ø50            | 1.0                | 1.5     | 86              | 92                | 100           | 1.5             |
| Ø52            | 1.0                | 1.5     | 86              | 96                | 104           | 1.5             |
| Ø63            | 0.9                | 1.5     | 96              | 118               | 126           | 1.5             |
| Ø66            | 0.9                | 1.5     | 96              | 124               | 132           | 1.5             |
| Ø80            | 0.8                | 1.5     | 107             | 152               | 160           | 1.5             |
| Ø100           | 0.7                | 1.5     | 123             | 192               | 200           | 1.5             |
| Ø125           | 0.4                | 1.5     | 215             | 240               | 250           | 1.5             |

Programming technical data



| BLMP 09 | R<br>Program | A<br>Over cut | B<br>Un-machined |
|---------|--------------|---------------|------------------|
|         | 2.5          | 0             | 0.61             |
|         | 3.0          | 0.09          | 0.45             |
|         | 3.5          | 0.24          | 0.30             |
|         | 4.0          | 0.41          | 0.17             |
|         | 3.0          | 0.36          | 0.04             |

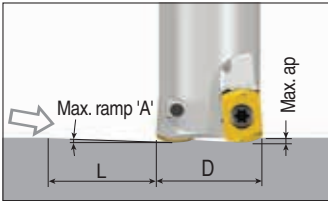
Recommended program 'R'



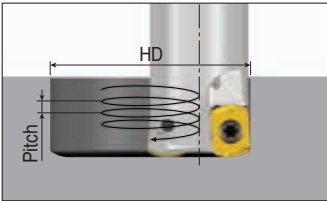
# Ramping Data



Straight ramping



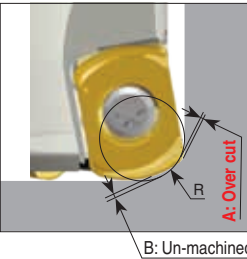
Helical ramping



BLMP 11 (unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø30            | 0.50               | 2.0     | 229             | 41                | 60            | 0.3             |
| Ø32            | 0.50               | 2.0     | 229             | 45                | 64            | 0.3             |
| Ø33            | 0.45               | 2.0     | 255             | 47                | 66            | 0.3             |
| Ø35            | 0.50               | 2.0     | 229             | 51                | 70            | 0.4             |
| Ø40            | 0.55               | 2.0     | 208             | 61                | 80            | 0.5             |
| Ø42            | 0.50               | 2.0     | 229             | 65                | 84            | 0.5             |
| Ø50            | 0.50               | 2.0     | 229             | 81                | 100           | 0.7             |
| Ø52            | 0.45               | 2.0     | 255             | 85                | 104           | 0.7             |
| Ø63            | 0.45               | 2.0     | 255             | 107               | 126           | 0.9             |
| Ø66            | 0.40               | 2.0     | 287             | 113               | 132           | 0.9             |
| Ø80            | 0.35               | 2.0     | 328             | 141               | 160           | 1.0             |
| Ø100           | 0.30               | 2.0     | 382             | 181               | 200           | 1.1             |
| Ø125           | 0.25               | 2.0     | 459             | 231               | 250           | 1.2             |
| Ø160           | 0.20               | 2.0     | 573             | 301               | 320           | 1.3             |
| Ø200           | 0.15               | 2.0     | 764             | 381               | 400           | 1.3             |

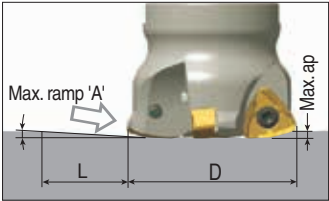
## Programming technical data



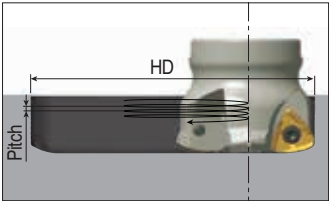
|         | R<br>Program | A<br>Over cut | B<br>Un-machined |
|---------|--------------|---------------|------------------|
| BLMP 11 | 2.4          | 0.00          | 1.09             |
|         | 3.0          | 0.00          | 0.90             |
|         | 3.2          | 0.18          | 0.85             |

