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SOLID CARBIDE CUTTING TOOLS

UK STOCKS NEXT DAY DELIVERY

G-TAC
G-TAC Coated
End Mill
Series

HARD series
High Speed
End Mill Series

FOR GRAPHITE
End Mills for
Graphite

FOR ALUMINUM
End Mills for
Aluminum

FOR SUS
End Mills

JJseries
End Mills for
Hardened
Steels

HARD series
High Speed
End Mill
Series

G series
End Mills for
General purpose

FOR CBN
CBN
End Mill
Series

E series
End Mills for
Heavy
Cuts

LOW Price

HIGH Performance

In 2015 Smart Tools UK Ltd and JJ Tools undertook a strategic alliance, resulting in Smart Tools securing sole distribution rights for the UK.

In agreement to our partnership we have weekly supply from the manufacturing warehouse facilities in Seoul.

One of the benefits of dealing with our partner is the pricing and quality of special tooling requirements many UK companies have benefited from this service.

Joint collaboration with customers is key to our success, by gaining a clear understanding of your needs; we ensure you are kept informed of the latest developments in tooling technology that are critical to staying ahead of the curve.

Call one of the team today on 01245 250910 to discuss how Smart Tools can improve your tooling solutions while reducing costs and ensure a robust supply chain.

Special Tools

Using the latest CNC grinding technology we can modify our cutters to your needs whether its corner radius chamfers or form tools to specification on a rapid turnaround.

Call us to find out more or alternatively email your requirements to:-
tech@smarttoolsuk.com



LOW Price HIGH Performance



E

HRC ~52

E series for heavy cuts

HRC52

Endmills for various work materials (~HRC52), pre-hardened steel, carbon steel, mold steel.

- Good wear resistance by high quality Si-based PVD coating.
- Suitable shape is designed for tooling in wide areas.
- Maximize the manufacturing cost saving with low price of products.
- Minimize fracturing by high TRS fine(0.5 μ m) WC grade.

**2HRBE 2HCBE 2HCEE 4HCEE
4HEME 3NSE 4NSE 2NCRE
4NCRE 4RCUE**



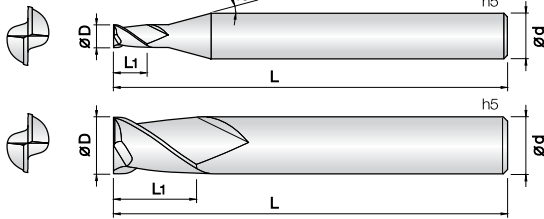
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- Endmills for various work materials (~HRc52), prehardened steel, carbon steel, mold steel.
- Good wear resistance by high quality Si-based PVD coating.
- Suitable shape is designed for tooling in wide areas.
- Maximize the manufacturing cost saving with low price of products.
- Minimize fracturing by high TRS fine(0.5 μm) WC grade.

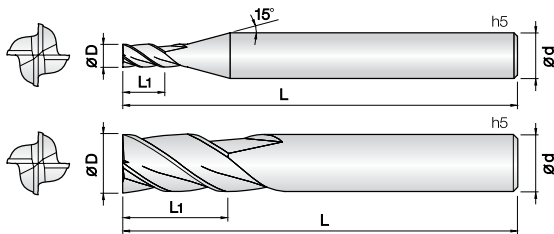
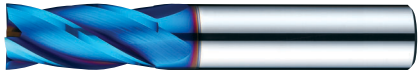
: mm

Order Number	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	List Price
2HCEE 002 004 S04	0.2	0.4	40	4	£27.49
2HCEE 003 006 S04	0.3	0.6	40	4	£21.40
2HCEE 004 008 S04	0.4	0.8	40	4	£21.40
2HCEE 005 010 S04	0.5	1	40	4	£20.19
2HCEE 006 012 S04	0.6	1.2	40	4	£20.19
2HCEE 007 014 S04	0.7	1.4	40	4	£20.19
2HCEE 008 016 S04	0.8	1.6	40	4	£20.19
2HCEE 009 018 S04	0.9	1.8	40	4	£20.19
2HCEE 010 025 S04	1	2.5	45	4	£16.54
2HCEE 012 030 S04	1.2	3	45	4	£16.26
2HCEE 015 040 S04	1.5	4	45	4	£16.26
2HCEE 020 060 S04	2	6	45	4	£16.26
2HCEE 025 080 S04	2.5	8	45	4	£16.26
2HCEE 030 080 S04	3	8	50	4	£17.16
2HCEE 030 080 S06	3	8	50	6	£19.30
2HCEE 040 110 S04	4	11	50	4	£17.17
2HCEE 040 110 S06	4	11	50	6	£19.30
2HCEE 050 130 S06	5	13	50	6	£20.81
2HCEE 060 130 050	6	13	50	6	£23.08
2HCEE 060 160 055	6	16	55	6	£23.08
2HCEE 080 200 060	8	20	60	8	£30.22
2HCEE 080 240 070	8	24	70	8	£33.25
2HCEE 100 220 070	10	22	70	10	£41.90
2HCEE 100 250 075	10	25	75	10	£47.07
2HCEE 120 260 075	12	26	75	12	£51.78
2HCEE 120 300 080	12	30	80	12	£58.02
2HCEE 160 400 090	16	40	90	16	£150.18



4HCEE

4 Flutes Standard Length End Mills for Heavy Cuts



- Endmills for various work materials (~HRC52), prehardened steel, carbon steel, mold steel.
- Good wear resistance by high quality Si-based PVD coating.
- Suitable shape is designed for tooling in wide areas.
- Maximize the manufacturing cost saving with low price of products.
- Minimize fracturing by high TRS fine(0.5µm) WC grade.

4

WC
미립자

BLUE
Coating

D
+0 -0.01
ø1 - ø5

D
-0.01-0.025
ø6 - ø12

D
-0.015-0.03
ø16

30°
Helix Angle

Shield Edge

: mm

Order Number	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	List Price
4HCEE 010 025 S04	1	2.5	45	4	£18.84
4HCEE 015 040 S04	1.5	4	45	4	£18.84
4HCEE 020 060 S04	2	6	45	4	£18.84
4HCEE 025 080 S04	2.5	8	45	4	£18.84
4HCEE 030 080 S04	3	8	50	4	£18.84
4HCEE 030 080 S06	3	8	50	6	£22.16
4HCEE 040 110 S04	4	11	50	4	£18.84
4HCEE 040 110 S06	4	11	50	6	£22.16
4HCEE 050 130 S06	5	13	50	6	£23.39
4HCEE 060 130 050	6	13	50	6	£23.39
4HCEE 060 160 055	6	16	55	6	£24.60
4HCEE 080 200 060	8	20	60	8	£32.49
4HCEE 080 240 070	8	24	70	8	£36.00
4HCEE 100 220 070	10	22	70	10	£45.72
4HCEE 100 250 075	10	25	75	10	£50.27
4HCEE 120 260 075	12	26	75	12	£53.30
4HCEE 120 300 080	12	30	80	12	£58.47
4HCEE 160 400 090	16	40	90	16	£156.42



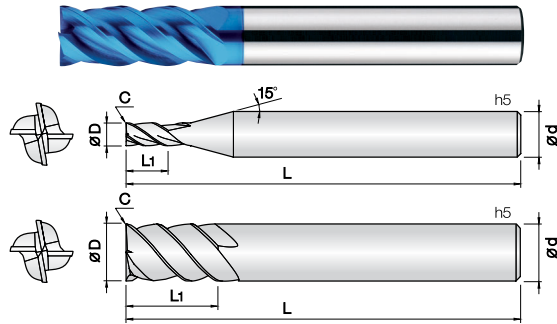
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- Endmills for various work materials (~HRC52), pre-hardened steel, carbon steel, mold steel, SUS, Ti/Ni-base alloy, Inconel.
- Good wear resistance by high quality Si-based PVD coating.
- Minimize chattering by unequal flute spacing design.
- Minimize fracturing by high TRS fine(0.5 μm) WC grade.



: mm

Order Number	Diameter D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price
4NSE 010 025 S04	1	2.5	-	45	4	£22.78
4NSE 010 040 S04	1	2.5	4	45	4	£25.81
4NSE 012 030 S04	1.2	3	-	45	4	£22.78
4NSE 012 050 S04	1.2	3	5	45	4	£25.81
4NSE 015 040 S04	1.5	4	-	45	4	£22.78
4NSE 015 060 S04	1.5	4	6	45	4	£25.81
4NSE 020 060 S04	2	6	-	45	4	£22.78
4NSE 020 100 S04	2	6	10	45	4	£25.81
4NSE 025 070 S04	2.5	7	-	45	4	£22.78
4NSE 025 100 S04	2.5	7	10	45	4	£25.81
4NSE 030 080 S06	3	8	-	50	6	£24.46
4NSE 030 100 S06	3	10	-	50	6	£24.46
4NSE 030 120 S06	3	8	12	50	6	£27.49
4NSE 040 100 S06	4	10	-	50	6	£24.46
4NSE 040 120 S06	4	12	-	50	6	£24.46
4NSE 040 160 S06	4	10	16	50	6	£27.49
4NSE 050 120 S06	5	12	-	55	6	£25.36
4NSE 050 160 S06	5	16	-	55	6	£26.42
4NSE 050 200 S06	5	12	20	55	6	£28.39
4NSE 060 130 S06	6	13	-	55	6	£25.36
4NSE 060 180 S06	6	18	-	55	6	£27.94
4NSE 060 210 055	6	13	21	55	6	£31.43
4NSE 080 200 S08	8	20	-	60	8	£43.44
4NSE 080 250 S08	8	25	-	70	8	£47.83
4NSE 080 270 070	8	20	27	70	8	£49.51
4NSE 100 250 S10	10	25	-	70	10	£62.12
4NSE 100 300 S10	10	30	-	75	10	£68.33
4NSE 100 320 075	10	25	32	75	10	£71.07
4NSE 120 260 S12	12	26	-	75	12	£66.97
4NSE 120 300 S12	12	30	-	80	12	£74.42
4NSE 120 380 080	12	26	38	80	12	£78.97
4NSE 160 450 S16	16	35	45	90	16	£191.33
4NSE 200 520 S20	20	40	52	100	20	£247.52



LOW Price

HIGH Performance

JCRO
coating

SUE-SERIES

End Mills for Exotic Materials

**SERIES 4SUB 3SUE 4SUE 4SUC 4LSUC 4SURE 4SUCR
3&4&5SUR**

- Strong design for protection against chattering.
- Excellent work surface finish by deep chip pocket.
- 42° degree helix design for high speed, feed condition.
- Minimize fracturing at high feed by high TRS fine WC grade.

End Mills for alloy steel, SUS, Ti/Ni base alloy, Inconel and hard to cut materials.



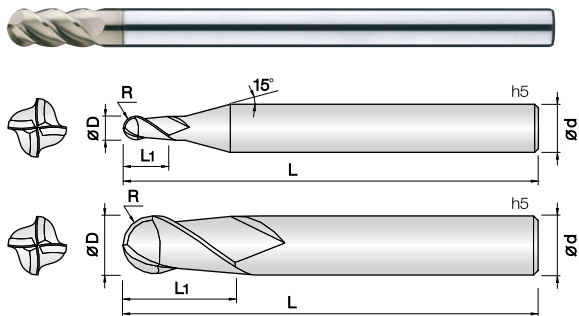
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Endmills for alloy steel, SUS, Ti/Ni base alloy, Inconel and hard to cut materials.

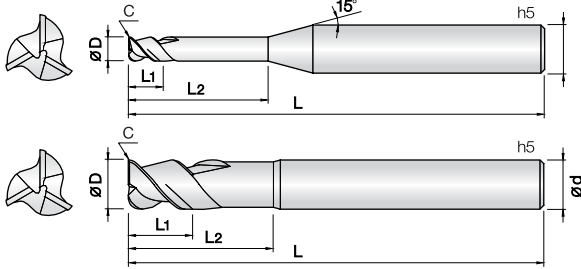
JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications. Excellent work surface finish by 4 flute and deep chip pocket. Minimize fracturing at high feed by high TRS fine WC grade.



D Size	D Tolerance
ø3 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm
ø16	-0.01 ~ -0.02mm

: mm

Order Number	Diameter R x D	Length of cut L1	Overall Length L	Shank Dia d	List Price
New 4SUB 010 025 S06	0.5R X 1	2.5	50	6	£39.22
New 4SUB 015 040 S06	0.75R X 1.5	4	50	6	£39.22
New 4SUB 020 060 S06	1R X 2	6	50	6	£39.22
4SUB 030 080 S06	1.5R X 3	8	60	6	£39.22
4SUB 040 080 S06	2R X 4	8	70	6	£40.59
4SUB 050 100 S06	2.5R X 5	10	80	6	£43.46
4SUB 060 120 S06	3R X 6	12	90	6	£46.47
4SUB 080 140 S08	4R X 8	14	100	8	£64.92
4SUB 100 180 S10	5R X 10	18	100	10	£88.70
4SUB 120 220 S12	6R X 12	22	110	12	£115.89
4SUB 160 300 S16	8R X 16	30	130	16	£207.73



Endmills for alloy steel, SUS, Ti/Ni base alloy, Inconel and hard to cut materials.

JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.

Excellent work surface finish by 3 flute and deep chip pocket. 45-degree helix design for high speed, feed condition.

Minimize fracturing at high feed by high TRS fine WC grade.



ø0.5 ~ 5

ø6 ~ 12

ø16 ~ 20

Shield Edge

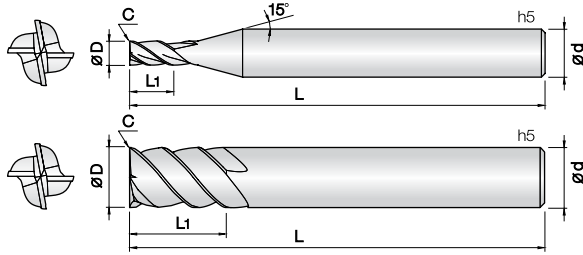
D Size	D Tolerance
ø0.5 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø16 ~ 20	-0.015 ~ -0.03mm

단위 : mm

Order Number	Diameter D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price	Order Number	Diameter D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price
New 3SUE 005 010 S04	0.5	1	-	45	4	£29.66	3SUE 160 360 S16	16	36	-	100	16	£162.63
New 3SUE 005 020 S04	0.5	1	2	45	4	£32.66	3SUE 160 450 S16	16	36	45	100	16	£173.57
New 3SUE 005 030 S04	0.5	1	3	45	4	£32.66	3SUE 200 550 S20	20	38	55	110	20	£240.53
New 3SUE 005 040 S04	0.5	1	4	45	4	£32.66							
New 3SUE 006 012 S04	0.6	1.2	-	45	4	£29.66							
New 3SUE 006 030 S04	0.6	1.2	3	45	4	£32.66							
New 3SUE 006 050 S04	0.6	1.2	5	45	4	£32.66							
New 3SUE 007 014 S04	0.7	1.4	-	45	4	£28.02							
New 3SUE 007 030 S04	0.7	1.4	3	45	4	£30.75							
3SUE 008 020 S04	0.8	2	-	45	4	£28.02							
3SUE 008 040 S06	0.8	2	4	45	6	£32.12							
New 3SUE 008 060 S06	0.8	2	6	45	6	£34.17							
3SUE 010 025 S04	1	2.5	-	45	4	£22.96							
3SUE 010 025 S06	1	2.5	-	45	6	£25.42							
3SUE 010 040 S06	1	2.5	4	45	6	£29.52							
New 3SUE 010 060 S06	1	2.5	6	45	6	£29.52							
New 3SUE 010 080 S06	1	2.5	8	45	6	£32.39							
3SUE 012 030 S04	1.2	3	-	45	4	£22.96							
3SUE 012 030 S06	1.2	3	-	45	6	£25.42							
3SUE 012 060 S06	1.2	3	6	45	6	£29.52							
New 3SUE 012 080 S06	1.2	3	8	45	6	£32.39							
3SUE 015 040 S04	1.5	4	-	45	4	£22.96							
3SUE 015 040 S06	1.5	4	-	45	6	£25.42							
3SUE 015 060 S06	1.5	4	6	45	6	£29.52							
New 3SUE 015 080 S06	1.5	4	8	45	6	£32.39							
New 3SUE 015 100 S06	1.5	4	10	45	6	£32.39							
3SUE 020 050 S04	2	5	-	45	4	£22.96							
3SUE 020 050 S06	2	5	-	45	6	£25.42							
3SUE 020 080 S06	2	5	8	45	6	£29.52							
New 3SUE 020 100 S06	2	5	10	50	6	£32.39							
New 3SUE 020 120 S06	2	5	12	50	6	£32.39							
3SUE 030 080 S04	3	8	-	45	4	£22.96							
3SUE 030 080 S06	3	8	-	45	6	£25.42							
3SUE 030 150 S06	3	8	15	45	6	£29.52							
New 3SUE 030 200 S06	3	8	20	60	6	£35.12							
3SUE 040 100 S04	4	10	-	50	4	£22.96							
3SUE 040 100 S06	4	10	-	50	6	£25.42							
3SUE 040 150 S06	4	10	15	50	6	£29.52							
New 3SUE 040 200 S06	4	10	20	60	6	£35.12							
3SUE 050 120 S06	5	12	-	50	6	£25.42							
3SUE 060 120 S06	6	12	-	60	6	£26.65							
3SUE 060 200 S06	6	12	20	60	6	£30.75							
3SUE 080 190 S08	8	19	-	60	8	£39.36							
3SUE 080 260 S08	8	19	26	60	8	£44.14							
3SUE 100 220 S10	10	22	-	70	10	£50.98							
3SUE 100 320 S10	10	22	32	70	10	£56.44							
3SUE 120 260 S12	12	26	-	80	12	£60.54							
3SUE 120 380 S12	12	26	38	80	12	£67.38							



4SUE 4 Flutes Non Symmetry End Mills for SUS



Endmills for alloy steel, SUS, Ti/Ni base alloy, Inconel and hard to cut materials.

JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.

Minimize chattering by unequal flute spacing design.

Excellent work surface finish by 4 flute and deep chip pocket.

Minimize fracturing at high feed by high TRS fine WC grade.