Recommended program 'R'

Straight ramping



Helical ramping

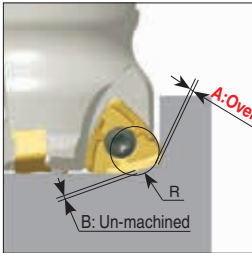


BLMP 13

(unit: mm)

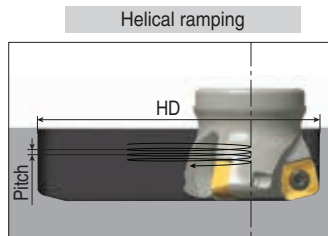
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø32            | 0.8                | 2.0     | 143             | 50                | 64            | 0.7             |
| Ø33            | 1.1                | 2.0     | 104             | 52                | 66            | 0.9             |
| Ø35            | 1.1                | 2.0     | 104             | 56                | 70            | 1.0             |
| Ø40            | 1.2                | 2.0     | 96              | 66                | 80            | 1.1             |
| Ø42            | 1.1                | 2.0     | 104             | 70                | 84            | 1.3             |
| Ø50            | 0.8                | 2.0     | 143             | 86                | 100           | 1.4             |
| Ø52            | 0.8                | 2.0     | 143             | 90                | 104           | 1.2             |
| Ø63            | 0.6                | 2.0     | 191             | 112               | 126           | 1.3             |
| Ø66            | 0.6                | 2.0     | 191             | 118               | 132           | 1.2             |
| Ø80            | 0.5                | 2.0     | 229             | 146               | 160           | 1.4             |
| Ø100           | 0.4                | 2.0     | 287             | 186               | 200           | 1.3             |
| Ø125           | 0.3                | 2.0     | 382             | 236               | 250           | 1.4             |
| Ø160           | 0.3                | 2.0     | 382             | 306               | 320           | 1.2             |
| Ø200           | 0.2                | 2.0     | 573             | 386               | 400           | 1.3             |
| Ø250           | 0.2                | 2.0     | 573             | 486               | 500           | 1.7             |

Programming technical data



| BLMP 13 | R<br>Program | A<br>Over cut | B<br>Un-machined |
|---------|--------------|---------------|------------------|
|         | 3.0          | 0             | 1.31             |
|         | 3.5          | 0             | 1.17             |
|         | 4.0          | 0.04          | 1.03             |
|         | 4.5          | 0.15          | 0.89             |
|         | 5.0          | 0.3           | 0.76             |

: Recommended program 'R'



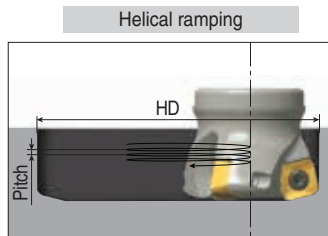
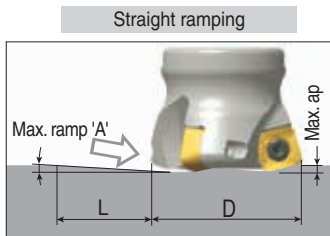
(unit: mm)

[illegible]

**B:** Un-machined

|         | R<br>Program | A<br>Over cut | B<br>Un-machined |
|---------|--------------|---------------|------------------|
| SBMT 06 | 1.8          | 0             | 0.81             |
|         | 2.0          | 0             | 0.77             |
|         | 2.2          | 0.01          | 0.73             |

■ :Recommended program 'R'