4

WC
미립자

JCRO
Coating

D
+0 -0.01

D
-0.01 -0.025

D
-0.015 -0.03

42°
Helix Angle

C Cutting

D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø16 ~ 20	-0.015 ~ -0.03mm

: mm

Order Number	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	List Price	Order Number	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	List Price
4SUE 010 015 S04	1	1.5	50	4	£24.19	4SUE 080 240 S08	8	24	70	8	£50.70
4SUE 010 025 S04	1	2.5	50	4	£24.19	4SUE 080 300 S08	8	30	80	8	£52.89
4SUE 010 035 S04	1	3.5	50	4	£25.15	New 4SUE 080 400 S08	8	40	90	8	£62.46
New 4SUE 010 050 S04	1	5	50	4	£28.70	New 4SUE 080 500 S08	8	50	100	8	£71.07
4SUE 015 025 S04	1.5	2.5	50	4	£24.19	4SUE 090 140 S10	9	14	80	10	£65.74
4SUE 015 040 S04	1.5	4	50	4	£24.19	4SUE 090 220 S10	9	22	80	10	£65.74
4SUE 015 055 S04	1.5	5.5	50	4	£25.15	4SUE 090 270 S10	9	27	80	10	£72.30
New 4SUE 015 070 S04	1.5	7	50	4	£28.70	4SUE 100 150 S10	10	15	80	10	£65.74
4SUE 020 030 S04	2	3	50	4	£24.19	4SUE 100 250 S10	10	25	80	10	£65.74
4SUE 020 060 S04	2	6	50	4	£24.19	4SUE 100 300 S10	10	30	80	10	£72.30
4SUE 020 080 S04	2	8	50	4	£25.15	4SUE 100 400 S10	10	40	90	10	£76.26
New 4SUE 020 100 S04	2	10	50	4	£28.70	4SUE 100 500 S10	10	50	100	10	£79.95
New 4SUE 020 120 S04	2	12	50	4	£31.43	New 4SUE 100 600 S10	10	60	110	10	£92.93
4SUE 025 035 S04	2.5	3.5	50	4	£24.19	4SUE 110 170 S12	11	17	90	12	£78.86
4SUE 025 080 S04	2.5	8	50	4	£24.19	4SUE 110 220 S12	11	22	90	12	£78.86
New 4SUE 025 100 S04	2.5	10	50	4	£28.70	4SUE 110 330 S12	11		90	12	£86.78
New 4SUE 025 120 S04	2.5	12	50	4	£31.43	4SUE 120 180 S12	12	18	90	12	£78.86
4SUE 030 045 S06	3	4.5	60	6	£25.83	4SUE 120 300 S12	12	30	90	12	£78.86
4SUE 030 100 S06	3	10	60	6	£25.83	4SUE 120 360 S12	12	36	90	12	£86.78
4SUE 030 120 S06	3	12	60	6	£27.06	4SUE 120 500 S12	12	50	100	12	£89.79
New 4SUE 030 150 S06	3	15	60	6	£31.16	4SUE 120 600 S12	12	60	110	12	£94.71
New 4SUE 030 200 S06	3	20	70	6	£35.12	New 4SUE 120 700 S12	12	70	120	12	£116.17
New 4SUE 035 055 S06	3.5	5.5	60	6	£30.07	4SUE 160 240 S16	16	24	100	16	£157.17
New 4SUE 035 100 S06	3.5	10	60	6	£32.80	4SUE 160 350 S16	16	35	100	16	£172.20
New 4SUE 035 150 S06	3.5	15	60	6	£35.53	4SUE 160 500 S16	16	50	110	16	£184.50
4SUE 040 060 S06	4	6	60	6	£25.83	New 4SUE 160 700 S16	16	70	130	16	£228.23
4SUE 040 120 S06	4	12	60	6	£25.83	New 4SUE 160 900 S16	16	90	150	16	£293.83
4SUE 040 160 S06	4	16	60	6	£27.06	4SUE 200 300 S20	20	30	100	20	£222.77
New 4SUE 040 200 S06	4	20	70	6	£35.12	4SUE 200 400 S20	20	40	100	20	£222.77
New 4SUE 040 250 S06	4	25	70	6	£37.86	4SUE 200 600 S20	20	60	120	20	£254.20
New 4SUE 045 070 S06	4.5	7	60	6	£30.07	New 4SUE 200 800 S20	20	80	150	20	£364.90
New 4SUE 045 130 S06	4.5	13	60	6	£32.80	New 4SUE 200 1000 S20	20	100	160	20	£405.90
New 4SUE 045 180 S06	4.5	18	60	6	£35.53						
4SUE 050 075 S06	5	7.5	60	6	£26.79						
4SUE 050 150 S06	5	15	60	6	£26.79						
4SUE 050 200 S06	5	20	70	6	£28.02						
New 4SUE 050 250 S06	5	25	70	6	£35.12						
4SUE 060 090 S06	6	9	60	6	£26.79						
4SUE 060 150 S06	6	15	60	6	£26.79						
4SUE 060 180 S06	6	18	65	6	£29.52						
4SUE 060 250 S06	6	25	70	6	£33.21						
New 4SUE 060 300 S06	6	30	70	6	£38.27						
New 4SUE 060 400 S06	6	40	80	6	£46.47						
4SUE 070 110 S08	7	11	70	8	£46.06						
4SUE 070 180 S08	7	18	70	8	£46.06						
4SUE 070 210 S08	7	21	70	8	£50.70						
4SUE 080 120 S08	8	12	70	8	£46.06						
4SUE 080 200 S08	8	20	70	8	£46.06						



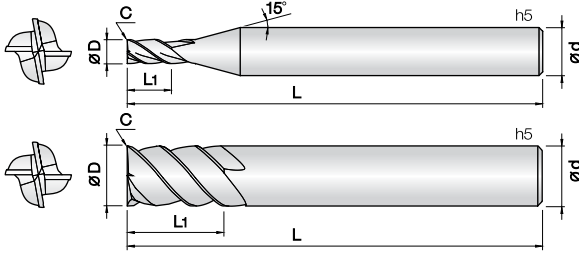
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Endmills for alloy steel, SUS, Ti/Ni base alloy, Inconel and hard to cut materials.

JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications. Minimize chattering during cutting application by unequal index of flute and helix angle to the endmill edge. Type A minimizes chipping, Type B maximizes chip emmissins. Minimize fracturing at high feed by high TRS fine WC grade.

4

WC
미랄자

JCRO
Coating

|D|
+0 -0.01

|D|
-0.01 -0.025

|D|
-0.015 -0.03

35°
Helix Angle

38°
Helix Angle

A

B

Ø1 ~ 5

Ø6 ~ 12

Ø16 ~ 20

Shield Edge

Shield Edge

D Size	D Tolerance
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø16 ~ 20	-0.015 ~ -0.03mm

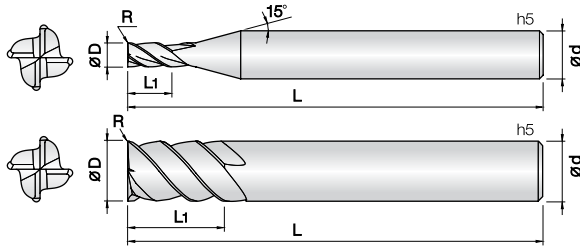
mm

Order Number	Diameter D	of cut L1	Length L2	type Type	Length L	Dia d	List Price	Order Number	Diameter D	of cut L1	Length L2	type Type	Length L	Dia d
4SUVA 010 025 S04	1	2.5	-	A	50	4	£24.46							
4SUVB 010 025 S04	1	2.5	-	B	50	4	£24.46							
4SUVA 010 060 S04	1	2.5	6	A	50	4	£27.20							
4SUVA 015 040 S04	1.5	4	-	A	50	4	£24.46							
4SUVB 015 040 S04	1.5	4	-	B	50	4	£24.46							
4SUVA 015 100 S04	1.5	4	10	A	50	4	£27.20							
4SUVA 020 050 S04	2	5	-	A	50	4	£24.46							
4SUVB 020 050 S04	2	5	-	B	50	4	£24.46							
4SUVA 020 120 S04	2	5	12	A	50	4	£27.20							
4SUVA 030 080 S06	3	8	-	A	60	6	£26.92							
4SUVB 030 080 S06	3	8	-	B	60	6	£26.92							
4SUVA 030 180 S06	3	8	18	A	60	6	£29.93							
4SUVA 040 110 S06	4	11	-	A	60	6	£26.92							
4SUVB 040 110 S06	4	11	-	B	60	6	£26.92							
4SUVA 040 210 S06	4	11	21	A	60	6	£29.93							
4SUVA 050 130 S06	5	13	-	A	60	6	£26.92							
4SUVB 050 130 S06	5	13	-	B	60	6	£26.92							
4SUVA 050 210 S06	5	13	21	A	60	6	£29.93							
4SUVA 060 130 S06	6	13	-	A	60	6	£26.92							
4SUVB 060 130 S06	6	13	-	B	60	6	£26.92							
4SUVA 060 210 S06	6	13	21	A	60	6	£29.93							
4SUVA 080 190 S08	8	19	-	A	60	8	£42.78							
4SUVB 080 190 S08	8	19	-	B	60	8	£42.78							
4SUVA 080 270 S08	8	19	27	A	60	8	£46.88							
4SUVA 100 220 S10	10	22	-	A	70	10	£61.09							
4SUVB 100 220 S10	10	22	-	B	70	10	£61.09							
4SUVA 100 320 S10	10	22	32	A	70	10	£65.19							
4SUVA 120 260 S12	12	26	-	A	80	12	£73.12							
4SUVB 120 260 S12	12	26	-	B	80	12	£73.12							
4SUVA 120 380 S12	12	26	38	A	80	12	£78.58							
4SUVA 160 320 S16	16	32	-	A	90	16	£150.33							
4SUVB 160 320 S16	16	32	-	B	90	16	£150.33							
4SUVA 160 450 S16	16	32	45	A	90	16	£157.17							
4SUVA 200 380 S20	20	38	-	A	100	20	£232.33							
4SUVB 200 380 S20	20	38	-	B	100	20	£232.33							
4SUVA 200 550 S20	20	38	55	A	110	20	£239.17							



3&4&5SUR

3&4&5 Flutes 45° Helix Roughing Core R End Mills for SUS



Alloy steel, SUS, Inconel, Mild Steels and various hard-to-cut material for roughing

JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications. 45 helix Design for minimizing cutting resistance and long time process. High speed and roughing work applicable by fine pitch flute.

3

4

5

WC
미립자

JCRO
Coating

ID
-0.02 -0.04

ID
-0.02 -0.05

45°
Helix Angle

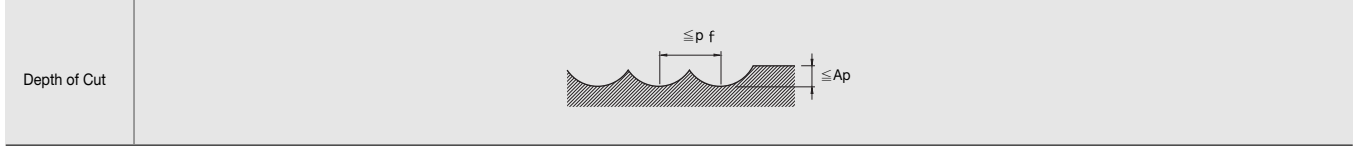
Ø3-Ø9 Ø10-Ø20

D Size	D Tolerance
Ø3 ~ 9	-0.02 ~ -0.04mm
Ø10 ~ 20	-0.02 ~ -0.05mm

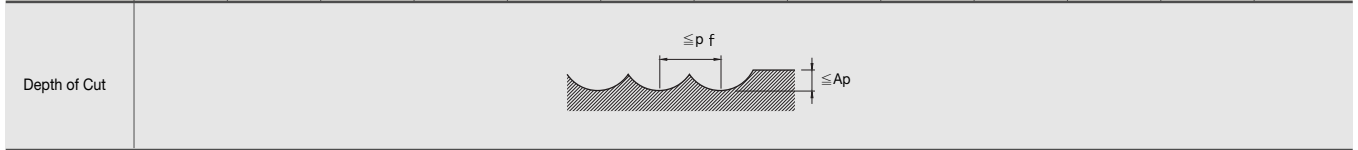
Order Number	Diameter D×R	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price													
3SUR 030 002 S06	3 X R0.2	8	-	50	6	£33.21													
3SUR 040 002 S06	4 X R0.2	10	-	50	6	£33.21													
4SUR 050 002 S06	5 X R0.2	13	-	50	6	£33.21													
4SUR 060 002 200	6 X R0.2	10	20	60	6	£37.58													
4SUR 060 002 S06	6 X R0.2	13	-	60	6	£34.85													
4SUR 060 005 S06	6 X R0.5	13	-	60	6	£34.85													
4SUR 070 002 S08	7X R0.2	18	-	70	8	£52.62													
4SUR 080 002 250	8X R0.2	12	25	70	8	£55.35													
4SUR 080 002 S08	8X R0.2	19	-	70	8	£52.62													
4SUR 080 010 S08	8 X R1	19	-	70	8	£52.62													
4SUR 090 003 S10	9 X R0.3	20	-	70	10	£69.56													
4SUR 100 003 300	10 X R0.3	15	30	75	10	£72.30													
4SUR 100 003 S10	10 X R0.3	22	-	75	10	£69.56													
4SUR 100 010 S10	10 X R1	22	-	75	10	£69.56													
4SUR 110 003 S12	11 X R0.3	25	-	80	12	£88.01													
4SUR 120 003 350	12 X R0.3	20	35	80	12	£90.75													
4SUR 120 003 S12	12 X R0.3	26	-	80	12	£88.01													
4SUR 120 010 S12	12 X R1	26	-	80	12	£88.01													
5SUR 140 005 S16	14 X R0.5	28	-	90	16	£215.93													
5SUR 160 005 100	16 X R0.5	32	-	100	16	£221.40													
5SUR 160 005 110	16 X R0.5	42	-	110	16	£233.70													
5SUR 160 015 100	16 X R1.5	32	-	100	16	£221.40													
5SUR 160 015 110	16 X R1.5	42	-	110	16	£233.70													
5SUR 200 005 100	20 X R0.5	38	-	100	20	£311.60													
5SUR 200 005 110	20 X R0.5	45	-	110	20	£326.63													
5SUR 200 020 100	20 X R2	38	-	100	20	£311.60													
5SUR 200 020 110	20 X R2	45	-	110	20	£326.63													

mm

Material	S45C, SCM440, SS400, S10C, NAK, PX5, SNCM439						4V, SUS630, SUS631, SUS431, SUS420J2					
반경 Radius	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth	pf	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth	
	RPM	FEED	RPM	FEED			RPM	FEED	RPM	FEED		
R1.5	32,000	7,700	21,000	3,200	0.25	0.75	24,000	4,800	16,000	1,900	0.25	
R2	24,000	5,800	16,000	2,800	0.33	1	18,000	4,000	12,000	1,700	0.33	
R2.5	19,000	5,300	12,700	2,600	0.42	1.25	14,400	3,500	9,600	1,500	0.42	
R3	16,000	4,800	10,600	2,100	0.5	1.5	12,000	3,200	8,000	1,400	0.5	
R4	12,000	4,300	8,000	1,900	0.8	2	9,000	3,200	6,000	1,400	0.8	
R5	9,600	4,100	6,400	1,800	1	2.5	7,200	3,000	4,800	1,300	1	
R6	8,000	4,000	5,300	1,800	1.2	3	6,000	3,000	4,000	1,300	1.2	



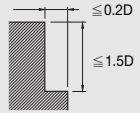
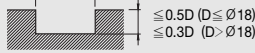
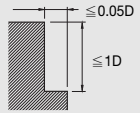
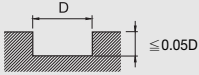
Material	Copper						inconel718						
Radius	pf	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth	pf	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth	pf
		RPM	FEED	RPM	FEED			RPM	FEED	RPM	FEED		
R1.5	0.75	38,000	9,100	25,000	3,800	0.25	0.75	6,400	640	4,200	340	0.13	0.3
R2	1	29,000	7,000	19,000	3,300	0.33	1	4,800	580	3,200	260	0.17	0.4
R2.5	1.25	23,000	6,400	15,000	3,100	0.42	1.25	3,800	530	2,500	250	0.21	0.5
R3	1.5	19,000	5,700	13,000	2,600	0.5	1.5	3,200	500	2,100	210	0.25	0.6
R4	2	14,000	5,000	9,600	2,300	0.8	2	2,400	430	1,600	190	0.4	0.8
R5	2.5	12,000	5,100	7,700	2,200	1	2.5	2,000	420	1,300	180	0.5	1
R6	3	9,600	4,800	6,400	2,200	1.2	3	1,700	350	1,100	150	0.6	1.2



3SUE

• RPM : rev./min • Feed : mm/min

Material	Carbon Steels / Alloy Steels SS400 / S50C / SCM		Stainless Steels/ Titanium Alloy Steels SUS304 / SUS316 / Ti-6AL-4V		Hardened Steels SKD61		Superhit resistance / Inconel	
	~ 45HRc				45 ~ 55HRc			
Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.8mm (3F)	7,200	80	6,400	60	3,900	30	2,000	10
1mm (3F)	6,400	100	5,600	70	3,500	30	1,700	15
2mm (3F)	5,600	110	4,800	80	2,900	34	1,400	20
3mm (3F)	4,800	200	4,000	90	2,200	45	1,400	25
4mm (3F)	4,000	200	3,300	140	1,800	70	1,200	35
5mm (3F)	3,200	230	2,700	170	1,500	90	1,000	45
6mm (3F)	2,900	250	2,400	180	1,400	90	900	45
8mm (3F)	2,200	270	1,800	190	1,000	100	720	40
10mm (3F)	1,700	260	1,400	190	900	110	600	40
12mm (3F)	1,400	230	1,200	150	700	90	500	35
16mm (3F)	1,000	160	900	120	550	60	360	30

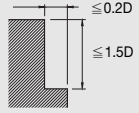
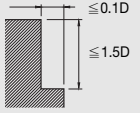
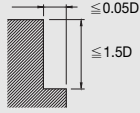
Depth of Cut				
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• In case of slotting, 80~100% of speed and 60~80% of feed on the table.

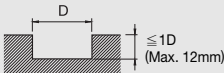
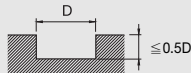
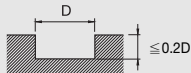
4SUE / 4SUC / 4SUV

• RPM : rev./min • Feed : mm/min

Side Cutting							
Material	Alloy Steels / Tools steel SKD61 / SK / NAK		SUS304 / SUS316 / T6A		Hardened Steels Inconel 718		
	Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
2mm	21,000	1,100	14,000	560	4,800	130	
3mm	15,000	1,250	10,600	850	4,200	200	
4mm	11,000	1,400	8,000	960	3,200	220	
5mm	9,600	1,900	6,400	1,000	2,500	250	
6mm	8,000	2,200	5,300	1,000	2,100	250	
7mm	6,800	1,900	4,500	1,000	1,800	260	
8mm	6,000	1,600	4,000	960	1,600	260	
9mm	5,300	1,480	3,500	840	1,400	220	
10mm	4,800	1,440	3,200	770	1,300	210	
11mm	4,400	1,350	2,900	760	1,200	190	
12mm	4,000	1,250	2,700	760	1,100	180	
16mm	3,000	1,140	2,000	560	800	130	
20mm	2,400	860	1,600	510	600	100	

절입량 Depth of Cut			
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Slotting							
Material	Alloy Steels / Tools steel SKD61 / SK / NAK		SUS304 / SUS316 / T6A		Hardened Steels Inconel 718		
	Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
2mm	10,000	400	9,600	310	3,200	80	
3mm	6,900	410	7,400	380	2,700	110	
4mm	5,600	490	5,600	400	2,000	120	
5mm	4,500	630	4,500	410	1,600	130	
6mm	3,700	740	3,700	440	1,300	160	
7mm	3,200	700	3,200	410	1,100	140	
8mm	2,800	670	2,800	390	1,000	130	
9mm	2,500	600	2,500	350	900	130	
10mm	2,200	530	2,200	350	800	130	
11mm	2,000	530	2,000	320	720	120	
12mm	1,900	530	1,900	300	660	110	
16mm	1,400	390	1,400	280	500	80	
20mm	1,100	350	1,100	260	400	60	

Depth of Cut			
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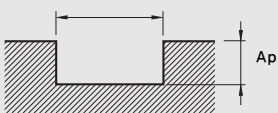
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3&4&5SUR

• RPM : rev./min • Feed : mm/min

Material		
Outside Diameter	RPM	FEED
3mm	4,400	380
4mm	3,800	350
5mm	3,300	350
6mm	3,000	340
7mm	2,700	340
8mm	2,200	340
9mm	2,000	340
10mm	1,750	330
12mm	1,300	330
14mm	5,000	310
16mm	4,800	300
20mm	4,700	210
Depth of Cut	 <p> Ap $\varnothing 6 - 10 = 0.25 \times D$ $\varnothing 12 - 16 = 0.15 \times D$ $\varnothing 18 - 20 = 0.1 \times D$ </p>	



LOW Price

HIGH Performance
G-TAC
coating

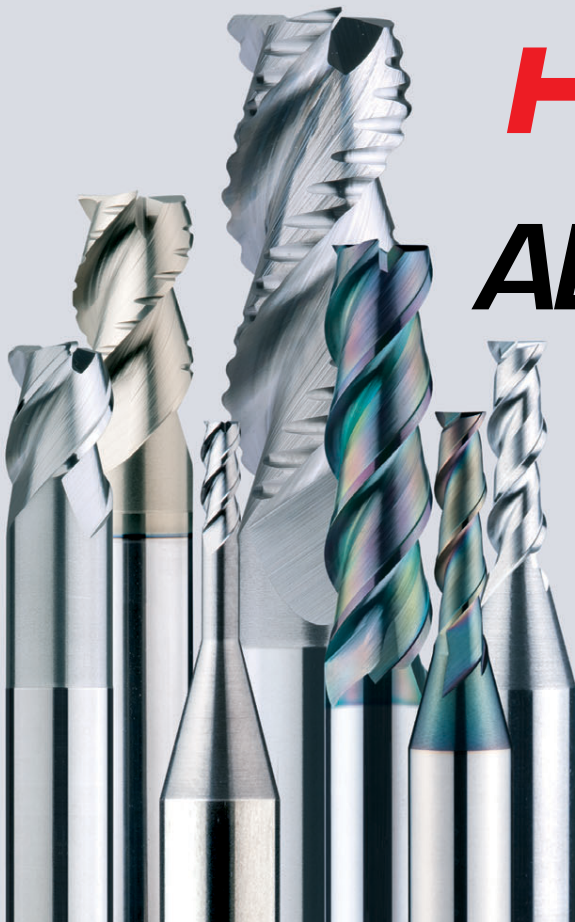
ALU-SERIES

End Mills for Aluminum

SERIES 2ALE 3ALE 3ALR 3ALC 3ARE 3ARC 3ARO

*Applied fine WC grade for excellent surface finish.
With RTAC coating, the tool life improved more than two times
over conventional uncoated endmills.
Various flute length design for covering wide range application.
Minimize built up edge by double edge and deep pocket design.
Minimize fracturing by high TRS fine(0.5) WC grade.*

**Endmills for Aluminum, AL alloy, non-ferrous
and non-metallic materials.**



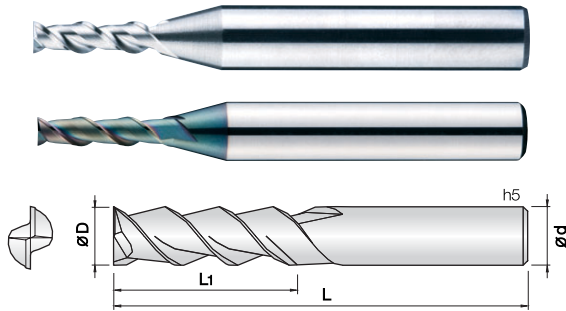
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Endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.