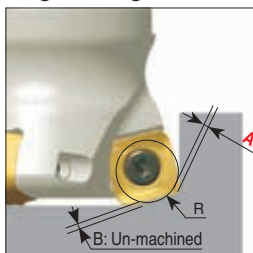


## SBMT 09

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø25            | 1.6                | 1.2     | 43              | 36                | 50            | 1               |
|                |                    |         |                 | 38                | 52            | 1.1             |
| Ø26            | 1.7                | 1.2     | 40              | 46                | 60            | 1.2             |
|                |                    |         |                 | 50                | 64            | 1.2             |
| Ø30            | 3.1                | 1.2     | 22              | 52                | 66            | 1.2             |
|                |                    |         |                 | 56                | 70            | 1.2             |
| Ø32            | 3.9                | 1.2     | 18              | 66                | 80            | 1.2             |
|                |                    |         |                 | 70                | 84            | 1.2             |
| Ø33            | 3.7                | 1.2     | 19              | 86                | 100           | 1.2             |
|                |                    |         |                 | 90                | 104           | 1.2             |
| Ø35            | 3.4                | 1.2     | 18              | 112               | 126           | 1.2             |
|                |                    |         |                 | 118               | 132           | 1.2             |
| Ø40            | 2.8                | 1.2     | 25              | 146               | 160           | 1.2             |
|                |                    |         |                 |                   |               |                 |
| Ø42            | 2.6                | 1.2     | 26              |                   |               |                 |
|                |                    |         |                 |                   |               |                 |
| Ø50            | 2.0                | 1.2     | 34              |                   |               |                 |
|                |                    |         |                 |                   |               |                 |
| Ø52            | 1.9                | 1.2     | 38              |                   |               |                 |
|                |                    |         |                 |                   |               |                 |
| Ø63            | 1.5                | 1.2     | 43              |                   |               |                 |
|                |                    |         |                 |                   |               |                 |
| Ø66            | 1.1                | 1.2     | 63              |                   |               |                 |
|                |                    |         |                 |                   |               |                 |
| Ø80            | 1.2                | 1.2     | 63              |                   |               |                 |
|                |                    |         |                 |                   |               |                 |

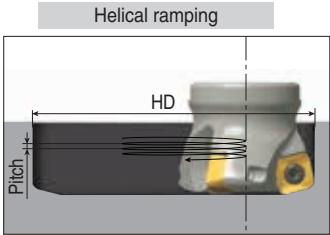
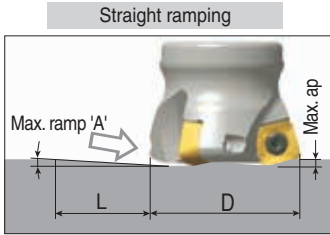
## Programming technical data



|         | R<br>Program | A<br>Over cut | B<br>Un-machined |
|---------|--------------|---------------|------------------|
| SBMT 09 | 3.5          | 0.1           | 0.81             |
|         | 3            | 0             | 0.9              |
|         | 2.5          | 0             | 0.98             |
|         | 2            | 0             | 1.1              |

   :Recommended program 'R'

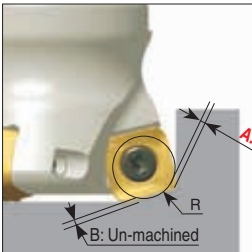
# Ramping Data



**SBMT 13** (unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø32            | 7.0                | 2.0     | 16              | 47                | 64            | 2.0             |
| Ø33            | 6.9                | 2.0     | 17              | 49                | 66            | 2.0             |
| Ø35            | 6.4                | 2.0     | 18              | 53                | 70            | 2.0             |
| Ø40            | 5.3                | 2.0     | 22              | 63                | 80            | 2.0             |
| Ø42            | 4.4                | 2.0     | 26              | 67                | 84            | 2.0             |
| Ø50            | 4.3                | 2.0     | 27              | 83                | 100           | 2.0             |
| Ø52            | 4.0                | 2.0     | 29              | 87                | 104           | 2.0             |
| Ø63            | 2.9                | 2.0     | 40              | 109               | 126           | 2.0             |
| Ø80            | 2.0                | 2.0     | 57              | 143               | 160           | 2.0             |
| Ø100           | 1.5                | 2.0     | 76              | 183               | 200           | 2.0             |
| Ø125           | 1.1                | 2.0     | 104             | 233               | 250           | 2.0             |
| Ø160           | 0.8                | 2.0     | 104             | 303               | 320           | 2.0             |
| Ø200           | 0.6                | 2.0     | 127             | 383               | 400           | 2.0             |
| Ø250           | 0.5                | 2.0     | 164             | 483               | 500           | 2.0             |

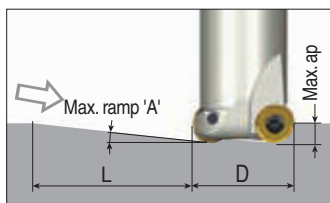
## Programming technical data



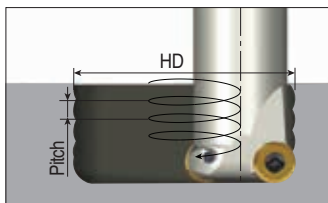
|                | R<br>Program | A<br>Over cut | B<br>Un-machined |
|----------------|--------------|---------------|------------------|
| <b>SBMT 13</b> | 4.0          | 0             | 1.62             |
|                | 4.5          | 0             | 1.51             |
|                | 5.0          | 0.04          | 1.4              |
|                | 5.5          | 0.14          | 1.29             |
|                | 6.0          | 0.28          | 1.18             |

:Recommended program 'R'

Straight ramping



Helical ramping



## RNMU 10

(unit: mm)

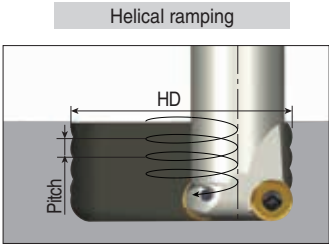
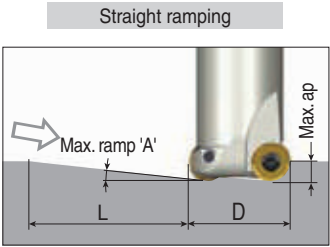
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø25            | 1.1                | 5.0     | 261             | 33                |               | 0.4             |
|                |                    |         |                 |                   | 50            | 1.3             |
| Ø26            | 1.1                | 5.0     | 261             | 35                |               | 0.5             |
|                |                    |         |                 |                   | 52            | 1.3             |
| Ø32            | 0.9                | 5.0     | 318             | 47                |               | 0.6             |
|                |                    |         |                 |                   | 64            | 1.3             |
| Ø33            | 0.9                | 5.0     | 318             | 49                |               | 0.7             |
|                |                    |         |                 |                   | 66            | 1.4             |
| Ø40            | 0.9                | 5.0     | 318             | 63                |               | 1.0             |
|                |                    |         |                 |                   | 80            | 1.7             |
| Ø42            | 0.9                | 5.0     | 318             | 67                |               | 1.0             |
|                |                    |         |                 |                   | 84            | 1.8             |
| Ø50            | 0.7                | 5.0     | 409             | 83                |               | 1.1             |
|                |                    |         |                 |                   | 100           | 1.6             |
| Ø52            | 0.8                | 5.0     | 358             | 87                |               | 1.3             |
|                |                    |         |                 |                   | 104           | 1.9             |

## RNMU 12

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø32            | 1.4                | 6.0     | 246             | 42                |               | 0.7             |
|                |                    |         |                 |                   | 64            | 2.1             |
| Ø33            | 1.4                | 6.0     | 246             | 44                |               | 0.7             |
|                |                    |         |                 |                   | 66            | 2.2             |
| Ø40            | 1.3                | 6.0     | 265             | 58                |               | 1.1             |
|                |                    |         |                 |                   | 80            | 2.4             |
| Ø50            | 1.0                | 6.0     | 344             | 78                |               | 1.3             |
|                |                    |         |                 |                   | 100           | 2.3             |
| Ø52            | 1.0                | 6.0     | 344             | 82                |               | 1.4             |
|                |                    |         |                 |                   | 104           | 2.4             |
| Ø63            | 1.0                | 6.0     | 344             | 104               |               | 1.9             |
|                |                    |         |                 |                   | 126           | 2.9             |
| Ø66            | 1.0                | 6.0     | 344             | 110               |               | 2.0             |
|                |                    |         |                 |                   | 132           | 3.1             |
| Ø80            | 0.9                | 6.0     | 382             | 138               |               | 2.4             |
|                |                    |         |                 |                   | 160           | 3.4             |
| Ø100           | 0.7                | 6.0     | 491             | 178               |               | 2.5             |
|                |                    |         |                 |                   | 200           | 3.3             |