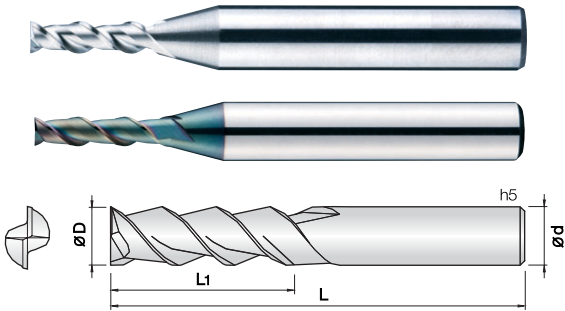
- Applied fine WC grade for excellent surface finish.
- Various flute length design for covering wide range application.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize built up edge by double edge and deep pocket design.

D Size	D Tolerance
∅0.5 ~ 20	+0 ~ -0.01mm

: mm

Order Number		Diameter D	Length of cut L1	Overall Length L	Shank Dia d	Uncoated	Coated
Uncoated	Coated						
2ALE 005 005 S04	New 2ALEC 005 005 S04	0.5	0.5	38	4	£22.14	£39.97
2ALE 005 010 S04	New 2ALEC 005 010 S04	0.5	1	38	4	£22.14	£39.97
2ALE 005 015 S04	New 2ALEC 005 015 S04	0.5	1.5	38	4	£22.14	£39.97
2ALE 005 020 S04	New 2ALEC 005 020 S04	0.5	2	38	4	£23.51	£41.87
2ALE 006 006 S04	New 2ALEC 006 006 S04	0.6	0.6	38	4	£21.46	£39.04
2ALE 006 012 S04	New 2ALEC 006 012 S04	0.6	1.2	38	4	£21.46	£39.04
2ALE 006 020 S04	New 2ALEC 006 020 S04	0.6	2	38	4	£22.82	£40.94
2ALE 007 007 S04	New 2ALEC 007 007 S04	0.7	0.7	38	4	£20.36	£37.54
2ALE 007 014 S04	New 2ALEC 007 014 S04	0.7	1.4	38	4	£20.36	£37.54
2ALE 007 020 S04	New 2ALEC 007 020 S04	0.7	2	38	4	£21.73	£39.41
2ALE 008 008 S04	New 2ALEC 008 008 S04	0.8	0.8	38	4	£20.36	£37.54
2ALE 008 016 S04	New 2ALEC 008 016 S04	0.8	1.6	38	4	£20.36	£37.54
2ALE 008 020 S04	New 2ALEC 008 020 S04	0.8	2	38	4	£21.73	£39.41
2ALE 009 009 S04	New 2ALEC 009 009 S04	0.9	0.9	38	4	£19.41	£36.21
2ALE 009 018 S04	New 2ALEC 009 018 S04	0.9	1.8	38	4	£19.41	£36.21
2ALE 009 025 S04	New 2ALEC 009 025 S04	0.9	2.5	38	4	£20.77	£38.11
2ALE 010 015 S04	New 2ALEC 010 015 S04	1	1.5	40	4	£18.45	£34.88
2ALE 010 015 S06	New 2ALEC 010 015 S06	1	1.5	40	6	£20.50	£37.71
2ALE 010 025 S04	New 2ALEC 010 025 S04	1	2.5	40	4	£18.45	£34.88
2ALE 010 025 S06	New 2ALEC 010 025 S06	1	2.5	40	6	£25.01	£43.93
2ALE 010 035 S04	New 2ALEC 010 035 S04	1	3.5	40	4	£19.82	£36.78
2ALE 010 035 S06	New 2ALEC 010 035 S06	1	3.5	40	6	£28.56	£48.86
2ALE 010 050 S06	New 2ALEC 010 050 S06	1	5	45	6	£29.52	£50.16
2ALE 010 060 S06	New 2ALEC 010 060 S06	1	6	45	6	£30.89	£52.05
New 2ALE 010 080 S06	New 2ALEC 010 080 S06	1	8	45	6	£33.76	£56.01
New 2ALE 010 100 S06	New 2ALEC 010 100 S06	1	10	45	6	£36.63	£59.97
2ALE 012 030 S06	New 2ALEC 012 030 S06	1.2	3	40	6	£25.97	£45.26
2ALE 012 040 S06	New 2ALEC 012 040 S06	1.2	4	40	6	£25.97	£45.26
2ALE 012 060 S06	New 2ALEC 012 060 S06	1.2	6	40	6	£28.02	£48.09
2ALE 015 040 S06	New 2ALEC 015 040 S06	1.5	4	40	6	£23.51	£41.87
2ALE 015 060 S06	New 2ALEC 015 060 S06	1.5	6	40	6	£26.65	£46.20
2ALE 015 080 S06	New 2ALEC 015 080 S06	1.5	8	45	6	£28.02	£48.09
2ALE 015 100 S06	New 2ALEC 015 100 S06	1.5	10	50	6	£30.07	£50.92
2ALE 015 120 S06	New 2ALEC 015 120 S06	1.5	12	50	6	£30.07	£50.92
New 2ALE 015 150 S06	New 2ALEC 015 150 S06	1.5	15	55	6	£35.12	£57.91
2ALE 020 050 S06	New 2ALEC 020 050 S06	2	5	45	6	£20.50	£37.71
2ALE 020 070 S06	New 2ALEC 020 070 S06	2	7	45	6	£20.50	£37.71
2ALE 020 100 S06	New 2ALEC 020 100 S06	2	10	50	6	£23.92	£42.44
2ALE 020 120 S06	New 2ALEC 020 120 S06	2	12	50	6	£25.15	£44.13
2ALE 020 140 S06	New 2ALEC 020 140 S06	2	14	50	6	£25.15	£44.13
2ALE 020 160 S06	New 2ALEC 020 160 S06	2	16	60	6	£30.07	£50.92
2ALE 025 080 S06	New 2ALEC 025 080 S06	2.5	8	45	6	£26.65	£46.20
2ALE 025 120 S06	New 2ALEC 025 120 S06	2.5	12	50	6	£29.66	£50.36
2ALE 025 150 S06	New 2ALEC 025 150 S06	2.5	15	60	6	£32.39	£54.12
2ALE 030 080 S06	New 2ALEC 030 080 S06	3	8	45	6	£20.50	£37.71
2ALE 030 100 S06	New 2ALEC 030 100 S06	3	10	45	6	£20.50	£37.71
2ALE 030 120 S06	New 2ALEC 030 120 S06	3	12	50	6	£22.55	£40.54
2ALE 030 150 S06	New 2ALEC 030 150 S06	3	15	50	6	£23.64	£42.07





Endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.

- Applied fine WC grade for excellent surface finish.
- Various flute length design for covering wide range application.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize built up edge by double edge and deep pocket design.

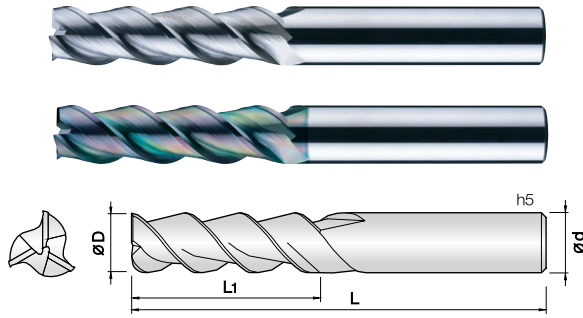


D Size	D Tolerance
ø0.5 ~ 20	+0 ~ -0.01mm

: mmm

Order Number		Diameter D	Length of cut L1	Overall Length L	Shank Dia d	Price	
Uncoated	Coated					Uncoated	Coated
2ALE 030 200 S06	New 2ALEC 030 200 S06	3	20	60	6	£25.56	£44.70
2ALE 030 250 S06	New 2ALEC 030 250 S06	3	25	65	6	£28.02	£48.09
2ALE 035 100 S06	New 2ALEC 035 100 S06	3.5	10	45	6	£26.65	£46.20
2ALE 035 150 S06	New 2ALEC 035 150 S06	3.5	15	50	6	£29.66	£50.36
2ALE 040 120 S06	New 2ALEC 040 120 S06	4	12	50	6	£20.50	£37.71
2ALE 040 150 S06	New 2ALEC 040 150 S06	4	15	55	6	£24.46	£43.20
2ALE 040 180 S06	New 2ALEC 040 180 S06	4	18	55	6	£25.56	£44.70
2ALE 040 250 S06	New 2ALEC 040 250 S06	4	25	65	6	£27.06	£46.76
2ALE 040 300 S06	New 2ALEC 040 300 S06	4	30	70	6	£34.58	£57.15
2ALE 045 120 S06	New 2ALEC 045 120 S06	4.5	12	50	6	£29.66	£50.36
2ALE 045 180 S06	New 2ALEC 045 180 S06	4.5	18	55	6	£32.25	£53.95
2ALE 050 150 S06	New 2ALEC 050 150 S06	5	15	50	6	£21.32	£38.84
2ALE 050 200 S06	New 2ALEC 050 200 S06	5	20	60	6	£23.64	£42.07
2ALE 050 250 S06	New 2ALEC 050 250 S06	5	25	65	6	£25.56	£44.70
2ALE 050 300 S06	New 2ALEC 050 300 S06	5	30	70	6	£34.58	£57.15
2ALE 055 150 S06	New 2ALEC 055 150 S06	5.5	15	50	6	£32.25	£53.95
2ALE 060 150 S06	New 2ALEC 060 150 S06	6	15	50	6	£21.32	£38.84
2ALE 060 200 S06	New 2ALEC 060 200 S06	6	20	60	6	£23.64	£42.07
2ALE 060 250 S06	New 2ALEC 060 250 S06	6	25	65	6	£26.24	£45.63
2ALE 060 300 S06	New 2ALEC 060 300 S06	6	30	70	6	£28.56	£48.86
2ALE 060 350 S06	New 2ALEC 060 350 S06	6	35	75	6	£32.80	£54.68
2ALE 060 400 S06	New 2ALEC 060 400 S06	6	40	80	6	£38.27	£62.24
2ALE 070 200 S08	New 2ALEC 070 200 S08	7	20	60	8	£34.30	£59.61
2ALE 070 300 S08	New 2ALEC 070 300 S08	7	30	70	8	£44.14	£73.19
2ALE 080 200 S08	New 2ALEC 080 200 S08	8	20	60	8	£34.30	£59.61
2ALE 080 250 S08	New 2ALEC 080 250 S08	8	25	65	8	£40.59	£68.26
2ALE 080 300 S08	New 2ALEC 080 300 S08	8	30	70	8	£44.14	£73.19
2ALE 080 400 S08	New 2ALEC 080 400 S08	8	40	80	8	£47.42	£77.71
2ALE 080 450 S08	New 2ALEC 080 450 S08	8	45	90	8	£50.57	£82.04
2ALE 100 250 S10	New 2ALEC 100 250 S10	10	25	70	10	£47.29	£79.58
2ALE 100 300 S10	New 2ALEC 100 300 S10	10	30	75	10	£56.58	£92.42
2ALE 100 350 S10	New 2ALEC 100 350 S10	10	35	80	10	£61.91	£99.78
2ALE 100 450 S10	New 2ALEC 100 450 S10	10	45	90	10	£65.19	£104.31
2ALE 100 500 S10	New 2ALEC 100 500 S10	10	50	100	10	£71.07	£112.40
2ALE 120 300 S12	New 2ALEC 120 300 S12	12	30	75	12	£59.04	£98.45
2ALE 120 350 S12	New 2ALEC 120 350 S12	12	35	80	12	£70.79	£114.66
2ALE 120 400 S12	New 2ALEC 120 400 S12	12	40	90	12	£75.17	£120.71
2ALE 120 450 S12	New 2ALEC 120 450 S12	12	45	100	12	£79.27	£126.37
2ALE 120 500 S12	New 2ALEC 120 500 S12	12	50	100	12	£79.54	£126.74
2ALE 120 600 S12	New 2ALEC 120 600 S12	12	60	110	12	£87.47	£137.69
2ALE 140 300 S14	New 2ALEC 140 300 S14	14	30	80	14	£126.96	£194.07
2ALE 160 400 S16	New 2ALEC 160 400 S16	16	40	90	16	£138.85	£210.48
2ALE 160 550 S16	New 2ALEC 160 550 S16	16	55	110	16	£166.60	£248.75
2ALE 160 700 S16	New 2ALEC 160 700 S16	16	70	120	16	£216.62	£317.78
2ALE 200 450 S20	New 2ALEC 200 450 S20	20	45	100	20	£211.70	£317.61
2ALE 200 650 S20	New 2ALEC 200 650 S20	20	65	120	20	£252.97	£374.56
2ALE 200 800 S20	New 2ALEC 200 800 S20	20	80	135	20	£304.22	£445.28





• Endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.

- Applied fine WC grade for excellent surface finish.
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- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize built up edge by double edge and deep pocket design.



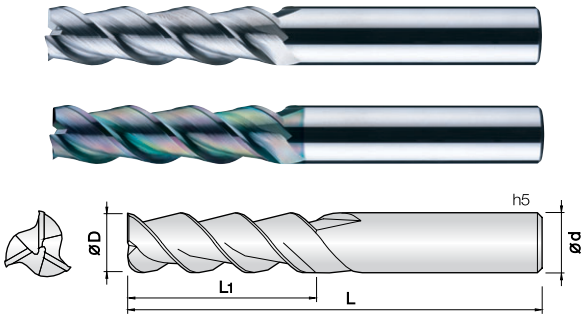
D Size	D Tolerance
ø1 ~ 20	+0 ~ -0.01mm

: mm

Order Number		Diameter D	Length of cut L1	Overall Length L	Shank Dia d	Uncoated	Coated
Uncoated	Coated						
3ALE 010 015 S06	New 3ALEC 010 015 S06	1	1.5	40	6	£25.01	£43.93
3ALE 010 030 S06	New 3ALEC 010 030 S06	1	3	40	6	£25.01	£43.93
3ALE 010 050 S06	New 3ALEC 010 050 S06	1	5	45	6	£29.52	£50.16
New 3ALE 010 060 S06	New 3ALEC 010 060 S06	1	6	45	6	£30.89	£52.05
New 3ALE 010 080 S06	New 3ALEC 010 080 S06	1	8	45	6	£33.76	£56.01
New 3ALE 010 100 S06	New 3ALEC 010 100 S06	1	10	45	6	£36.63	£59.97
3ALE 012 030 S06	New 3ALEC 012 030 S06	1.2	3	40	6	£24.33	£43.00
3ALE 012 040 S06	New 3ALEC 012 040 S06	1.2	4	40	6	£24.33	£43.00
3ALE 012 060 S06	New 3ALEC 012 060 S06	1.2	6	40	6	£27.88	£47.89
3ALE 015 025 S06	New 3ALEC 015 025 S06	1.5	2.5	40	6	£23.64	£42.07
3ALE 015 040 S06	New 3ALEC 015 040 S06	1.5	4	40	6	£23.64	£42.07
3ALE 015 060 S06	New 3ALEC 015 060 S06	1.5	6	45	6	£26.38	£45.83
3ALE 015 080 S06	New 3ALEC 015 080 S06	1.5	8	45	6	£28.02	£48.09
3ALE 015 100 S06	New 3ALEC 015 100 S06	1.5	10	50	6	£30.07	£50.92
3ALE 015 120 S06	New 3ALEC 015 120 S06	1.5	12	50	6	£32.12	£53.75
New 3ALE 015 150 S06	New 3ALEC 015 150 S06	1.5	15	50	6	£35.12	£57.91
3ALE 020 030 S06	New 3ALEC 020 030 S06	2	3	45	6	£20.64	£37.91
3ALE 020 050 S06	New 3ALEC 020 050 S06	2	5	45	6	£20.64	£37.91
3ALE 020 070 S06	New 3ALEC 020 070 S06	2	7	45	6	£20.64	£37.91
3ALE 020 100 S06	New 3ALEC 020 100 S06	2	10	50	6	£23.92	£42.44
3ALE 020 120 S06	New 3ALEC 020 120 S06	2	12	50	6	£25.15	£44.13
3ALE 020 140 S06	New 3ALEC 020 140 S06	2	14	60	6	£28.02	£48.09
3ALE 020 160 S06	New 3ALEC 020 160 S06	2	16	60	6	£30.07	£50.92
New 3ALE 020 180 S06	New 3ALEC 020 180 S06	2	18	60	6	£34.17	£56.58
New 3ALE 020 200 S06	New 3ALEC 020 200 S06	2	20	60	6	£39.63	£64.13
3ALE 025 040 S06	New 3ALEC 025 040 S06	2.5	4	45	6	£26.65	£46.20
3ALE 025 080 S06	New 3ALEC 025 080 S06	2.5	8	45	6	£26.65	£46.20
3ALE 025 120 S06	New 3ALEC 025 120 S06	2.5	12	50	6	£29.66	£50.36
3ALE 025 150 S06	New 3ALEC 025 150 S06	2.5	15	60	6	£32.39	£54.12
3ALE 030 045 S06	New 3ALEC 030 045 S06	3	4.5	45	6	£20.64	£37.91
3ALE 030 080 S06	New 3ALEC 030 080 S06	3	8	45	6	£20.64	£37.91
3ALE 030 120 S06	New 3ALEC 030 120 S06	3	12	50	6	£22.69	£40.74
3ALE 030 150 S06	New 3ALEC 030 150 S06	3	15	50	6	£23.64	£42.07
3ALE 030 200 S06	New 3ALEC 030 200 S06	3	20	55	6	£25.56	£44.70
3ALE 030 250 S06	New 3ALEC 030 250 S06	3	25	60	6	£27.06	£46.76
3ALE 030 300 S06	New 3ALEC 030 300 S06	3	30	65	6	£34.58	£57.15
3ALE 035 055 S06	New 3ALEC 035 055 S06	3.5	5.5	45	6	£26.65	£46.20
3ALE 035 100 S06	New 3ALEC 035 100 S06	3.5	10	45	6	£26.65	£46.20
3ALE 035 150 S06	New 3ALEC 035 150 S06	3.5	15	50	6	£29.66	£50.36
New 3ALE 035 200 S06	New 3ALEC 035 200 S06	3.5	20	55	6	£33.76	£56.01
New 3ALE 035 250 S06	New 3ALEC 035 250 S06	3.5	25	60	6	£37.86	£61.67
New 3ALE 035 300 S06	New 3ALEC 035 300 S06	3.5	30	65	6	£41.96	£67.33
3ALE 040 060 S06	New 3ALEC 040 060 S06	4	6	45	6	£20.64	£37.91
3ALE 040 110 S06	New 3ALEC 040 110 S06	4	11	45	6	£20.64	£37.91
3ALE 040 160 S06	New 3ALEC 040 160 S06	4	16	50	6	£23.64	£42.07
3ALE 040 200 S06	New 3ALEC 040 200 S06	4	20	55	6	£25.56	£44.70
3ALE 040 250 S06	New 3ALEC 040 250 S06	4	25	60	6	£27.06	£46.76
3ALE 040 300 S06	New 3ALEC 040 300 S06	4	30	65	6	£34.58	£57.15



3ALE 3 Flutes 45° Helix End Mills for Aluminum



• **Endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.**

- Applied fine WC grade for excellent surface finish.
- Various flute length design for covering wide range application.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize built up edge by double edge and deep pocket design.