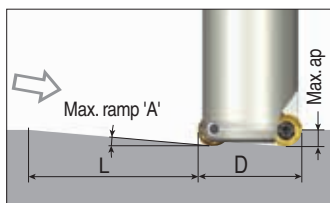
# Ramping Data



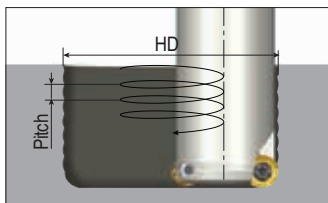
**RNMU 16**
(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø40            | 1.4                | 8.0     | 328             | 52                |               | 0.8             |
|                |                    |         |                 |                   | 80            | 2.6             |
| Ø42            | 1.4                | 8.0     | 328             | 56                |               | 0.9             |
|                |                    |         |                 |                   | 84            | 2.7             |
| Ø50            | 1.3                | 8.0     | 353             | 72                |               | 1.3             |
|                |                    |         |                 |                   | 100           | 3.0             |
| Ø52            | 1.0                | 8.0     | 459             | 76                |               | 1.1             |
|                |                    |         |                 |                   | 104           | 2.4             |
| Ø63            | 1.0                | 8.0     | 459             | 98                |               | 1.6             |
|                |                    |         |                 |                   | 126           | 2.9             |
| Ø66            | 1.0                | 8.0     | 459             | 104               |               | 1.8             |
|                |                    |         |                 |                   | 132           | 3.1             |
| Ø80            | 1.0                | 8.0     | 459             | 132               |               | 2.4             |
|                |                    |         |                 |                   | 160           | 3.7             |
| Ø100           | 0.9                | 8.0     | 510             | 172               |               | 3.0             |
|                |                    |         |                 |                   | 200           | 4.2             |
| Ø125           | 0.9                | 8.0     | 510             | 222               |               | 4.1             |
|                |                    |         |                 |                   | 250           | 5.2             |

Straight ramping



Helical ramping



## RYM(H)X-08

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø16            | 2.5                | 4.0     | 92              | 18                |               | 0.2             |
|                |                    |         |                 |                   | 32            | 1.9             |
| Ø17            | 2.5                | 4.0     | 92              | 20                |               | 0.3             |
|                |                    |         |                 |                   | 34            | 2.0             |
| Ø18            | 2.5                | 4.0     | 92              | 22                |               | 0.5             |
|                |                    |         |                 |                   | 36            | 2.1             |
| Ø20            | 4.0                | 4.0     | 57              | 26                |               | 1.1             |
|                |                    |         |                 |                   | 40            | 3.4             |
| Ø21            | 4.0                | 4.0     | 57              | 28                |               | 1.3             |
|                |                    |         |                 |                   | 42            | 3.4             |
| Ø25            | 4.0                | 4.0     | 57              | 36                |               | 2.1             |
|                |                    |         |                 |                   | 50            | 3.4             |
| Ø26            | 4.0                | 4.0     | 57              | 38                |               | 2.2             |
|                |                    |         |                 |                   | 52            | 3.4             |
| Ø32            | 4.0                | 4.0     | 57              | 50                |               | 3.4             |
|                |                    |         |                 |                   | 64            | 3.4             |
| Ø40            | 7.0                | 4.0     | 33              | 66                |               | 3.4             |
|                |                    |         |                 |                   | 80            | 3.4             |

## RYMX-10

(unit: mm)