D Size	D Tolerance
ø1 ~ 20	+0 ~ -0.01mm

: mm

Order Number		Diameter D	Length of cut L1	Overall Length L	Shank Dia d	Price	
Uncoated	Coated					Uncoated	Coated
3ALE 045 120 S06	New 3ALEC 045 120 S06	4.5	12	50	6	£29.66	£50.36
3ALE 045 180 S06	New 3ALEC 045 180 S06	4.5	18	55	6	£32.25	£44.50
New 3ALE 045 250 S06	New 3ALEC 045 250 S06	4.5	25	60	6	£35.12	£57.91
New 3ALE 045 300 S06	New 3ALEC 045 300 S06	4.5	30	65	6	£40.59	£46.59
3ALE 050 075 S06	New 3ALEC 050 075 S06	5	7.5	50	6	£22.00	£39.80
3ALE 050 130 S06	New 3ALEC 050 130 S06	5	13	50	6	£22.00	£39.80
3ALE 050 200 S06	New 3ALEC 050 200 S06	5	20	55	6	£23.64	£42.07
3ALE 050 250 S06	New 3ALEC 050 250 S06	5	25	60	6	£25.56	£44.70
3ALE 050 300 S06	New 3ALEC 050 300 S06	5	30	65	6	£34.58	£57.15
New 3ALE 050 350 S06	New 3ALEC 050 350 S06	5	35	70	6	£40.32	£65.07
New 3ALE 050 400 S06	New 3ALEC 050 400 S06	5	40	75	6	£45.10	£71.66
3ALE 055 150 S06	New 3ALEC 055 150 S06	5.5	15	50	6	£32.25	£53.95
New 3ALE 055 200 S06	New 3ALEC 055 200 S06	5.5	20	55	6	£35.12	£57.91
New 3ALE 055 250 S06	New 3ALEC 055 250 S06	5.5	25	60	6	£40.59	£65.43
3ALE 060 090 050	New 3ALEC 060 090 050	6	9	50	6	£22.00	£39.80
3ALE 060 150 050	New 3ALEC 060 150 050	6	15	50	6	£22.00	£39.80
3ALE 060 200 055	New 3ALEC 060 200 055	6	20	55	6	£23.64	£42.07
3ALE 060 250 060	New 3ALEC 060 250 060	6	25	60	6	£27.06	£46.76
3ALE 060 300 070	New 3ALEC 060 300 070	6	30	70	6	£28.56	£48.86
3ALE 060 350 070	New 3ALEC 060 350 070	6	35	70	6	£32.80	£54.68
3ALE 060 400 075	New 3ALEC 060 400 075	6	40	75	6	£38.27	£62.24
New 3ALE 060 450 080	New 3ALEC 060 450 080	6	45	80	6	£45.10	£71.66
New 3ALE 060 500 090	New 3ALEC 060 500 090	6	50	90	6	£51.93	£81.11
New 3ALE 070 200 060	New 3ALEC 070 200 060	7	20	60	8	£43.73	£72.62
New 3ALE 070 300 075	New 3ALEC 070 300 075	7	30	75	8	£53.30	£85.80
New 3ALE 070 400 090	New 3ALEC 070 400 090	7	40	90	8	£59.72	£94.69
3ALE 080 120 060	New 3ALEC 080 120 060	8	12	60	8	£35.94	£61.87
3ALE 080 200 060	New 3ALEC 080 200 060	8	20	60	8	£35.94	£61.87
3ALE 080 250 065	New 3ALEC 080 250 065	8	25	65	8	£42.50	£70.92
3ALE 080 300 070	New 3ALEC 080 300 070	8	30	70	8	£46.19	£76.02
3ALE 080 350 075	New 3ALEC 080 350 075	8	35	75	8	£47.83	£78.28
3ALE 080 400 080	New 3ALEC 080 400 080	8	40	80	8	£49.61	£80.71
3ALE 080 450 090	New 3ALEC 080 450 090	8	45	90	8	£51.25	£82.97
3ALE 080 500 090	New 3ALEC 080 500 090	8	50	90	8	£53.85	£86.57
3ALE 080 550 100	New 3ALEC 080 550 100	8	55	100	8	£57.26	£91.29
3ALE 080 600 110	New 3ALEC 080 600 110	8	60	110	8	£61.50	£97.12
New 3ALE 080 700 120	New 3ALEC 080 700 120	8	70	120	8	£69.70	£108.44
3ALE 100 150 070	New 3ALEC 100 150 070	10	15	70	10	£49.47	£82.61
3ALE 100 250 070	New 3ALEC 100 250 070	10	25	70	10	£49.47	£82.61
3ALE 100 300 075	New 3ALEC 100 300 075	10	30	75	10	£59.18	£95.99
3ALE 100 350 080	New 3ALEC 100 350 080	10	35	80	10	£64.92	£103.91
3ALE 100 400 090	New 3ALEC 100 400 090	10	40	90	10	£68.06	£108.27
3ALE 100 450 090	New 3ALEC 100 450 090	10	45	90	10	£68.47	£108.83
3ALE 100 500 100	New 3ALEC 100 500 100	10	50	100	10	£73.12	£115.23
3ALE 100 550 100	New 3ALEC 100 550 100	10	55	100	10	£73.94	£116.36
3ALE 100 600 110	New 3ALEC 100 600 110	10	60	110	10	£81.32	£126.54
3ALE 100 650 110	New 3ALEC 100 650 110	10	65	110	10	£82.96	£128.80
3ALE 100 700 120	New 3ALEC 100 700 120	10	70	120	10	£88.83	£136.92



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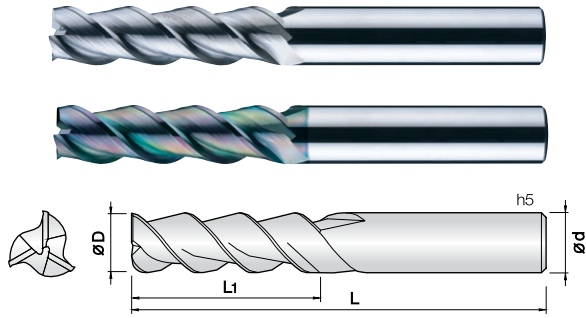


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3ALE 3 Flutes 45° Helix End Mills for Aluminum



- Endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.
- Applied fine WC grade for excellent surface finish.
- Various flute length design for covering wide range application.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize built up edge by double edge and deep pocket design.

3

WC
미랄자

RTAC
Coating

IDI
+0 -0.01

45°
Helix Angle

Shield Edge

ø1 ~ ø20

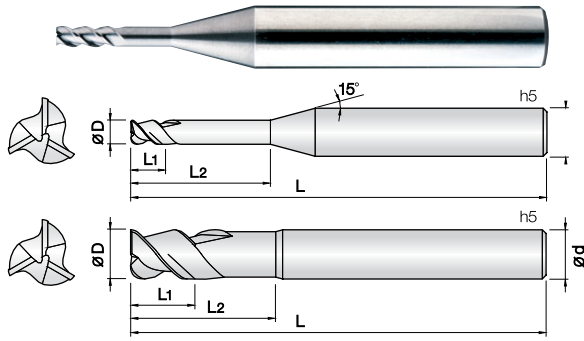
D Size	D Tolerance
ø1 ~ 20	+0 ~ -0.01mm

: mmm

Order Number		Diameter	Length of cut	Overall Length	Shank Dia	Uncoated	Coated
Uncoated	Coated	D	L1	L	d	Uncoated	Coated
New 3ALE 100 800 130	New 3ALEC 100 800 130	10	80	130	10	£96.62	£147.67
3ALE 120 180 075	New 3ALEC 120 180 075	12	18	75	12	£62.05	£102.61
3ALE 120 260 075	New 3ALEC 120 260 075	12	26	75	12	£62.05	£102.61
3ALE 120 350 080	New 3ALEC 120 350 080	12	35	80	12	£74.35	£119.58
3ALE 120 400 090	New 3ALEC 120 400 090	12	40	90	12	£80.36	£127.87
3ALE 120 450 090	New 3ALEC 120 450 090	12	45	90	12	£81.59	£129.57
3ALE 120 500 100	New 3ALEC 120 500 100	12	50	100	12	£84.46	£133.53
3ALE 120 550 100	New 3ALEC 120 550 100	12	55	100	12	£85.96	£135.59
3ALE 120 650 110	New 3ALEC 120 650 110	12	65	110	12	£88.42	£138.99
3ALE 120 700 120	New 3ALEC 120 700 120	12	70	120	12	£94.30	£147.11
New 3ALE 120 800 130	New 3ALEC 120 800 130	12	80	130	12	£105.23	£162.19
3ALE 140 300 080	New 3ALEC 140 300 080	14	30	80	14	£132.43	£201.62
3ALE 140 450 110	New 3ALEC 140 450 110	14	45	110	14	£142.27	£215.20
3ALE 160 300 090	New 3ALEC 160 300 090	16	30	90	16	£143.91	£217.47
3ALE 160 500 110	New 3ALEC 160 500 110	16	50	110	16	£152.11	£228.78
3ALE 160 650 120	New 3ALEC 160 650 120	16	65	120	16	£176.98	£263.10
3ALE 160 800 130	New 3ALEC 160 800 130	16	80	130	16	£208.42	£306.47
New 3ALE 160 1000 160	New 3ALEC 160 1000 160	16	100	160	16	£287.00	£414.93
3ALE 200 500 100	New 3ALEC 200 500 100	20	50	100	20	£244.77	£363.24
3ALE 200 750 130	New 3ALEC 200 750 130	20	75	130	20	£312.56	£456.80
3ALE 200 1000 160	New 3ALEC 200 1000 160	20	100	160	20	£327.45	£477.34
3ALE 200 1300 200	New 3ALEC 200 1300 200	20	130	200	20	£492.82	£705.55
New 3ALE 200 1500 220	New 3ALEC 200 1500 220	20	150	220	20	£542.57	£774.21



3ALR 3 Flutes 45° Helix Rib End Mills for Aluminum



Endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.

- Applied fine WC grade for excellent surface finish.
- Applied short flute length for various applications.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize built up edge by double edge and deep pocket design.

D Size	D Tolerance
ø0.8 ~ 12	+0 ~ -0.01mm

mm

Order Number		Diameter D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	Uncoated	Coated
Non coated	RTAC Coated							
3ALR 008 016 S04	New 3ALRC 008 016 S04	0.8	1.6	-	50	4	£28.70	£49.03
3ALR 008 030 S04	New 3ALRC 008 030 S04	0.8	1.6	3	50	4	£31.43	£52.82
3ALR 008 040 S04	New 3ALRC 008 040 S04	0.8	1.6	4	50	4	£31.43	£52.82
3ALR 008 050 S04	New 3ALRC 008 050 S04	0.8	1.6	5	50	4	£31.43	£52.82
3ALR 008 060 S04	New 3ALRC 008 060 S04	0.8	1.6	6	50	4	£31.43	£52.82
3ALR 008 080 S04	New 3ALRC 008 080 S04	0.8	1.6	8	50	4	£33.07	£55.08
3ALR 008 100 S04	New 3ALRC 008 010 S04	0.8	1.6	10	50	4	£33.07	£55.08
3ALR 008 120 S04	New 3ALRC 008 012 S04	0.8	1.6	12	50	4	£33.07	£55.08
3ALR 010 020 S06	New 3ALRC 010 020 S06	1	2	-	60	6	£29.66	£50.36
3ALR 010 040 S06	New 3ALRC 010 040 S06	1	2	4	60	6	£33.89	£56.21
3ALR 010 060 S06	New 3ALRC 010 060 S06	1	2	6	60	6	£33.89	£56.21
3ALR 010 080 S06	New 3ALRC 010 080 S06	1	2	8	60	6	£34.99	£57.71
3ALR 010 100 S06	New 3ALRC 010 100 S06	1	2	10	60	6	£34.99	£57.71
3ALR 010 120 S06	New 3ALRC 010 120 S06	1	2	12	60	6	£34.99	£57.71
3ALR 010 140 S06	New 3ALRC 010 140 S06	1	2	14	60	6	£34.99	£57.71
New 3ALR 010 160 S06	New 3ALRC 010 160 S06	1	2	16	60	6	£39.22	£63.57
3ALR 015 030 S06	New 3ALRC 015 030 S06	1.5	3	-	60	6	£29.66	£50.36
3ALR 015 060 S06	New 3ALRC 015 060 S06	1.5	3	6	60	6	£33.89	£56.21
3ALR 015 080 S06	New 3ALRC 015 080 S06	1.5	3	8	60	6	£33.89	£56.21
3ALR 015 100 S06	New 3ALRC 015 100 S06	1.5	3	10	60	6	£33.89	£56.21
3ALR 015 120 S06	New 3ALRC 015 120 S06	1.5	3	12	60	6	£34.99	£57.71
3ALR 015 140 S06	New 3ALRC 015 140 S06	1.5	3	14	60	6	£34.99	£57.71
3ALR 015 160 S06	New 3ALRC 015 160 S06	1.5	3	16	60	6	£34.99	£57.71
New 3ALR 015 180 S06	New 3ALRC 015 180 S06	1.5	3	18	60	6	£39.22	£63.57
New 3ALR 015 200 S06	New 3ALRC 015 200 S06	1.5	3	20	60	6	£39.22	£63.57
3ALR 020 040 S06	New 3ALRC 020 040 S06	2	4	-	60	6	£29.66	£40.94
3ALR 020 080 S06	New 3ALRC 020 080 S06	2	4	8	60	6	£33.89	£56.21
3ALR 020 100 S06	New 3ALRC 020 100 S06	2	4	10	60	6	£33.89	£56.21
3ALR 020 120 S06	New 3ALRC 020 120 S06	2	4	12	60	6	£33.89	£56.21
3ALR 020 140 S06	New 3ALRC 020 140 S06	2	4	14	60	6	£33.21	£55.25
3ALR 020 160 S06	New 3ALRC 020 160 S06	2	4	16	60	6	£34.99	£57.71
3ALR 020 200 S06	New 3ALRC 020 200 S06	2	4	20	60	6	£34.99	£57.71
New 3ALR 020 220 S06	New 3ALRC 020 220 S06	2	4	22	60	6	£39.22	£63.57
New 3ALR 020 250 S06	New 3ALRC 020 250 S06	2	4	25	65	6	£42.37	£67.90
3ALR 025 050 S06	New 3ALRC 025 050 S06	2.5	5	-	60	6	£29.66	£50.36
3ALR 025 100 S06	New 3ALRC 025 100 S06	2.5	5	10	60	6	£33.89	£56.21
3ALR 025 150 S06	New 3ALRC 025 150 S06	2.5	5	15	60	6	£33.89	£56.21
3ALR 025 200 S06	New 3ALRC 025 200 S06	2.5	5	20	60	6	£37.72	£61.47
3ALR 025 250 S06	New 3ALRC 025 250 S06	2.5	5	25	60	6	£38.95	£63.17
New 3ALR 025 300 S06	New 3ALRC 025 300 S06	2.5	5	30	70	6	£42.37	£67.90
3ALR 030 060 S06	New 3ALRC 030 060 S06	3	6	-	60	6	£29.66	£50.36
3ALR 030 100 S06	New 3ALRC 030 100 S06	3	6	10	60	6	£33.89	£56.21
3ALR 030 150 S06	New 3ALRC 030 150 S06	3	6	15	60	6	£33.89	£56.21
3ALR 030 200 S06	New 3ALRC 030 200 S06	3	6	20	70	6	£37.72	£61.47
3ALR 030 250 S06	New 3ALRC 030 250 S06	3	6	25	70	6	£39.63	£64.13
3ALR 030 300 S06	New 3ALRC 030 300 S06	3	6	30	80	6	£42.37	£67.90
New 3ALR 030 350 S06	New 3ALRC 030 350 S06	3	6	35	80	6	£46.47	£73.55
New 3ALR 030 400 S06	New 3ALRC 030 400 S06	3	6	40	90	6	£50.57	£79.21



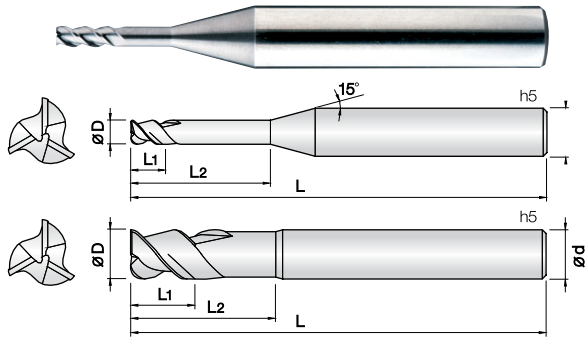
01245 260414 - 250910



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Endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.

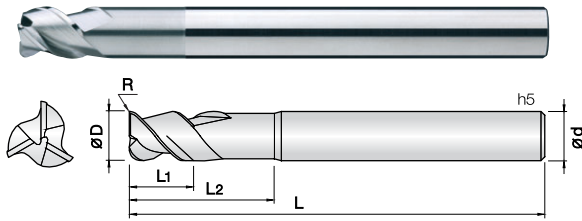
- Applied fine WC grade for excellent surface finish.
- Applied short flute length for various applications.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize built up edge by double edge and deep pocket design.

D Size	D Tolerance
ø0.8 ~ 12	+0 ~ -0.01mm

mm

Order Number		Diameter D	of cut L1	Length L2	Length L	Dia d	Uncoated	Coated
Uncoated	Coated							
3ALR 040 080 S06	New 3ALRC 040 080 S06	4	8	-	70	6	£33.89	£56.21
3ALR 040 100 S06	New 3ALRC 040 100 S06	4	8	10	70	6	£37.72	£61.47
3ALR 040 150 S06	New 3ALRC 040 150 S06	4	8	15	70	6	£37.72	£61.47
3ALR 040 200 S06	New 3ALRC 040 200 S06	4	8	20	70	6	£37.72	£61.47
3ALR 040 250 S06	New 3ALRC 040 250 S06	4	8	25	70	6	£39.63	£64.13
3ALR 040 300 S06	New 3ALRC 040 300 S06	4	8	30	80	6	£42.37	£67.90
New 3ALR 040 350 S06	New 3ALRC 040 350 S06	4	8	35	80	6	£46.47	£73.55
New 3ALR 040 400 S06	New 3ALRC 040 400 S06	4	8	40	90	6	£50.57	£79.21
3ALR 050 100 S06	New 3ALRC 050 100 S06	5	10	-	80	6	£37.72	£61.47
3ALR 050 200 S06	New 3ALRC 050 200 S06	5	10	20	80	6	£42.37	£67.90
3ALR 050 300 S06	New 3ALRC 050 300 S06	5	10	30	80	6	£42.37	£67.90
New 3ALR 050 400 S06	New 3ALRC 050 400 S06	5	10	40	90	6	£47.83	£75.45
New 3ALR 050 500 S06	New 3ALRC 050 500 S06	5	10	50	100	6	£51.93	£81.11
3ALR 060 200 S06	New 3ALRC 060 200 S06	6	12	20	80	6	£42.37	£67.90
3ALR 060 400 S06	New 3ALRC 060 400 S06	6	12	40	80	6	£46.47	£73.55
New 3ALR 060 600 110	New 3ALRC 060 600 110	6	12	60	110	6	£56.03	£86.77
3ALR 080 400 S08	New 3ALRC 080 400 S08	8	16	40	100	8	£61.50	£97.12
New 3ALR 080 600 110	New 3ALRC 080 600 110	8	16	60	110	8	£71.07	£110.33
3ALR 100 500 S10	New 3ALRC 100 500 S10	10	20	50	110	10	£85.42	£132.20
New 3ALR 100 700 120	New 3ALRC 100 700 120	10	20	70	120	10	£97.03	£148.24
3ALR 120 500 S12	New 3ALRC 120 500 S12	12	24	50	110	12	£103.87	£160.32
New 3ALR 120 700 130	New 3ALRC 120 700 130	12	24	70	130	12	£118.90	£181.06





- Endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.
- Applied fine WC grade for excellent surface finish.
- Minimize built up edge by double edge and deep pocket design.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- High speed, feed applicable by 3 flute 45° degree helix and short flute design.

3

WC
미립자

RTAC
Coating

R
±0.005
R0.5

R
±0.01
R1 ~ 1.5

R
±0.015
R2 ~ 5

45°
Helix Angle

D Size	D Tolerance
Ø6 ~ 20	+0 ~ -0.015mm

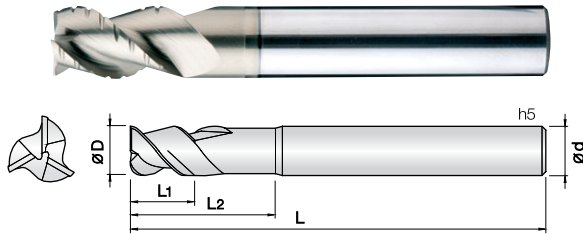
: mm

Order Number		Diameter D x R	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	Uncoated	Coated
3ALC 060 005 050	3ALCC 060 005 050	6 X R0.5	15	-	50	6	£35.67	£54.86
3ALC 060 005 070	3ALCC 060 005 070	6 X R0.5	7	20	70	6	£40.59	£60.52
3ALC 060 010 050	3ALCC 060 010 050	6 X R1	15	-	50	6	£35.67	£54.86
3ALC 060 010 070	3ALCC 060 010 070	6 X R1	7	20	70	6	£40.59	£60.52
3ALC 080 005 060	3ALCC 080 005 060	8 X R0.5	20	-	60	8	£49.61	£76.22
3ALC 080 005 080	3ALCC 080 005 080	8 X R0.5	9	25	80	8	£57.40	£85.65
3ALC 080 010 060	3ALCC 080 010 060	8 X R1	20	-	60	8	£49.61	£76.22
3ALC 080 010 080	3ALCC 080 010 080	8 X R1	9	25	80	8	£57.40	£85.65
3ALC 080 020 060	3ALCC 080 020 060	8 X R2	20	-	60	8	£49.61	£76.22
3ALC 080 020 080	3ALCC 080 020 080	8 X R2	9	25	80	8	£57.40	£85.65
3ALC 080 025 080	3ALCC 080 025 080	8 X R2.5	9	25	80	8	£57.40	£85.65
New 3ALC 100 005 070	New 3ALCC 100 005 070	10 X R0.5	25	-	70	10	£65.87	£98.24
New 3ALC 100 005 100	New 3ALCC 100 005 100	10 X R0.5	11	30	100	10	£82.68	£114.74
3ALC 100 010 070	3ALCC 100 010 070	10 X R1	25	-	70	10	£65.87	£98.24
3ALC 100 010 100	3ALCC 100 010 100	10 X R1	11	30	100	10	£82.68	£114.74
3ALC 100 015 070	3ALCC 100 015 070	10 X R1.5	25	-	70	10	£65.87	£98.24
3ALC 100 015 100	3ALCC 100 015 100	10 X R1.5	11	30	100	10	£82.68	£114.74
3ALC 100 020 070	3ALCC 100 020 070	10 X R2	25	-	70	10	£65.87	£98.24
3ALC 100 020 100	3ALCC 100 020 100	10 X R2	11	30	100	10	£82.68	£114.74
3ALC 100 025 100	3ALCC 100 025 100	10 X R2.5	11	30	100	10	£82.68	£114.74
New 3ALC 120 005 075	New 3ALCC 120 005 075	12 X R0.5	30	-	75	12	£78.45	£117.10
New 3ALC 120 005 110	New 3ALCC 120 005 110	12 X R0.5	13	36	110	12	£103.18	£145.39
3ALC 120 010 075	3ALCC 120 010 075	12 X R1	30	-	75	12	£78.45	£117.10
3ALC 120 010 110	3ALCC 120 010 110	12 X R1	13	36	110	12	£103.18	£145.39
3ALC 120 015 110	3ALCC 120 015 110	12 X R1.5	13	36	110	12	£103.18	£145.39
3ALC 120 020 075	3ALCC 120 020 075	12 X R2	30	-	75	12	£78.45	£117.10
3ALC 120 020 110	3ALCC 120 020 110	12 X R2	13	36	110	12	£103.18	£145.39
3ALC 120 025 110	3ALCC 120 025 110	12 X R2.5	13	36	110	12	£103.18	£145.39
3ALC 120 030 075	3ALCC 120 030 075	12 X R3	30	-	75	12	£78.45	£117.10
3ALC 120 030 110	3ALCC 120 030 110	12 X R3	13	36	110	12	£103.18	£145.39
3ALC 120 040 075	3ALCC 120 040 075	12 X R4	30	-	75	12	£78.45	£117.10
3ALC 120 040 110	3ALCC 120 040 110	12 X R4	13	36	110	12	£103.18	£145.39
New 3ALC 160 005 130	New 3ALCC 160 005 130	16 X R0.5	17	50	130	16	£211.83	£281.32
3ALC 160 010 090	3ALCC 160 010 090	16 X R1	35	-	90	16	£159.90	£227.90
3ALC 160 010 130	3ALCC 160 010 130	16 X R1	17	50	130	16	£211.83	£281.32
3ALC 160 020 090	3ALCC 160 020 090	16 X R2	35	-	90	16	£159.90	£227.90
3ALC 160 020 130	3ALCC 160 020 130	16 X R2	17	50	130	16	£211.83	£281.32
3ALC 160 025 130	3ALCC 160 025 130	16 X R2.5	17	50	130	16	£211.83	£281.32
3ALC 160 030 090	3ALCC 160 030 090	16 X R3	35	-	90	16	£159.90	£227.90
3ALC 160 030 130	3ALCC 160 030 130	16 X R3	17	50	130	16	£211.83	£281.32
3ALC 160 040 090	3ALCC 160 040 090	16 X R4	35	-	90	16	£159.90	£227.90
3ALC 160 040 130	3ALCC 160 040 130	16 X R4	17	50	130	16	£211.83	£281.32
3ALC 160 050 090	3ALCC 160 050 090	16 X R5	35	-	90	16	£159.90	£227.90
New 3ALC 200 010 150	New 3ALCC 200 010 150	20 X R1	21	60	150	20	£377.20	£487.22
3ALC 200 020 150	3ALCC 200 020 150	20 X R2	21	60	150	20	£377.20	£487.22
3ALC 200 025 150	3ALCC 200 025 150	20 X R2.5	21	60	150	20	£377.20	£487.22
3ALC 200 030 150	3ALCC 200 030 150	20 X R3	21	60	150	20	£377.20	£487.22
3ALC 200 040 150	3ALCC 200 040 150	20 X R4	21	60	150	20	£377.20	£487.22



3ARE

3 Flutes Semi-Finishing & Roughing End Mills for Aluminum



- High speed semi finishing and roughing endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize built up edge by chip braker and deep pocket design.
- Good surface integrity differently from competitor's AL roughing endmills.

3

WC
미립자

JCRO
Coating

D
-0.02 -0.04

D
-0.02 -0.05

45°
Helix Angle

Shield Edge

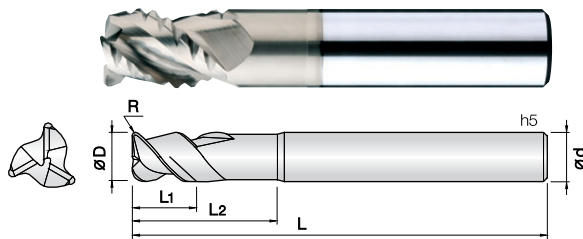
ø6~ø8 ø10~ø20 : mm

D Size	D Tolerance
ø6 ~ 8	-0.02 ~ -0.04mm
ø10 ~ 20	-0.02 ~ -0.05mm

Order Number	Diameter D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price	Order Number	Diameter D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price
3ARE 060 150 S06	6	10	15	50	6	£41.96	3ARE 160 500 S16	16	35	50	120	16	£245.86
3ARE 060 200 S06	6	15	20	70	6	£46.47	3ARE 200 500 S20	20	35	50	110	20	£295.34
3ARE 080 200 S08	8	15	20	60	8	£55.76	3ARE 200 600 S20	20	45	60	120	20	£330.73
3ARE 080 250 S08	8	20	25	80	8	£69.15							
3ARE 100 250 S10	10	18	25	70	10	£75.17							
3ARE 100 300 S10	10	23	30	90	10	£91.70							
3ARE 120 300 S12	12	20	30	80	12	£95.94							
3ARE 120 400 S12	12	30	40	100	12	£110.56							
3ARE 160 350 S16	16	25	35	110	16	£220.31							

3ARC

3 Flutes Semi-Finishing & Roughing Corner Radius End Mills for Aluminum



- High speed semi finishing and roughing endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize built up edge by chip braker and deep pocket design.
- Good surface integrity differently from competitor's AL roughing endmills.

3

WC
미립자

JCRO
Coating

R
±0.005

R
±0.01

R
±0.015

45°
Helix Angle

R0.5 R1 R02 ~ 3 : mm

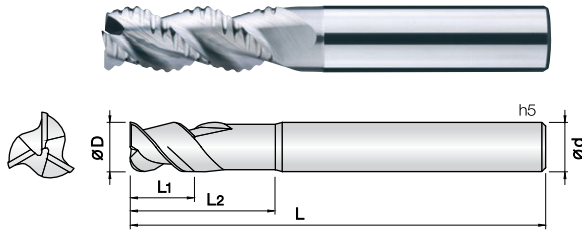
Size	D Tolerance
ø6 ~ 20	+0 ~ -0.015mm

Order Number	Diameter D × R	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price	Order Number	Diameter D × R	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price
3ARC 060 005 S06	6 X R0.5	9	15	65	6	£52.62	3ARC 160 010 S16	16 X R1	25	35	110	16	£234.79
3ARC 060 010 S06	6 X R1	9	15	65	6	£52.62	3ARC 160 020 S16	16 X R2	25	35	110	16	£234.79
3ARC 080 005 S08	8 X R0.5	12	20	70	8	£73.53	3ARC 160 030 S16	16 X R3	25	35	110	16	£234.79
3ARC 080 010 S08	8 X R1	12	20	70	8	£73.53	3ARC 200 020 S20	20 X R2	30	50	110	20	£316.66
3ARC 100 010 S10	10 X R1	15	25	75	10	£89.52	3ARC 200 030 S20	20 X R3	30	50	110	20	£316.66
3ARC 100 020 S10	10 X R2	15	25	75	10	£89.52							
3ARC 120 010 S12	12 X R1	20	30	80	12	£108.92							
3ARC 120 020 S12	12 X R2	20	30	80	12	£108.92							
3ARC 120 030 S12	12 X R3	20	30	80	12	£108.92							





- High speed semi finishing and roughing endmills for **Aluminum, AL alloy, non-ferrous and non-metallic materials.**
- Minimize built up edge by chip braker and deep pocket design.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize fracturing at high feed by high TRS fine WC grade.



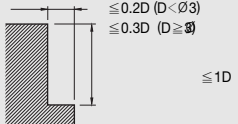
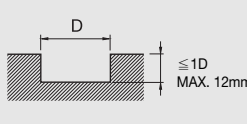
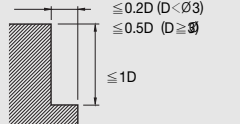
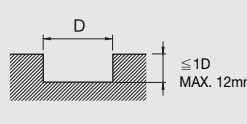
D Size	D Tolerance
ø4 ~ 8	-0.02 ~ -0.04mm
ø10 ~ 20	-0.02 ~ -0.05mm

: mm

Order Number		Diameter D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	Price	
Uncoated	Coated						Uncoated	Coated
3ARO 040 080 S06	3AROC 040 080 S06	4	8	-	50	6	£39.63	£61.13
3ARO 040 150 S06	3AROC 040 150 S06	4	10	15	60	6	£49.20	£72.14
3ARO 050 100 S06	3AROC 050 100 S06	5	10	-	60	6	£39.63	£61.13
3ARO 050 200 S06	3AROC 050 200 S06	5	15	20	60	6	£49.20	£72.14
3ARO 060 120 S06	3AROC 060 120 S06	6	12	-	60	6	£39.63	£61.13
3ARO 060 210 S06	3AROC 060 210 S06	6	16	21	65	6	£49.20	£72.14
3ARO 080 160 S08	3AROC 080 160 S08	8	16	-	70	8	£51.93	£80.63
3ARO 080 270 S08	3AROC 080 270 S08	8	21	27	70	8	£62.87	£93.19
3ARO 100 200 S10	3AROC 100 200 S10	10	20	-	70	10	£68.33	£103.73
3ARO 100 310 S10	3AROC 100 310 S10	10	26	31	75	10	£79.27	£116.30
3ARO 120 240 S12	3AROC 120 240 S12	12	24	-	75	12	£87.47	£129.83
3ARO 120 380 S12	3AROC 120 380 S12	12	30	38	80	12	£98.40	£142.39
3ARO 160 320 S16	3AROC 160 320 S16	16	32	-	100	16	£185.87	£251.47
3ARO 160 450 S16	3AROC 160 450 S16	16	36	45	100	16	£229.60	£301.76
3ARO 200 550 S20	3AROC 200 550 S20	20	41	55	110	20	£293.83	£385.05

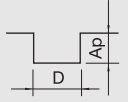
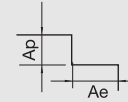
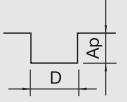
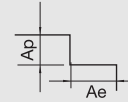


Material	Aluminum Alloys / A7075 etc.				Aluminum Alloys / AC4B etc.			
Speed	300m/min		240m/min		240m/min		200m/min	
	Side Milling		Slotting		Side Milling		Slotting	
Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	34,000	500	34,000	400	34,000	400	34,000	300
2mm	34,000	950	32,300	720	32,300	720	27,200	470
3mm	27,200	1,200	21,300	800	21,300	800	18,000	510
4mm	20,400	1,300	16,000	850	16,000	850	14,000	550
5mm	16,200	1,400	13,000	850	13,000	850	11,000	600
6mm	13,600	1,600	11,000	940	11,000	940	9,400	640
8mm	10,200	1,600	8,000	1,000	8,000	1,000	6,800	680
10mm	8,100	1,600	6,500	1,000	6,500	1,000	5,400	680
12mm	6,800	1,600	5,400	1,000	5,400	1,000	4,500	680
16mm	5,100	1,600	4,100	1,000	4,100	1,000	3,400	610
20mm	4,100	1,300	3,200	850	3,200	850	2,700	560

Depth of Cut	 $\leq 0.2D (D < \phi 3)$ $\leq 0.3D (D \geq \phi 3)$ $\leq 1D$	 $\leq 1D$ MAX. 12mm	 $\leq 0.2D (D < \phi 3)$ $\leq 0.5D (D \geq \phi 3)$ $\leq 1D$	 $\leq 1D$ MAX. 12mm
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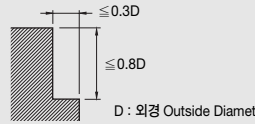
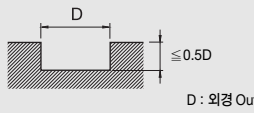
3ALR/3ALE

Material	Aluminum Alloys etc.							
	3ALE				3ALR			
Outside Diameter	RPM	FEED			RPM	FEED		
		Vertical	Slotting	Side Milling		Vertical	Slotting	Side Milling
1mm	25,500	130	770	930	30,000	150	900	1,100
2mm	25,500	190	1,530	1,800	30,000	225	1,800	2,150
3mm	18,400	190	1,700	2,000	21,600	225	2,000	2,400
4mm	14,000	255	1,700	2,000	16,200	300	2,000	2,400
5mm	11,000	255	1,700	2,000	13,000	300	2,000	2,400
6mm	9,200	255	1,700	2,000	10,800	300	2,000	2,400
8mm	7,000	255	1,700	2,000	8,100	300	2,000	2,400
10mm	5,500	210	1,700	2,000	6,480	250	2,000	2,400
12mm	4,400	170	1,700	2,000	5,400	200	2,000	2,400
16mm	3,200	130	1,530	1,900	-	-	-	-
20mm	2,000	85	1,360	1,700	-	-	-	-

Milling Amount (mm)	Ap=0.75D	Ap=0.75D	Ap=0.75D/ Ae=0.3D	Ap=0.75D	Ap=0.75D	Ap=0.75D/ Ae=0.3D
Depth of Cut						

3ALC

	Side Cutting		Slotting	
Material	Aluminum Alloys / A7075 etc.		Aluminum Alloys / A7075 etc.	
Outside Diameter	RPM	FEED	RPM	FEED
6mm	20,000	8,400	20,000	6,600
8mm	18,000	7,500	18,000	5,400
10mm	15,000	6,000	15,000	4,000
12mm	13,000	5,400	13,000	3,200
16mm	10,000	5,400	10,000	3,200
20mm	8,000	5,000	8,000	3,000

Depth of Cut	 $\leq 0.3D$ $\leq 0.8D$ D : 외경 Outside Diameter	 $\leq 0.5D$ D : 외경 Outside Diameter
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3ARE/3ARC

• RPM : rev./min • Feed : mm/min

Material	Copper		Aluminum	
Speed	80m/min		80 ~ 150m/min	
Outside Diameter	RPM	FEED	RPM	FEED
6mm	4,200	320	8,000	1,200
8mm	3,200	320	6,000	1,200
10mm	2,600	320	4,800	1,200
12mm	2,100	320	4,000	1,200
16mm	1,600	320	3,000	1,200
20mm	1,300	320	2,400	1,200

Depth of Cut		
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3ARO

• RPM : rev./min • Feed : mm/min

Side Cutting				
Material	Aluminum Alloys / A7075 etc.		Aluminum Alloys / AC4B etc.	
Outside Diameter	RPM	FEED	RPM	FEED
4mm	30,000	4,200	16,000	1,800
5mm	27,000	4,900	14,400	2,000
6mm	24,300	5,500	11,700	2,100
8mm	18,000	5,400	9,000	2,200
10mm	14,400	5,200	7,200	2,100
12mm	11,700	4,800	5,900	1,900
16mm	9,000	4,600	4,500	1,800
20mm	7,200	4,300	3,600	1,700

Depth of Cut	
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High speed machining hardened steels



HARD

HRC 50~65

HARD series for high speed cutting

HRC50~62

Endmills for pre-hardened and hardened steel
(HRC50~62)

- Good wear resistance by high quality Si-based PVD coating. High precise edge tolerance.
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine(0.2 μ m) WC grade.