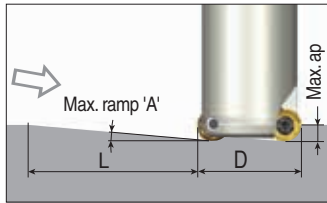
| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø20            | 4.5                | 5.0     | 64              | 22                |               | 0.4             |
|                |                    |         |                 |                   | 40            | 4.2             |
| Ø21            | 4.5                | 5.0     | 64              | 24                |               | 0.6             |
|                |                    |         |                 |                   | 42            | 4.4             |
| Ø25            | 5.0                | 5.0     | 57              | 32                |               | 1.6             |
|                |                    |         |                 |                   | 50            | 4.3             |
| Ø26            | 5.0                | 5.0     | 57              | 34                |               | 1.9             |
|                |                    |         |                 |                   | 52            | 4.3             |
| Ø32            | 5.0                | 5.0     | 57              | 46                |               | 3.3             |
|                |                    |         |                 |                   | 64            | 4.3             |
| Ø35            | 5.0                | 5.0     | 57              | 52                |               | 4.0             |
|                |                    |         |                 |                   | 70            | 4.3             |
| Ø40            | 5.0                | 5.0     | 57              | 62                |               | 4.3             |
|                |                    |         |                 |                   | 80            | 4.3             |
| Ø42            | 5.0                | 5.0     | 57              | 66                |               | 4.3             |
|                |                    |         |                 |                   | 84            | 4.3             |
| Ø50            | 6.5                | 5.0     | 44              | 82                |               | 4.3             |
|                |                    |         |                 |                   | 100           | 4.3             |
| Ø52            | 6.0                | 5.0     | 48              | 86                |               | 4.3             |
|                |                    |         |                 |                   | 104           | 4.3             |
| Ø66            | 4.5                | 5.0     | 64              | 114               |               | 4.3             |
|                |                    |         |                 |                   | 132           | 4.3             |



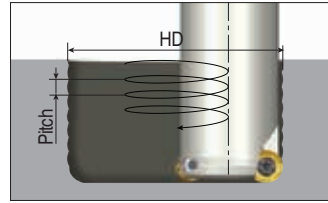
# Ramping Data



Straight ramping



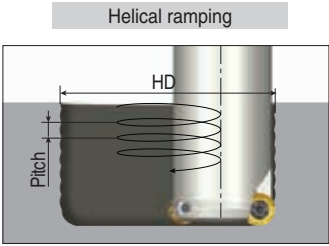
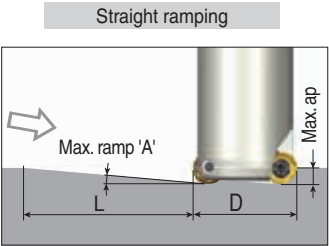
Helical ramping



## RYMX-12

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø25            | 6.0                | 6.0     | 57              | 28                |               | 0.8             |
|                |                    |         |                 |                   | 50            | 5.1             |
| Ø26            | 6.0                | 6.0     | 57              | 30                |               | 1.1             |
|                |                    |         |                 |                   | 52            | 5.1             |
| Ø32            | 12.0               | 6.0     | 28              | 42                |               | 5.1             |
|                |                    |         |                 |                   | 64            | 5.1             |
| Ø33            | 12.0               | 6.0     | 28              | 44                |               | 5.1             |
|                |                    |         |                 |                   | 66            | 5.1             |
| Ø35            | 12.0               | 6.0     | 28              | 48                |               | 5.1             |
|                |                    |         |                 |                   | 70            | 5.1             |
| Ø40            | 10.0               | 6.0     | 34              | 58                |               | 5.1             |
|                |                    |         |                 |                   | 80            | 5.1             |
| Ø42            | 12.0               | 6.0     | 28              | 62                |               | 5.1             |
|                |                    |         |                 |                   | 84            | 5.1             |
| Ø50            | 9.0                | 6.0     | 38              | 78                |               | 5.1             |
|                |                    |         |                 |                   | 100           | 5.1             |
| Ø52            | 8.0                | 6.0     | 43              | 82                |               | 5.1             |
|                |                    |         |                 |                   | 104           | 5.1             |
| Ø55            | 8.0                | 6.0     | 43              | 88                |               | 5.1             |
|                |                    |         |                 |                   | 110           | 5.1             |
| Ø63            | 7.0                | 6.0     | 49              | 104               |               | 5.1             |
|                |                    |         |                 |                   | 126           | 5.1             |
| Ø66            | 6.5                | 6.0     | 53              | 110               |               | 5.1             |
|                |                    |         |                 |                   | 132           | 5.1             |
| Ø80            | 4.5                | 6.0     | 76              | 138               |               | 5.1             |
|                |                    |         |                 |                   | 160           | 5.1             |
| Ø100           | 3.5                | 6.0     | 98              | 178               |               | 5.1             |
|                |                    |         |                 |                   | 200           | 5.1             |
| Ø125           | 2.5                | 6.0     | 137             | 228               |               | 5.1             |
|                |                    |         |                 |                   | 250           | 5.1             |