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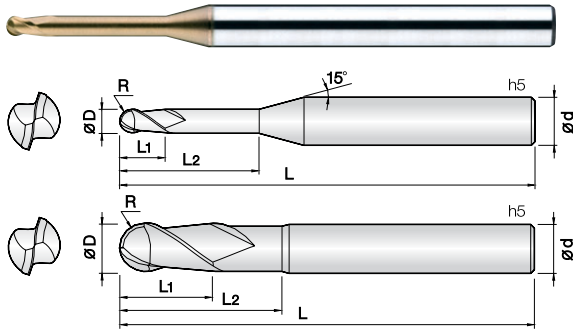
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- High precise edge tolerance.
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0.05 ~ 2.5R 3 ~ 6R

D Size	D Tolerance
Ø0.1	+0 ~ -0.005mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

mm

Order Number	Diameter R x D	Length of cut L1	Effective Length L2	Overall Length L	Shank d	List Price	Order Number	Diameter R x D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price
2HRB 001 003 S04	0.05R X 0.1	0.3	-	40	4	£72.30	2HRB 006 080 S04	0.3R X 0.6	0.6	8	45	4	£36.49
2HRB 001 005 S04	0.05R X 0.1	0.5	-	40	4	£72.30	2HRB 006 100 S04	0.3R X 0.6	0.6	10	45	4	£36.49
2HRB 002 005 S04	0.1R X 0.2	0.2	0.5	40	4	£45.65	2HRB 006 120 S04	0.3R X 0.6	0.6	12	45	4	£36.49
2HRB 002 010 S04	0.1R X 0.2	0.2	1	40	4	£45.65	2HRB 006 140 S04	0.3R X 0.6	0.6	14	45	4	£43.46
2HRB 002 015 S04	0.1R X 0.2	0.2	1.5	40	4	£45.65	2HRB 006 160 S04	0.3R X 0.6	0.6	16	45	4	£43.46
2HRB 002 020 S04	0.1R X 0.2	0.2	2	40	4	£45.65	2HRB 007 020 S04	0.35R X 0.7	0.7	2	45	4	£36.49
2HRB 002 025 S04	0.1R X 0.2	0.2	2.5	40	4	£48.52	2HRB 007 040 S04	0.35R X 0.7	0.7	4	45	4	£36.49
2HRB 002 030 S04	0.1R X 0.2	0.2	3	40	4	£48.52	2HRB 007 060 S04	0.35R X 0.7	0.7	6	45	4	£36.49
2HRB 003 010 S04	0.15R X 0.3	0.3	1	40	4	£42.91	2HRB 007 080 S04	0.35R X 0.7	0.7	8	45	4	£36.49
2HRB 003 015 S04	0.15R X 0.3	0.3	1.5	40	4	£42.91	2HRB 007 100 S04	0.35R X 0.7	0.7	10	45	4	£43.46
2HRB 003 020 S04	0.15R X 0.3	0.3	2	40	4	£42.91	2HRB 007 120 S04	0.35R X 0.7	0.7	12	45	4	£43.46
2HRB 003 025 S04	0.15R X 0.3	0.3	2.5	40	4	£42.91	2HRB 008 020 S04	0.4R X 0.8	0.8	2	45	4	£33.07
2HRB 003 030 S04	0.15R X 0.3	0.3	3	40	4	£42.91	2HRB 008 030 S04	0.4R X 0.8	0.8	3	45	4	£33.07
2HRB 003 035 S04	0.15R X 0.3	0.3	3.5	40	4	£47.56	2HRB 008 040 S04	0.4R X 0.8	0.8	4	45	4	£33.07
2HRB 003 040 S04	0.15R X 0.3	0.3	4	40	4	£50.29	2HRB 008 050 S04	0.4R X 0.8	0.8	5	45	4	£33.07
2HRB 003 050 S04	0.15R X 0.3	0.3	5	40	4	£50.29	2HRB 008 060 S04	0.4R X 0.8	0.8	6	45	4	£33.07
2HRB 004 010 S04	0.2R X 0.4	0.4	1	40	4	£41.27	2HRB 008 080 S04	0.4R X 0.8	0.8	8	45	4	£33.07
2HRB 004 015 S04	0.2R X 0.4	0.4	1.5	40	4	£41.27	2HRB 008 100 S04	0.4R X 0.8	0.8	10	45	4	£33.07
2HRB 004 020 S04	0.2R X 0.4	0.4	2	40	4	£41.27	2HRB 008 120 S04	0.4R X 0.8	0.8	12	45	4	£33.07
2HRB 004 025 S04	0.2R X 0.4	0.4	2.5	40	4	£41.27	2HRB 008 140 S04	0.4R X 0.8	0.8	14	45	4	£40.18
2HRB 004 030 S04	0.2R X 0.4	0.4	3	40	4	£41.27	2HRB 008 160 S04	0.4R X 0.8	0.8	16	45	4	£40.18
2HRB 004 035 S04	0.2R X 0.4	0.4	3.5	40	4	£41.27	2HRB 009 040 S04	0.45R X 0.9	0.9	4	45	4	£33.07
2HRB 004 040 S04	0.2R X 0.4	0.4	4	40	4	£41.27	2HRB 010 020 S04	0.5R X 1	1	2	45	4	£29.38
2HRB 004 045 S04	0.2R X 0.4	0.4	4.5	40	4	£41.27	2HRB 010 020 S06	0.5R X 1	1	2	50	6	£34.03
2HRB 004 050 S04	0.2R X 0.4	0.4	5	40	4	£41.27	2HRB 010 030 S04	0.5R X 1	1	3	45	4	£29.38
2HRB 004 060 S04	0.2R X 0.4	0.4	6	40	4	£41.27	2HRB 010 030 S06	0.5R X 1	1	3	50	6	£34.03
2HRB 004 080 S04	0.2R X 0.4	0.4	8	40	4	£41.27	2HRB 010 040 S04	0.5R X 1	1	4	45	4	£29.38
2HRB 004 100 S04	0.2R X 0.4	0.4	10	40	4	£48.11	2HRB 010 040 S06	0.5R X 1	1	4	50	6	£34.03
2HRB 005 010 S04	0.25R X 0.5	0.5	1	45	4	£37.72	2HRB 010 050 S04	0.5R X 1	1	5	45	4	£29.38
2HRB 005 015 S04	0.25R X 0.5	0.5	1.5	45	4	£37.72	2HRB 010 050 S06	0.5R X 1	1	5	50	6	£34.03
2HRB 005 020 S04	0.25R X 0.5	0.5	2	45	4	£37.72	2HRB 010 060 S04	0.5R X 1	1	6	45	4	£29.38
2HRB 005 025 S04	0.25R X 0.5	0.5	2.5	45	4	£37.72	2HRB 010 060 S06	0.5R X 1	1	6	50	6	£34.03
2HRB 005 030 S04	0.25R X 0.5	0.5	3	45	4	£37.72	2HRB 010 080 S04	0.5R X 1	1	8	45	4	£29.38
2HRB 005 035 S04	0.25R X 0.5	0.5	3.5	45	4	£37.72	2HRB 010 080 S06	0.5R X 1	1	8	50	6	£34.03
2HRB 005 040 S04	0.25R X 0.5	0.5	4	45	4	£37.72	2HRB 010 100 S04	0.5R X 1	1	10	50	4	£30.61
2HRB 005 045 S04	0.25R X 0.5	0.5	4.5	45	4	£37.72	2HRB 010 100 S06	0.5R X 1	1	10	50	6	£34.03
2HRB 005 050 S04	0.25R X 0.5	0.5	5	45	4	£38.81	2HRB 010 120 S04	0.5R X 1	1	12	50	4	£30.61
2HRB 005 060 S04	0.25R X 0.5	0.5	6	45	4	£38.81	2HRB 010 120 S06	0.5R X 1	1	12	50	6	£34.03
2HRB 005 080 S04	0.25R X 0.5	0.5	8	45	4	£38.81	2HRB 010 140 S04	0.5R X 1	1	14	50	4	£30.61
2HRB 005 100 S04	0.25R X 0.5	0.5	10	45	4	£38.81	2HRB 010 140 S06	0.5R X 1	1	14	50	6	£34.03
2HRB 005 120 S04	0.25R X 0.5	0.5	12	45	4	£45.92	2HRB 010 160 S04	0.5R X 1	1	16	50	4	£30.61
2HRB 005 140 S04	0.25R X 0.5	0.5	14	45	4	£45.92	2HRB 010 160 S06	0.5R X 1	1	16	60	6	£35.81
2HRB 006 010 S04	0.3R X 0.6	0.6	1	45	4	£35.40	2HRB 010 180 S04	0.5R X 1	1	18	50	4	£30.61
2HRB 006 020 S04	0.3R X 0.6	0.6	2	45	4	£35.40	2HRB 010 180 S06	0.5R X 1	1	18	60	6	£35.81
2HRB 006 030 S04	0.3R X 0.6	0.6	3	45	4	£35.40	2HRB 010 200 S04	0.5R X 1	1	20	50	4	£30.61
2HRB 006 040 S04	0.3R X 0.6	0.6	4	45	4	£35.40	2HRB 010 200 S06	0.5R X 1	1	20	60	6	£35.81
2HRB 006 050 S04	0.3R X 0.6	0.6	5	45	4	£35.40	2HRB 010 220 S04	0.5R X 1	1	22	60	4	£33.76
2HRB 006 060 S04	0.3R X 0.6	0.6	6	45	4	£35.40	2HRB 010 220 S06	0.5R X 1	1	22	65	6	£37.99



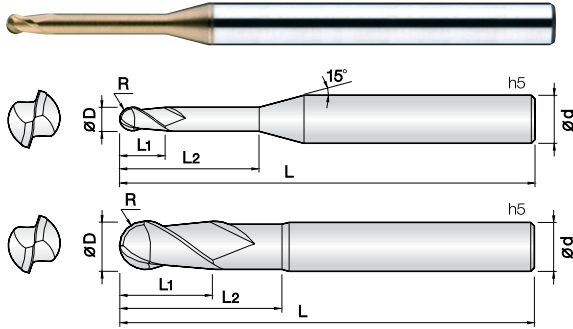
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0.05 ~ 2.5R 3 ~ 6R

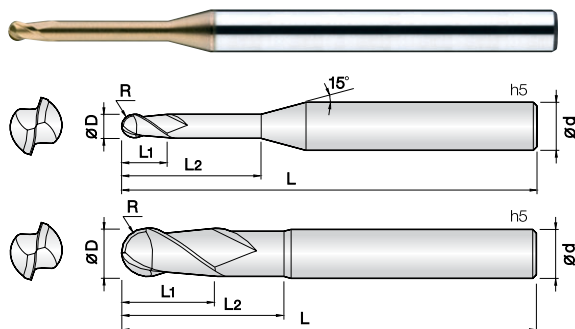
D Size	D Tolerance
Ø0.1	+0 ~ -0.005mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

mmm

Order Number	Diameter R×D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price	Order Number	Diameter R×D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price
2HRB 010 250 S04	0.5R X 1	1	25	60	4	£40.45	2HRB 015 350 S04	0.75R X 1.5	1.5	35	70	4	£43.73
2HRB 010 300 S04	0.5R X 1	1	30	70	4	£44.83	2HRB 015 400 S04	0.75R X 1.5	1.5	40	80	4	£47.56
2HRB 012 040 S04	0.6R X 1.2	1.2	4	45	4	£30.61	2HRB 016 060 S04	0.8R X 1.6	1.6	6	45	4	£35.40
2HRB 012 040 S06	0.6R X 1.2	1.2	4	50	6	£34.03	2HRB 016 080 S04	0.8R X 1.6	1.6	8	45	4	£35.40
2HRB 012 060 S04	0.6R X 1.2	1.2	6	45	4	£30.61	2HRB 016 120 S04	0.8R X 1.6	1.6	12	50	4	£35.40
2HRB 012 060 S06	0.6R X 1.2	1.2	6	50	6	£34.03	2HRB 016 160 S04	0.8R X 1.6	1.6	16	50	4	£35.40
2HRB 012 080 S04	0.6R X 1.2	1.2	8	45	4	£30.61	2HRB 016 200 S04	0.8R X 1.6	1.6	20	50	4	£35.40
2HRB 012 080 S06	0.6R X 1.2	1.2	8	50	6	£34.03	2HRB 018 060 S04	0.9R X 1.8	1.8	6	45	4	£35.40
2HRB 012 100 S04	0.6R X 1.2	1.2	10	50	4	£30.61	2HRB 018 080 S04	0.9R X 1.8	1.8	8	45	4	£35.40
2HRB 012 100 S06	0.6R X 1.2	1.2	10	50	6	£34.03	2HRB 018 120 S04	0.9R X 1.8	1.8	12	50	4	£35.40
2HRB 012 120 S04	0.6R X 1.2	1.2	12	50	4	£30.61	2HRB 018 160 S04	0.9R X 1.8	1.8	16	50	4	£35.40
2HRB 012 120 S06	0.6R X 1.2	1.2	12	50	6	£34.03	2HRB 018 200 S04	0.9R X 1.8	1.8	20	50	4	£35.40
2HRB 012 160 S04	0.6R X 1.2	1.2	16	50	4	£30.61	2HRB 020 040 S04	1R X 2	2	4	45	4	£29.38
2HRB 012 160 S06	0.6R X 1.2	1.2	16	60	6	£35.81	2HRB 020 040 S06	1R X 2	2	4	50	6	£34.03
2HRB 012 200 S04	0.6R X 1.2	1.2	20	50	4	£30.61	2HRB 020 060 S04	1R X 2	2	6	45	4	£29.38
2HRB 012 200 S06	0.6R X 1.2	1.2	20	60	6	£35.81	2HRB 020 060 S06	1R X 2	2	6	50	6	£34.03
2HRB 012 240 S04	0.6R X 1.2	1.2	24	60	4	£33.76	2HRB 020 080 S04	1R X 2	2	8	45	4	£29.38
2HRB 012 240 S06	0.6R X 1.2	1.2	24	65	6	£37.99	2HRB 020 080 S06	1R X 2	2	8	50	6	£34.03
2HRB 014 060 S04	0.7R X 1.4	1.4	6	45	4	£30.61	2HRB 020 100 S04	1R X 2	2	10	50	4	£29.38
2HRB 014 080 S04	0.7R X 1.4	1.4	8	45	4	£30.61	2HRB 020 100 S06	1R X 2	2	10	50	6	£34.03
2HRB 014 120 S04	0.7R X 1.4	1.4	12	50	4	£30.61	2HRB 020 120 S04	1R X 2	2	12	50	4	£29.38
2HRB 014 160 S04	0.7R X 1.4	1.4	16	50	4	£30.61	2HRB 020 120 S06	1R X 2	2	12	50	6	£34.03
2HRB 015 030 S04	0.75R X 1.5	1.5	3	45	4	£29.38	2HRB 020 140 S04	1R X 2	2	14	50	4	£29.38
2HRB 015 030 S06	0.75R X 1.5	1.5	3	50	6	£34.03	2HRB 020 140 S06	1R X 2	2	14	50	6	£34.03
2HRB 015 040 S04	0.75R X 1.5	1.5	4	45	4	£29.38	2HRB 020 160 S04	1R X 2	2	16	50	4	£29.38
2HRB 015 040 S06	0.75R X 1.5	1.5	4	50	6	£34.03	2HRB 020 160 S06	1R X 2	2	16	60	6	£35.81
2HRB 015 060 S04	0.75R X 1.5	1.5	6	45	4	£29.38	2HRB 020 180 S04	1R X 2	2	18	50	4	£29.38
2HRB 015 060 S06	0.75R X 1.5	1.5	6	50	6	£34.03	2HRB 020 180 S06	1R X 2	2	18	60	6	£35.81
2HRB 015 080 S04	0.75R X 1.5	1.5	8	45	4	£29.38	2HRB 020 200 S04	1R X 2	2	20	50	4	£31.57
2HRB 015 080 S06	0.75R X 1.5	1.5	8	50	6	£34.03	2HRB 020 200 S06	1R X 2	2	20	60	6	£35.81
2HRB 015 100 S04	0.75R X 1.5	1.5	10	50	4	£30.61	2HRB 020 220 S04	1R X 2	2	22	60	4	£31.57
2HRB 015 100 S06	0.75R X 1.5	1.5	10	50	6	£34.03	2HRB 020 220 S06	1R X 2	2	22	65	6	£37.99
2HRB 015 120 S04	0.75R X 1.5	1.5	12	50	4	£30.61	2HRB 020 250 S04	1R X 2	2	25	60	4	£31.57
2HRB 015 120 S06	0.75R X 1.5	1.5	12	50	6	£34.03	2HRB 020 250 S06	1R X 2	2	25	65	6	£37.99
2HRB 015 140 S04	0.75R X 1.5	1.5	14	50	4	£30.61	2HRB 020 300 S04	1R X 2	2	30	70	4	£37.04
2HRB 015 140 S06	0.75R X 1.5	1.5	14	50	6	£34.03	2HRB 020 300 S06	1R X 2	2	30	70	6	£43.46
2HRB 015 160 S04	0.75R X 1.5	1.5	16	50	4	£30.61	2HRB 020 350 S04	1R X 2	2	35	70	4	£37.04
2HRB 015 160 S06	0.75R X 1.5	1.5	16	60	6	£35.81	2HRB 020 350 S06	1R X 2	2	35	75	6	£47.70
2HRB 015 180 S04	0.75R X 1.5	1.5	18	50	4	£30.61	2HRB 020 400 S04	1R X 2	2	40	80	4	£41.68
2HRB 015 180 S06	0.75R X 1.5	1.5	18	60	6	£35.81	2HRB 020 400 S06	1R X 2	2	40	80	6	£52.07
2HRB 015 200 S04	0.75R X 1.5	1.5	20	50	4	£30.61	2HRB 020 450 S04	1R X 2	2	45	80	4	£48.52
2HRB 015 200 S06	0.75R X 1.5	1.5	20	60	6	£35.81	2HRB 020 500 S04	1R X 2	2	50	90	4	£52.62
2HRB 015 220 S04	0.75R X 1.5	1.5	22	60	4	£33.76	2HRB 025 080 S04	1.25R X 2.5	2.5	8	45	4	£31.57
2HRB 015 220 S06	0.75R X 1.5	1.5	22	65	6	£37.99	2HRB 025 080 S06	1.25R X 2.5	2.5	8	50	6	£37.86
2HRB 015 250 S04	0.75R X 1.5	1.5	25	60	4	£33.76	2HRB 025 100 S04	1.25R X 2.5	2.5	10	50	4	£31.57
2HRB 015 250 S06	0.75R X 1.5	1.5	25	65	6	£37.99	2HRB 025 100 S06	1.25R X 2.5	2.5	10	50	6	£37.86
2HRB 015 300 S04	0.75R X 1.5	1.5	30	70	4	£36.90	2HRB 025 120 S04	1.25R X 2.5	2.5	12	50	4	£31.57
2HRB 015 300 S06	0.75R X 1.5	1.5	30	70	6	£43.46	2HRB 025 120 S06	1.25R X 2.5	2.5	12	50	6	£37.86

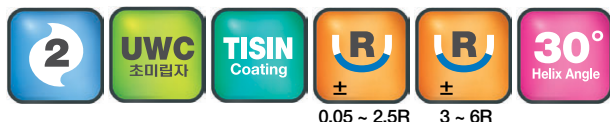


2HRB 2 Flutes High Speed Rib Ball End Mills



• Endmills for pre-hardened and hardened steel(HRc50~62)

- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine (0.2µm) WC grade.



D Size	D Tolerance
Ø0.1	+0 ~ -0.005mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

: mm

Order Number	Diameter R x D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price	Order Number	Diameter R x D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price
2HRB 025 160 S04	1.25R X 2.5	2.5	16	50	4	£31.57	2HRB 060 300 S06	3R X 6	10	30	110	6	£52.07
2HRB 025 160 S06	1.25R X 2.5	2.5	16	60	6	£37.86	2HRB 080 250 060	4R X 8	12	25	60	8	£44.42
2HRB 025 200 S04	1.25R X 2.5	2.5	20	60	4	£31.57	2HRB 080 300 100	4R X 8	12	30	100	8	£60.13
2HRB 025 250 S04	1.25R X 2.5	2.5	25	60	4	£34.44	2HRB 100 300 070	5R X 10	16	30	70	10	£58.22
2HRB 025 300 S04	1.25R X 2.5	2.5	30	70	4	£37.31	2HRB 100 350 100	5R X 10	16	35	100	10	£79.27
2HRB 025 350 S04	1.25R X 2.5	2.5	35	70	4	£37.31	2HRB 120 300 075	6R X 12	18	30	75	12	£75.85
2HRB 025 400 S04	1.25R X 2.5	2.5	40	80	4	£41.68	2HRB 120 400 110	6R X 12	18	40	110	12	£105.23
2HRB 030 060 S06	1.5R X 3	3	6	50	6	£34.03							
2HRB 030 080 S06	1.5R X 3	3	8	50	6	£34.03							
2HRB 030 100 S06	1.5R X 3	3	10	50	6	£34.03							
2HRB 030 120 S06	1.5R X 3	3	12	50	6	£34.03							
2HRB 030 160 S06	1.5R X 3	3	16	60	6	£35.81							
2HRB 030 200 S06	1.5R X 3	3	20	60	6	£35.81							
2HRB 030 250 S06	1.5R X 3	3	25	65	6	£37.99							
2HRB 030 300 S06	1.5R X 3	3	30	70	6	£43.46							
2HRB 030 350 S06	1.5R X 3	3	35	75	6	£47.70							
2HRB 030 400 S06	1.5R X 3	3	40	80	6	£52.07							
2HRB 030 450 S06	1.5R X 3	3	45	90	6	£54.94							
2HRB 030 500 S06	1.5R X 3	3	50	100	6	£59.31							
2HRB 030 600 S06	1.5R X 3	3	60	100	6	£66.01							
2HRB 030 650 S06	1.5R X 3	3	65	110	6	£71.07							
2HRB 030 700 S06	1.5R X 3	3	70	110	6	£73.66							
2HRB 040 080 S06	2R X 4	4	8	50	6	£34.03							
2HRB 040 100 S06	2R X 4	4	10	50	6	£34.03							
2HRB 040 120 S06	2R X 4	4	12	50	6	£34.03							
2HRB 040 160 S06	2R X 4	4	16	60	6	£35.81							
2HRB 040 200 S06	2R X 4	4	20	60	6	£35.81							
2HRB 040 250 S06	2R X 4	4	25	65	6	£37.99							
2HRB 040 300 S06	2R X 4	4	30	70	6	£43.46							
2HRB 040 350 S06	2R X 4	4	35	75	6	£47.70							
2HRB 040 400 S06	2R X 4	4	40	80	6	£52.07							
2HRB 040 450 S06	2R X 4	4	45	90	6	£54.94							
2HRB 040 500 S06	2R X 4	4	50	100	6	£59.31							
2HRB 040 550 S06	2R X 4	4	55	100	6	£66.01							
2HRB 040 600 S06	2R X 4	4	60	100	6	£66.01							
2HRB 040 650 S06	2R X 4	4	65	110	6	£71.07							
2HRB 040 700 S06	2R X 4	4	70	110	6	£73.66							
2HRB 050 160 S06	2.5R X 5	6	16	60	6	£37.99							
2HRB 050 200 S06	2.5R X 5	6	20	60	6	£37.99							
2HRB 050 250 S06	2.5R X 5	6	25	70	6	£43.46							
2HRB 050 300 S06	2.5R X 5	6	30	75	6	£47.70							
2HRB 050 400 S06	2.5R X 5	6	40	80	6	£52.07							
2HRB 050 450 S06	2.5R X 5	6	45	90	6	£54.94							
2HRB 050 500 S06	2.5R X 5	6	50	100	6	£59.31							
2HRB 050 600 S06	2.5R X 5	6	60	100	6	£66.01							
2HRB 050 650 S06	2.5R X 5	6	65	110	6	£71.07							
2HRB 050 700 S06	2.5R X 5	6	70	110	6	£73.66							
2HRB 060 150 S06	3R X 6	10	15	55	6	£32.66							



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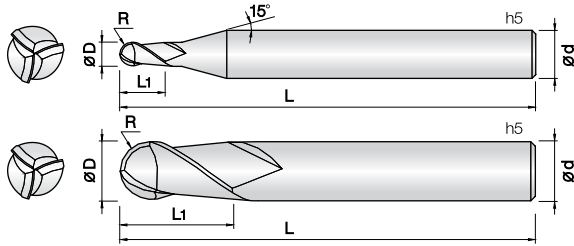
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3HCB

3 Flutes High Speed Standard Length Ball End Mills



• Endmills for pre-hardened and hardened steel (HRc50~65)

- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- High speed, feed applicable by 3 flute ball edge.
- Minimize fracturing by high TRS fine(0.5µm) WC grade.

3

WC
미립자

TISIN
Coating

R
±0.005

R
±0.01

30°
Helix Angle

0.5 ~ 2.5R 3R ~ 6R

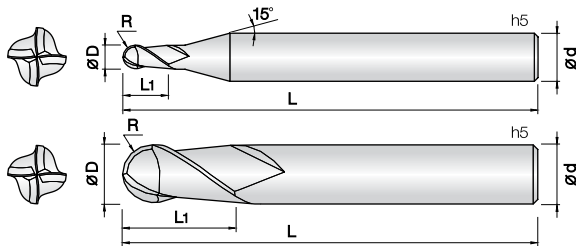
D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm

mm

Order Number	Diameter R x D	Length of cut L1	Overall Length L	Shank Dia d	List Price	Order Number	Diameter R x D	Length of cut L1	Overall Length L	Shank Dia d	List Price
New 3HCB 010 250 S04	0.5R X 1	2.5	50	4	£33.21	3HCB 120 220 S12	6R X 12	22	110	12	£108.38
New 3HCB 015 040 S04	0.75R X 1.5	4	50	4	£33.21						
3HCB 020 050 S06	1R X 2	5	50	6	£33.21						
3HCB 030 080 S06	1.5R X 3	8	65	6	£34.71						
3HCB 040 080 S04	2R X 4	8	60	4	£31.43						
3HCB 040 080 S06	2R X 4	8	70	6	£34.71						
3HCB 050 100 S06	2.5R X 5	10	75	6	£38.27						
3HCB 060 120 S06	3R X 6	12	80	6	£38.27						
3HCB 080 140 S08	4R X 8	14	90	8	£60.68						
3HCB 100 180 S10	5R X 10	18	100	10	£82.96						

4HCB

4 Flutes High Speed Standard Length Ball End Mills



• Endmills for pre-hardened and hardened steel (HRc50~65)

- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- High speed, feed applicable by 4 flute ball edge.
- Minimize fracturing by high TRS fine(0.5µm) WC grade.

4

WC
미립자

TISIN
Coating

R
±0.005

R
±0.01

R
±0.01

30°
Helix Angle

0.5 ~ 2.5R 3 ~ 6R 8 ~ 10R

D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm
ø16 ~ 20	-0.01 ~ -0.02mm

mm

Order Number	Diameter R x D	Length of cut L1	Overall Length L	Shank Dia d	List Price	Order Number	Diameter R x D	Length of cut L1	Overall Length L	Shank Dia d	List Price
4HCB 010 025 S06	0.5R X 1	2.5	50	6	£34.71	4HCB 120 220 S12	6R X 12	22	110	12	£108.38
4HCB 015 040 S06	0.75R X 1.5	4	50	6	£34.71	4HCB 160 300 S16	8R X 16	30	130	16	£207.73
4HCB 020 050 S06	1R X 2	5	50	6	£34.71	4HCB 200 400 S20	10R X 20	40	160	20	£396.33
4HCB 030 080 S06	1.5R X 3	8	60	6	£34.71						
4HCB 040 080 S04	2R X 4	8	60	4	£31.43						
4HCB 040 080 S06	2R X 4	8	70	6	£34.71						
4HCB 050 100 S06	2.5R X 5	10	80	6	£38.27						
4HCB 060 120 S06	3R X 6	12	90	6	£40.32						
4HCB 080 140 S08	4R X 8	14	100	8	£64.10						
4HCB 100 180 S10	5R X 10	18	100	10	£82.96						



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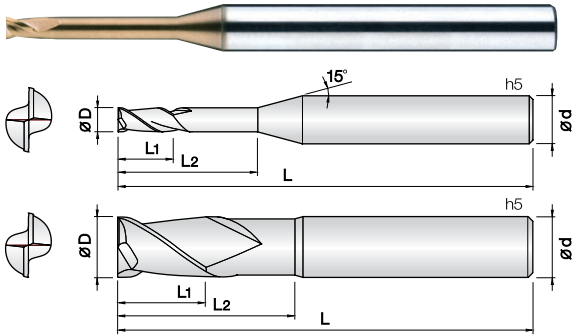


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2HRE 2 Flutes High Speed Rib End Mills



- Endmills for pre-hardened and hardened steel(HRc50~60)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- Outstanding performance at high speed machining by ultra fine (0.2µm) WC grade.



D Size	D Tolerance
ø0.1	+0 ~ -0.005mm
ø0.2 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm

mm

Order Number	Diameter D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price	Order Number	Diameter D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price
2HRE 001 003 S04	0.1	0.3	-	40	4	£56.85	2HRE 007 020 S04	0.7	0.7	2	40	4	£26.79
2HRE 001 005 S04	0.1	0.5	-	40	4	£56.85	2HRE 007 040 S04	0.7	0.7	4	40	4	£26.79
2HRE 002 005 S04	0.2	0.2	0.5	40	4	£36.49	2HRE 007 060 S04	0.7	0.7	6	40	4	£26.79
2HRE 002 010 S04	0.2	0.2	1	40	4	£36.49	2HRE 007 080 S04	0.7	0.7	8	40	4	£26.79
2HRE 002 015 S04	0.2	0.2	1.5	40	4	£36.49	2HRE 007 100 S04	0.7	0.7	10	40	4	£26.79
2HRE 002 020 S04	0.2	0.2	2	40	4	£36.49	2HRE 007 120 S04	0.7	0.7	12	45	4	£33.62
2HRE 002 025 S04	0.2	0.2	2.5	40	4	£38.40	2HRE 008 020 S04	0.8	0.8	2	40	4	£26.79
2HRE 002 030 S04	0.2	0.2	3	40	4	£40.45	2HRE 008 030 S04	0.8	0.8	3	40	4	£26.79
2HRE 003 010 S04	0.3	0.3	1	40	4	£31.71	2HRE 008 040 S04	0.8	0.8	4	40	4	£26.79
2HRE 003 015 S04	0.3	0.3	1.5	40	4	£31.71	2HRE 008 050 S04	0.8	0.8	5	40	4	£26.79
2HRE 003 020 S04	0.3	0.3	2	40	4	£31.71	2HRE 008 060 S04	0.8	0.8	6	40	4	£26.79
2HRE 003 025 S04	0.3	0.3	2.5	40	4	£31.71	2HRE 008 080 S04	0.8	0.8	8	40	4	£26.79
2HRE 003 030 S04	0.3	0.3	3	40	4	£31.71	2HRE 008100 S04	0.8	0.8	10	40	4	£26.79
2HRE 003 035 S04	0.3	0.3	3.5	40	4	£38.68	2HRE 008120 S04	0.8	0.8	12	45	4	£28.15
2HRE 003 040 S04	0.3	0.3	4	40	4	£38.68	2HRE 008140 S04	0.8	0.8	14	45	4	£35.12
2HRE 003 050 S04	0.3	0.3	5	40	4	£38.68	2HRE 009 060 S04	0.9	0.9	6	40	4	£26.79
2HRE 004 010 S04	0.4	0.4	1	40	4	£31.71	2HRE 009 080 S04	0.9	0.9	8	40	4	£26.79
2HRE 004 015 S04	0.4	0.4	1.5	40	4	£31.71	2HRE 009 100 S04	0.9	0.9	10	40	4	£26.79
2HRE 004 020 S04	0.4	0.4	2	40	4	£31.71	2HRE 010 020 S04	1	1	2	45	4	£23.23
2HRE 004 025 S04	0.4	0.4	2.5	40	4	£31.71	2HRE 010 030 S04	1	1	3	45	4	£23.23
2HRE 004 030 S04	0.4	0.4	3	40	4	£31.71	2HRE 010 040 S04	1	1	4	45	4	£23.23
2HRE 004 035 S04	0.4	0.4	3.5	40	4	£31.71	2HRE 010 050 S04	1	1	5	45	4	£23.23
2HRE 004 040 S04	0.4	0.4	4	40	4	£31.71	2HRE 010 060 S04	1	1	6	45	4	£23.23
2HRE 004 050 S04	0.4	0.4	5	40	4	£31.71	2HRE 010 080 S04	1	1	8	45	4	£23.23
2HRE 004 060 S04	0.4	0.4	6	40	4	£31.71	2HRE 010 100 S04	1	1	10	45	4	£25.15
2HRE 004 080 S04	0.4	0.4	8	40	4	£31.71	2HRE 010 120 S04	1	1	12	45	4	£25.15
2HRE 004 100 S04	0.4	0.4	10	40	4	£38.68	2HRE 010 140 S04	1	1	14	45	4	£25.15
2HRE 005 010 S04	0.5	0.5	1	40	4	£28.15	2HRE 010 160 S04	1	1	16	50	4	£25.15
2HRE 005 020 S04	0.5	0.5	2	40	4	£28.15	2HRE 010 180 S04	1	1	18	50	4	£25.15
2HRE 005 030 S04	0.5	0.5	3	40	4	£28.15	2HRE 010 200 S04	1	1	20	50	4	£25.15
2HRE 005 040 S04	0.5	0.5	4	40	4	£28.15	2HRE 010 250 S04	1	1	25	60	4	£28.15
2HRE 005 050 S04	0.5	0.5	5	40	4	£28.15	2HRE 010 300 S04	1	1	30	70	4	£37.99
2HRE 005 060 S04	0.5	0.5	6	40	4	£28.15	2HRE 012 040 S04	1.2	1.2	4	45	4	£23.23
2HRE 005 080 S04	0.5	0.5	8	40	4	£28.15	2HRE 012 060 S04	1.2	1.2	6	45	4	£23.23
2HRE 005 100 S04	0.5	0.5	10	40	4	£33.07	2HRE 012 080 S04	1.2	1.2	8	45	4	£23.23
2HRE 005 120 S04	0.5	0.5	12	45	4	£40.32	2HRE 012 100 S04	1.2	1.2	10	45	4	£25.15
2HRE 005 140 S04	0.5	0.5	14	45	4	£40.32	2HRE 012 120 S04	1.2	1.2	12	45	4	£25.15
2HRE 006 010 S04	0.6	0.6	1	40	4	£28.15	2HRE 012 160 S04	1.2	1.2	16	50	4	£25.15
2HRE 006 020 S04	0.6	0.6	2	40	4	£28.15	2HRE 012 200 S04	1.2	1.2	20	50	4	£25.15
2HRE 006 030 S04	0.6	0.6	3	40	4	£28.15	2HRE 012 250 S04	1.2	1.2	25	60	4	£28.15
2HRE 006 040 S04	0.6	0.6	4	40	4	£28.15	2HRE 012 300 S04	1.2	1.2	30	70	4	£37.99
2HRE 006 050 S04	0.6	0.6	5	40	4	£28.15	2HRE 014 060 S04	1.4	1.4	6	45	4	£25.15
2HRE 006 060 S04	0.6	0.6	6	40	4	£28.15	2HRE 014 080 S04	1.4	1.4	8	45	4	£25.15
2HRE 006 080 S04	0.6	0.6	8	40	4	£28.15	2HRE 014 100 S04	1.4	1.4	10	45	4	£25.15
2HRE 006 100 S04	0.6	0.6	10	40	4	£28.15	2HRE 014 140 S04	1.4	1.4	14	45	4	£25.15
2HRE 006 120 S04	0.6	0.6	12	45	4	£33.07	2HRE 014 160 S04	1.4	1.4	16	50	4	£25.15
2HRE 006 140 S04	0.6	0.6	14	45	4	£40.32	2HRE 014 200 S04	1.4	1.4	20	50	4	£25.15
2HRE 006 160 S04	0.6	0.6	16	45	4	£40.32	2HRE 015 040 S04	1.5	1.5	4	45	4	£23.23



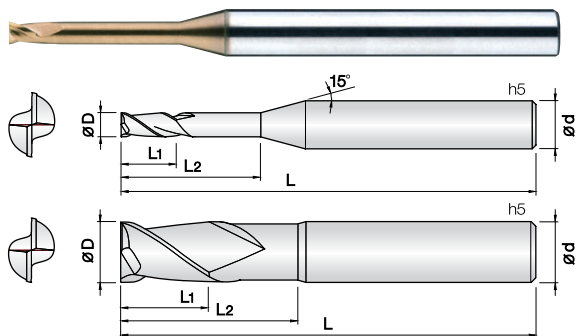
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• Endmills for pre-hardened and hardened steel(HRc50~60)

- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- Outstanding performance at high speed machining by ultra fine (0.2µm) WC grade.



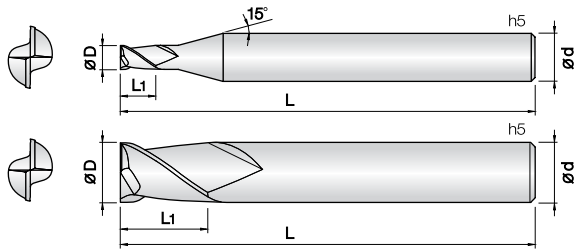
D Size	D Tolerance
ø0.1	+0 ~ -0.005mm
ø0.2 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm

mmm

Order Number	Diameter D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price	Order Number	Diameter D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price
2HRE 015 060 S04	1.5	1.5	6	45	4	£23.23	2HRE 030 250 S06	3	3	25	65	6	£28.56
2HRE 015 080 S04	1.5	1.5	8	45	4	£23.23	2HRE 030 300 S06	3	3	30	70	6	£34.99
2HRE 015 100 S04	1.5	1.5	10	45	4	£23.23	2HRE 030 350 S06	3	3	35	75	6	£40.18
2HRE 015 120 S04	1.5	1.5	12	45	4	£25.15	2HRE 030 400 S06	3	3	40	80	6	£41.55
2HRE 015 140 S04	1.5	1.5	14	50	4	£25.15	2HRE 030 450 S06	3	3	45	90	6	£43.19
2HRE 015 160 S04	1.5	1.5	16	50	4	£25.15	2HRE 030 500 S06	3	3	50	100	6	£46.06
2HRE 015 180 S04	1.5	1.5	18	50	4	£25.15	2HRE 030 600 S06	3	3	60	100	6	£53.03
2HRE 015 200 S04	1.5	1.5	20	50	4	£25.15	2HRE 040 080 S06	4	4	8	50	6	£27.33
2HRE 015 250 S04	1.5	1.5	25	60	4	£28.15	2HRE 040 100 S06	4	4	10	50	6	£27.33
2HRE 015 300 S04	1.5	1.5	30	70	4	£37.99	2HRE 040 120 S06	4	4	12	50	6	£27.33
2HRE 016 100 S04	1.6	1.6	10	45	4	£25.15	2HRE 040 160 S06	4	4	16	55	6	£27.33
2HRE 016 140 S04	1.6	1.6	14	45	4	£25.15	2HRE 040 200 S06	4	4	20	60	6	£29.93
2HRE 016 180 S04	1.6	1.6	18	60	4	£25.15	2HRE 040 250 S06	4	4	25	65	6	£29.93
2HRE 018 100 S04	1.8	1.8	10	45	4	£25.15	2HRE 040 300 S06	4	4	30	70	6	£34.99
2HRE 018 140 S04	1.8	1.8	14	45	4	£25.15	2HRE 040 350 S06	4	4	35	75	6	£40.18
2HRE 018 180 S04	1.8	1.8	18	50	4	£25.15	2HRE 040 400 S06	4	4	40	80	6	£41.55
2HRE 020 040 S04	2	2	4	45	4	£23.23	2HRE 040 450 S06	4	4	45	90	6	£43.19
2HRE 020 060 S04	2	2	6	45	4	£23.23	2HRE 040 500 S06	4	4	50	100	6	£46.06
2HRE 020 080 S04	2	2	8	45	4	£23.23	2HRE 040 550 S06	4	4	55	100	6	£53.03
2HRE 020 100 S04	2	2	10	45	4	£23.23	2HRE 040 600 S06	4	4	60	100	6	£58.08
2HRE 020 120 S04	2	2	12	45	4	£23.23	2HRE 050 160 S06	5	6	16	55	6	£29.93
2HRE 020 140 S04	2	2	14	45	4	£23.23	2HRE 050 200 S06	5	6	20	60	6	£29.93
2HRE 020 160 S04	2	2	16	50	4	£23.23	2HRE 050 250 S06	5	6	25	65	6	£34.99
2HRE 020 180 S04	2	2	18	50	4	£23.23	2HRE 050 300 S06	5	6	30	70	6	£34.99
2HRE 020 200 S04	2	2	20	50	4	£23.23	2HRE 050 350 S06	5	6	35	75	6	£40.18
2HRE 020 220 S04	2	2	22	60	4	£25.15	2HRE 050 400 S06	5	6	40	80	6	£41.55
2HRE 020 250 S04	2	2	25	60	4	£25.15	2HRE 050 500 S06	5	6	50	100	6	£46.06
2HRE 020 300 S04	2	2	30	60	4	£28.70	2HRE 050 600 S06	5	6	60	100	6	£53.03
2HRE 020 350 S04	2	2	35	70	4	£31.16	2HRE 060 200 S06	6	10	20	60	6	£29.93
2HRE 020 400 S04	2	2	40	80	4	£34.03	2HRE 060 300 S06	6	10	30	75	6	£34.99
2HRE 020 450 S04	2	2	45	80	4	£40.86	2HRE 060 400 S06	6	10	40	80	6	£41.55
2HRE 020 500 S04	2	2	50	90	4	£47.56	2HRE 060 500 S06	6	10	50	90	6	£43.73
2HRE 025 080 S04	2.5	2.5	8	45	4	£25.15	2HRE 060 600 S06	6	10	60	110	6	£49.75
2HRE 025 100 S04	2.5	2.5	10	45	4	£25.15	2HRE 080 200 S08	8	12	20	65	8	£43.73
2HRE 025 120 S04	2.5	2.5	12	45	4	£25.15	2HRE 080 300 S08	8	12	30	80	8	£49.20
2HRE 025 160 S04	2.5	2.5	16	50	4	£25.15	2HRE 080 400 S08	8	12	40	100	8	£56.03
2HRE 025 200 S04	2.5	2.5	20	50	4	£25.15	2HRE 100 250 S10	10	15	25	70	10	£64.92
2HRE 025 250 S04	2.5	2.5	25	60	4	£25.15	2HRE 100 350 S10	10	15	35	80	10	£71.75
2HRE 025 300 S04	2.5	2.5	30	70	4	£28.70	2HRE 100 450 S10	10	15	45	100	10	£80.63
2HRE 025 350 S04	2.5	2.5	35	70	4	£31.16	2HRE 120 300 S12	12	18	30	80	12	£74.89
2HRE 025 400 S04	2.5	2.5	40	80	4	£34.03	2HRE 120 400 S12	12	18	40	100	12	£86.10
2HRE 025 500 S04	2.5	2.5	50	90	4	£41.00	2HRE 120 500 S12	12	18	50	120	12	£98.40
2HRE 030 060 S06	3	3	6	45	6	£25.83							
2HRE 030 080 S06	3	3	8	45	6	£25.83							
2HRE 030 100 S06	3	3	10	45	6	£25.83							
2HRE 030 120 S06	3	3	12	50	6	£25.83							
2HRE 030 160 S06	3	3	16	55	6	£25.83							
2HRE 030 200 S06	3	3	20	60	6	£28.56							



2HCE 2 Flutes High Speed Standard Length End Mills



- Endmills for pre-hardened and hardened steel(HRc50~60)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- Produce down to 0.05mm in diameter endmills at the first time in Korea.
- Minimize fracturing by high TRS fine(0.5µm) WC grade.