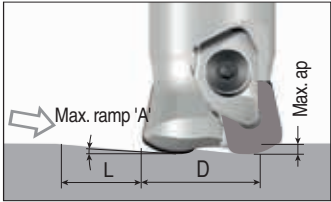
**RYMX-16** (unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø32            | 8.0                | 8.0     | 57              | 34                |               | 0.7             |
|                |                    |         |                 |                   | 64            | 6.8             |
| Ø40            | 9.5                | 8.0     | 48              | 50                |               | 4.5             |
|                |                    |         |                 |                   | 80            | 6.8             |
| Ø42            | 9.0                | 8.0     | 51              | 54                |               | 5.1             |
|                |                    |         |                 |                   | 84            | 6.8             |
| Ø50            | 9.0                | 8.0     | 51              | 70                |               | 6.8             |
|                |                    |         |                 |                   | 100           | 6.8             |
| Ø52            | 9.0                | 8.0     | 51              | 74                |               | 6.8             |
|                |                    |         |                 |                   | 104           | 6.8             |
| Ø63            | 8.5                | 8.0     | 54              | 96                |               | 6.8             |
|                |                    |         |                 |                   | 126           | 6.8             |
| Ø66            | 8.5                | 8.0     | 54              | 102               |               | 6.8             |
|                |                    |         |                 |                   | 132           | 6.8             |
| Ø80            | 6.0                | 8.0     | 76              | 130               |               | 6.8             |
|                |                    |         |                 |                   | 160           | 6.8             |
| Ø100           | 5.0                | 8.0     | 91              | 170               |               | 6.8             |
|                |                    |         |                 |                   | 200           | 6.8             |
| Ø125           | 3.5                | 8.0     | 131             | 220               |               | 6.8             |
|                |                    |         |                 |                   | 250           | 6.8             |
| Ø160           | 3.5                | 8.0     | 131             | 290               |               | 6.8             |
|                |                    |         |                 |                   | 320           | 6.8             |

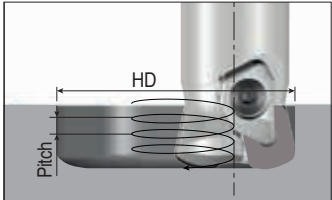
**RYMX-20** (unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø50            | 8.0                | 10.0    | 71              | 62                |               | 4.5             |
|                |                    |         |                 |                   | 100           | 8.5             |
| Ø63            | 12.5               | 10.0    | 45              | 88                |               | 8.5             |
|                |                    |         |                 |                   | 126           | 8.5             |
| Ø80            | 8.5                | 10.0    | 67              | 122               |               | 8.5             |
|                |                    |         |                 |                   | 160           | 8.5             |
| Ø100           | 6.5                | 10.0    | 88              | 162               |               | 8.5             |
|                |                    |         |                 |                   | 200           | 8.5             |
| Ø125           | 4.5                | 10.0    | 127             | 212               |               | 8.5             |
|                |                    |         |                 |                   | 250           | 8.5             |
| Ø160           | 4.0                | 10.0    | 143             | 282               |               | 8.5             |
|                |                    |         |                 |                   | 320           | 8.5             |
| Ø200           | 2.5                | 10.0    | 229             | 362               |               | 8.5             |
|                |                    |         |                 |                   | 400           | 8.5             |
| Ø250           | 2.4                | 10.0    | 239             | 462               |               | 8.5             |
|                |                    |         |                 |                   | 500           | 8.5             |

Straight ramping



Helical ramping



BNGX 06

(unit: mm)

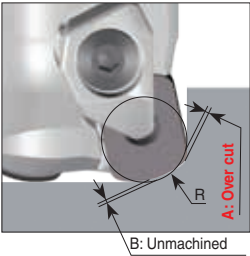
| Cutter dia. (D) | Straight ramp down |         |                 | Helical ramp down |                |                 |
|-----------------|--------------------|---------|-----------------|-------------------|----------------|-----------------|
|                 | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia. (HD)    | Max. dia. (HD) | Max. pitch/rev. |
| Ø16             | 0.5                | 1.0     | 115             | 25.6              |                | 0.2             |
|                 |                    |         |                 |                   | 32             | 0.4             |
| Ø20             | 0.5                | 1.0     | 115             | 33.4              |                | 0.3             |
|                 |                    |         |                 |                   | 40             | 0.5             |
| Ø25             | 0.4                | 1.0     | 144             | 43.4              |                | 0.4             |
|                 |                    |         |                 |                   | 50             | 0.5             |
| Ø32             | 0.3                | 1.0     | 191             | 57.3              |                | 0.4             |
|                 |                    |         |                 |                   | 64             | 0.6             |

BNGX 09

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø25            | 1.2                | 1.5     | 55              | 39                |               | 0.9             |
|                |                    |         |                 |                   | 50            | 1.1             |
| Ø32            | 0.6                | 1.5     | 132             | 53                |               | 0.6             |
|                |                    |         |                 |                   | 64            | 0.7             |
| Ø40            | 0.6                | 1.5     | 143             | 69                |               | 0.7             |
|                |                    |         |                 |                   | 80            | 0.8             |
| Ø50            | 0.5                | 1.5     | 156             | 89                |               | 0.9             |
|                |                    |         |                 |                   | 100           | 1.0             |

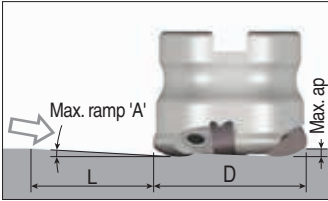
Programming technical data



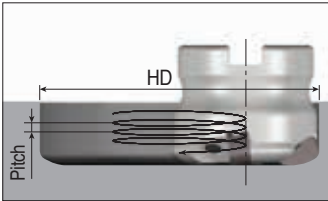
|         | R<br>Program | A<br>Over cut | B<br>Un-machined |
|---------|--------------|---------------|------------------|
| BNGX 06 | 1.5          | 0.00          | 0.60             |
|         | 2.0          | 0.00          | 0.42             |
|         | 2.5          | 0.10          | 0.27             |
| BNGX 09 | 3.0          | 0.00          | 0.61             |
|         | 3.4          | 0.00          | 0.46             |
|         | 3.5          | 0.01          | 0.43             |
|         | 4.0          | 0.12          | 0.26             |

   : Recommended program 'R'

Straight ramping



Helical ramping

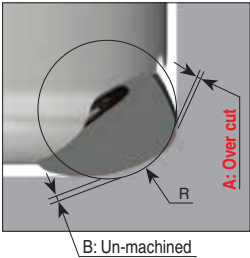


BNGX 12

(unit: mm)

| Cutter dia.(D) | Straight ramp down |         |                 | Helical ramp down |               |                 |
|----------------|--------------------|---------|-----------------|-------------------|---------------|-----------------|
|                | Max. ramp (A°)     | Max. ap | Min. length (L) | Min. dia.(HD)     | Max. dia.(HD) | Max. pitch/rev. |
| Ø50            | 0.6                | 2.5     | 239             | 84                |               | 1.1             |
|                |                    |         |                 |                   | 100           | 1.0             |
| Ø63            | 0.5                | 2.5     | 287             | 110               |               | 1.1             |
|                |                    |         |                 |                   | 126           | 1.1             |
| Ø80            | 0.4                | 2.5     | 318             | 144               |               | 1.3             |
|                |                    |         |                 |                   | 160           | 1.3             |

Programming technical data



|         | R<br>Program | A<br>Over cut | B<br>Un-machined |
|---------|--------------|---------------|------------------|
| BNGX 12 | 4.0          | 0.00          | 1.18             |
|         | 4.5          | 0.00          | 1.00             |
|         | 5.0          | 0.03          | 0.84             |

Yellow background: Recommended program 'R'