2

WC
미립자

TISIN
Coating

D
+0 -0.005

D
+0 -0.01

D
-0.01 -0.025

D
-0.015 -0.03

30°
Helix Angle

Shield Edge

ø0.05 ~ 0.15
ø0.2 ~ 5.9
ø6 ~ 12
ø13 ~ 20

D Size	D Tolerance
ø0.05 ~ 0.15	+0 ~ -0.005mm
ø0.2 ~ 5.9	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø13 ~ 20	-0.015 ~ -0.03mm

mm

Order Number	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	List Price	Order Number	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	List Price
2HCE 0005 0008 S04	0.05	0.08	40	4	£105.23	2HCE 017 042 S04	1.7	4.2	40	4	£19.68
2HCE 0006 001 S04	0.06	0.1	40	4	£93.62	2HCE 0175 042 S04	1.75	4.2	40	4	£20.23
2HCE 0007 0012 S04	0.07	0.12	40	4	£81.86	2HCE 018 045 S04	1.8	4.5	40	4	£19.68
2HCE 0008 0015 S04	0.08	0.15	40	4	£70.25	2HCE 0185 045 S04	1.85	4.5	40	4	£20.23
2HCE 0009 0017 S04	0.09	0.17	40	4	£64.37	2HCE 019 050 S04	1.9	5	40	4	£19.68
2HCE 0010 002 S04	0.1	0.2	40	4	£43.73	2HCE 0195 050 S04	1.95	5	40	4	£20.23
2HCE 0015 003 S04	0.15	0.3	40	4	£40.45	2HCE 020 060 S03	2	6	40	3	£25.28
2HCE 002 004 S04	0.2	0.4	40	4	£31.43	2HCE 020 060 S04	2	6	40	4	£17.08
2HCE 0025 005 S04	0.25	0.5	40	4	£34.30	2HCE 020 060 S06	2	6	40	6	£17.08
2HCE 003 006 S04	0.3	0.6	40	4	£24.46	2HCE 020 060 060	2	6	60	6	£19.27
2HCE 0035 007 S04	0.35	0.7	40	4	£27.33	2HCE 021 060 S04	2.1	6	40	4	£19.68
2HCE 004 008 S04	0.4	0.8	40	4	£24.46	2HCE 022 060 S04	2.2	6	40	4	£19.68
2HCE 0045 009 S04	0.45	0.9	40	4	£27.33	2HCE 023 060 S04	2.3	6	40	4	£19.68
2HCE 005 010 S03	0.5	1	40	3	£17.08	2HCE 024 080 S04	2.4	8	45	4	£19.68
2HCE 005 010 S04	0.5	1	40	4	£22.96	2HCE 025 080 S03	2.5	8	45	3	£17.08
2HCE 0055 011 S04	0.55	1.1	40	4	£25.83	2HCE 025 080 S04	2.5	8	45	4	£17.08
2HCE 006 012 S03	0.6	1.2	40	3	£17.08	2HCE 025 080 S06	2.5	8	45	6	£19.27
2HCE 006 012 S04	0.6	1.2	40	4	£22.96	2HCE 025 080 070	2.5	8	70	6	£27.33
2HCE 0065 013 S04	0.65	1.3	40	4	£25.83	2HCE 026 080 S04	2.6	8	45	4	£19.68
2HCE 007 014 S04	0.7	1.4	40	4	£21.32	2HCE 027 080 S04	2.7	8	45	4	£19.68
2HCE 0075 015 S04	0.75	1.5	40	4	£24.33	2HCE 028 080 S04	2.8	8	45	4	£20.23
2HCE 008 016 S03	0.8	1.6	40	3	£17.08	2HCE 029 080 S04	2.9	8	45	4	£19.68
2HCE 008 016 S04	0.8	1.6	40	4	£21.32	2HCE 030 080 S03	3	8	45	3	£20.23
2HCE 0085 017 S04	0.85	1.7	40	4	£24.33	2HCE 030 080 S04	3	8	45	4	£20.33
2HCE 009 020 S04	0.9	2	40	4	£21.32	2HCE 030 080 S06	3	8	45	6	£25.28
2HCE 0095 020 S04	0.95	2	40	4	£24.33	2HCE 030 080 070	3	8	70	6	£27.33
2HCE 010 025 S03	1	2.5	40	3	£25.28	2HCE 031 080 S06	3.1	8	45	6	£17.08
2HCE 010 025 S04	1	2.5	40	4	£17.08	2HCE 032 080 S06	3.2	8	45	6	£17.08
2HCE 010 025 S06	1	2.5	40	6	£17.08	2HCE 033 080 S06	3.3	8	45	6	£19.27
2HCE 010 025 060	1	2.5	60	6	£19.27	2HCE 034 080 S06	3.4	8	45	6	£19.68
2HCE 0105 025 S04	1.05	2.5	40	4	£20.23	2HCE 035 100 S06	3.5	10	45	6	£19.68
2HCE 011 027 S04	1.1	2.7	40	4	£19.68	2HCE 036 100 S06	3.6	10	45	6	£19.68
2HCE 0115 025 S04	1.15	2.5	40	4	£20.23	2HCE 037 100 S06	3.7	10	45	6	£19.68
2HCE 012 030 S03	1.2	3	40	3	£25.69	2HCE 038 100 S06	3.8	10	45	6	£17.08
2HCE 012 030 S04	1.2	3	40	4	£17.08	2HCE 039 100 S06	3.9	10	45	6	£19.68
2HCE 012 030 060	1.2	3	60	6	£19.68	2HCE 040 100 S04	4	10	45	4	£19.68
2HCE 0125 030 S04	1.25	3	40	4	£20.23	2HCE 040 110 S06	4	11	45	6	£19.68
2HCE 013 032 S04	1.3	3.2	40	4	£19.68	2HCE 040 110 070	4	11	70	6	£27.33
2HCE 0135 032 S04	1.35	3.2	40	4	£20.23	2HCE 041 110 S06	4.1	11	45	6	£27.33
2HCE 014 035 S04	1.4	3.5	40	4	£19.68	2HCE 042 110 S06	4.2	11	45	6	£24.33
2HCE 0145 035 S04	1.45	3.5	40	4	£20.23	2HCE 043 110 S06	4.3	11	45	6	£24.33
2HCE 015 040 S03	1.5	4	40	3	£25.28	2HCE 044 110 S06	4.4	11	45	6	£24.33
2HCE 015 040 S04	1.5	4	40	4	£17.08	2HCE 045 110 S06	4.5	11	45	6	£24.33
2HCE 015 040 S06	1.5	4	40	6	£17.08	2HCE 046 110 S06	4.6	11	45	6	£24.33
2HCE 015 040 060	1.5	4	60	6	£19.27	2HCE 047 110 S06	4.7	11	45	6	£24.33
2HCE 0155 040 S04	1.55	4	40	4	£20.23	2HCE 048 110 S06	4.8	11	45	6	£24.33
2HCE 016 040 S04	1.6	4	40	4	£19.68	2HCE 049 110 S06	4.9	11	45	6	£24.33
2HCE 0165 040 S04	1.65	4	40	4	£20.23	2HCE 050 130 S06	5	13	50	6	£24.33



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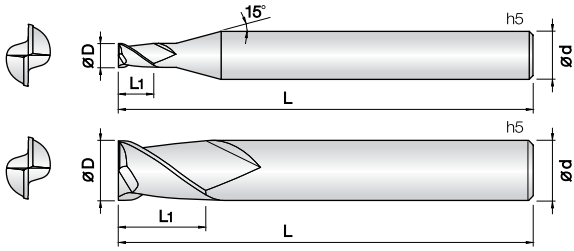


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2HCE 2 Flutes High Speed Standard Length End Mills



- Endmills for pre-hardened and hardened steel(HRc50~60)**
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- Produce down to 0.05mm in diameter endmills at the first time in Korea.
- Minimize fracturing by high TRS fine(0.5 μ m) WC grade.

2

WC
미립자

TISIN
Coating

D
+0 -0.005

D
+0 -0.01

D
-0.01 -0.025

D
-0.015 -0.03

30°
Helix Angle

Shield Edge

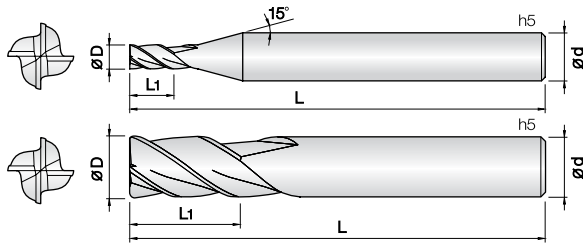
ϕ 0.05 ~ 0.15 ϕ 0.2 ~ 5.9 ϕ 6 ~ 12 ϕ 13 ~ 20

D Size	D Tolerance
ϕ 0.05 ~ 0.15	+0 ~ -0.005mm
ϕ 0.2 ~ 5.9	+0 ~ -0.01mm
ϕ 6 ~ 12	-0.01 ~ -0.025mm
ϕ 13 ~ 20	-0.015 ~ -0.03mm

mmm

Order Number	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	List Price					
2HCE 050 130 080	5	13	80	6	£24.33					
2HCE 051 130 S06	5.1	13	50	6	£24.33					
2HCE 052 130 S06	5.2	13	50	6	£24.33					
2HCE 053 130 S06	5.3	13	50	6	£24.33					
2HCE 054 130 S06	5.4	13	50	6	£24.33					
2HCE 055 130 S06	5.5	13	50	6	£18.04					
2HCE 056 130 S06	5.6	13	50	6	£27.33					
2HCE 057 130 S06	5.7	13	50	6	£20.23					
2HCE 058 130 S06	5.8	13	50	6	£24.33					
2HCE 059 130 S06	5.9	13	50	6	£24.33					
2HCE 060 130 S06	6	13	50	6	£24.33					
2HCE 060 130 080	6	13	80	6	£24.33					
2HCE 061 150 S08	6.1	15	70	8	£27.61					
2HCE 062 150 S08	6.2	15	70	8	£24.33					
2HCE 063 150 S08	6.3	15	70	8	£24.33					
2HCE 064 150 S08	6.4	15	70	8	£24.33					
2HCE 065 160 S08	6.5	16	60	8	£24.33					
2HCE 070 160 S08	7	16	60	8	£38.81					
2HCE 075 160 S08	7.5	16	60	8	£42.91					
2HCE 080 190 S08	8	19	60	8	£34.58					
2HCE 085 190 S10	8.5	19	70	10	£57.40					
2HCE 090 190 S10	9	19	70	10	£53.30					
2HCE 095 190 S10	9.5	19	70	10	£57.40					
2HCE 100 220 S10	10	22	70	10	£49.20					
2HCE 105 220 S12	10.5	22	75	12	£67.24					
2HCE 110 220 S12	11	22	75	12	£63.14					
2HCE 115 220 S12	11.5	22	75	12	£67.24					
2HCE 120 260 S12	12	26	75	12	£59.04					
2HCE 130 260 S14	13	26	80	14	£140.77					
2HCE 140 260 S14	14	26	80	14	£144.87					
2HCE 140 260 S16	14	26	90	16	£161.27					
2HCE 150 350 S16	15	35	100	16	£176.30					
2HCE 160 350 S16	16	35	100	16	£175.34					
2HCE 170 350 S18	17	35	100	18	£211.83					
2HCE 180 350 S18	18	35	100	18	£210.06					
2HCE 200 400 S20	20	40	100	20	£239.85					

4LEM 4Flutes Long Length End Mills



- Endmill for various work materials, hardened steel(HRc~55), pre-hardened steel, tool steel and cast iron
- Good wear resistance by Si-based PVD coating.
- Improve tool performance by even run-out and tolerance control.
- Various flute and overall length design for covering wide range applications as well as high efficiency machining.
- Minimize edge chipping by improving corner strength.

4

WC
미립자

TISIN
Coating

D
+0 -0.01

D
-0.01 -0.025

D
-0.015 -0.03

30°
Helix Angle

Shield Edge

D Size	D Tolerance
ø0.5 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø14 ~ 25	-0.015 ~ -0.03mm

mm

Order Number	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	List Price	Order Number	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	List Price
New 4LEM 005 015 S04	0.5	1.5	40	4	£38.95	4LEM 080 450 S08	8	45	100	8	£66.56
New 4LEM 006 018 S04	0.6	1.8	40	4	£38.95	4LEM 080 500 S08	8	50	100	8	£69.70
New 4LEM 008 024 S04	0.8	2.4	40	4	£37.58	4LEM 080 550 S08	8	55	100	8	£77.90
4LEM 010 030 S06	1	3	60	6	£36.63	New 4LEM 080 600 S08	8	60	110	8	£92.93
4LEM 010 050 S06	1	5	60	6	£36.63	4LEM 100 300 S10	10	30	80	10	£66.01
4LEM 010 070 S06	1	7	60	6	£37.99	4LEM 100 300 110	10	30	110	10	£88.83
New 4LEM 010 100 S06	1	10	60	6	£42.37	4LEM 100 350 S10	10	35	90	10	£68.88
New 4LEM 010 120 S06	1	12	60	6	£47.83	4LEM 100 400 S10	10	40	90	10	£75.17
4LEM 015 060 S06	1.5	6	60	6	£35.12	4LEM 100 450 S10	10	45	100	10	£82.00
4LEM 015 080 S06	1.5	8	60	6	£35.12	4LEM 100 500 S10	10	50	100	10	£85.55
4LEM 015 100 S06	1.5	10	60	6	£37.99	4LEM 100 550 S10	10	55	100	10	£88.83
New 4LEM 150 120 S06	1.5	12	60	6	£42.37	4LEM 100 600 S10	10	60	110	10	£101.13
New 4LEM 150 150 S06	1.5	15	60	6	£47.83	4LEM 100 650 S10	10	65	120	10	£107.97
4LEM 020 080 S06	2	8	60	6	£29.79	4LEM 100 700 S10	10	70	120	10	£114.80
4LEM 020 100 S06	2	10	60	6	£29.79	4LEM 120 300 S12	12	30	90	12	£84.46
4LEM 020 120 S06	2	12	60	6	£29.79	4LEM 120 350 110	12	35	110	12	£105.92
4LEM 020 150 S06	2	15	60	6	£33.89	4LEM 120 400 S12	12	40	100	12	£91.16
4LEM 030 100 S06	3	10	70	6	£32.12	4LEM 120 450 S12	12	45	100	12	£92.93
4LEM 030 150 S06	3	15	70	6	£32.12	4LEM 120 500 S12	12	50	100	12	£96.35
4LEM 030 200 S06	3	20	70	6	£35.12	4LEM 120 550 S12	12	55	110	12	£102.50
4LEM 030 250 S06	3	25	70	6	£38.95	4LEM 120 600 S12	12	60	110	12	£106.19
4LEM 030 300 S06	3	30	70	6	£42.37	4LEM 120 700 S12	12	70	130	12	£120.27
4LEM 040 120 S06	4	12	70	6	£32.12	4LEM 120 800 S12	12	80	130	12	£128.47
4LEM 040 150 S04	4	15	70	4	£30.75	4LEM 140 500 S14	14	50	110	14	£185.18
4LEM 040 150 S06	4	15	70	6	£32.12	4LEM 160 400 160	16	40	160	16	£228.23
4LEM 040 200 S04	4	20	70	4	£30.75	4LEM 160 550 S16	16	55	120	16	£193.52
4LEM 040 200 S06	4	20	70	6	£35.12	4LEM 160 700 S16	16	70	130	16	£225.50
4LEM 040 250 S06	4	25	70	6	£37.99	4LEM 160 900 S16	16	90	150	16	£266.50
4LEM 040 300 S06	4	30	75	6	£42.37	4LEM 160 1000 S16	16	100	160	16	£287.00
4LEM 040 350 S06	4	35	75	6	£45.10	4LEM 200 500 160	20	50	160	20	£323.90
4LEM 040 400 S06	4	40	80	6	£49.20	4LEM 200 600 S20	20	60	130	20	£297.66
4LEM 050 200 S06	5	20	70	6	£35.12	4LEM 200 800 S20	20	80	160	20	£352.60
4LEM 050 250 S06	5	25	75	6	£37.99	4LEM 200 1000 S20	20	100	200	20	£537.10
4LEM 050 300 S06	5	30	80	6	£42.91	4LEM 250 750 S25	25	75	160	25	£638.37
4LEM 050 400 S06	5	40	80	6	£49.20						
4LEM 060 200 S06	6	20	75	6	£43.73						
4LEM 060 200 100	6	20	100	6	£35.12						
4LEM 060 250 S06	6	25	75	6	£37.99						
4LEM 060 300 S06	6	30	80	6	£42.91						
4LEM 060 350 S06	6	35	80	6	£46.47						
4LEM 060 400 S06	6	40	90	6	£51.93						
New 4LEM 060 450 S06	6	45	90	6	£60.13						
New 4LEM 060 500 S06	6	50	100	6	£71.07						
4LEM 080 250 S08	8	25	75	8	£61.50						
4LEM 080 250 100	8	25	100	8	£48.52						
4LEM 080 300 S08	8	30	80	8	£50.16						
4LEM 080 350 S08	8	35	90	8	£54.67						
4LEM 080 400 S08	8	40	90	8	£61.09						



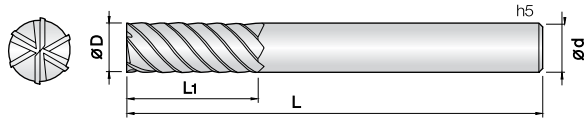
01245 260414 - 250910



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- Endmills for pre-hardened and hardened steel (HRc50~62)
- Good wear resistance by Si-based PVD coating.
- Precise run-out and tolerance for finish machining.
- Reinforced edge design for preventing edge chipping.
- 45° degree helix design for high speed, feed condition.
- Outstanding performance at high speed machining by ultra fine (0.2 μm) WC grade.

6

8

UWC

초미립자

TISIN

Coating

D

+0 -0.01

D

-0.01 -0.025

D

-0.015 -0.03

45°

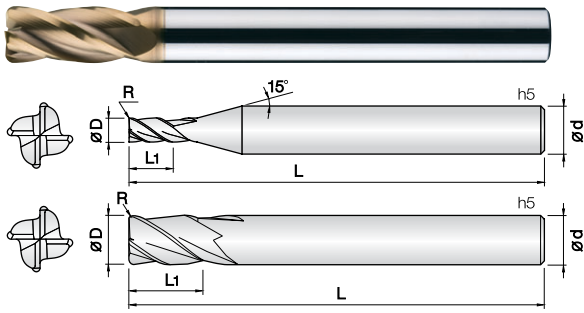
Helix Angle

D Size	D Tolerance
ø3 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø16 ~ 25	-0.015 ~ -0.03mm

mm

Order Number	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	List Price									
6HEM 030 100 S06	3	10	50	6	£32.80									
6HEM 030 150 S06	3	15	50	6	£36.90									
6HEM 040 120 S06	4	12	50	6	£32.80									
6HEM 040 160 S06	4	16	50	6	£36.90									
6HEM 050 150 S06	5	15	50	6	£32.80									
6HEM 050 200 S06	5	20	60	6	£39.36									
6HEM 060 150 S06	6	15	50	6	£32.80									
6HEM 060 200 S06	6	20	60	6	£39.36									
6HEM 060 250 S06	6	25	65	6	£50.84									
6HEM 060 300 S06	6	30	70	6	£53.98									
6HEM 060 350 S06	6	35	75	6	£57.40									
6HEM 080 200 S08	8	20	60	8	£51.52									
6HEM 080 250 S08	8	25	65	8	£61.09									
6HEM 080 300 S08	8	30	75	8	£66.83									
6HEM 080 350 S08	8	35	80	8	£80.09									
6HEM 080 400 S08	8	40	90	8	£81.32									
6HEM 080 450 S08	8	45	100	8	£86.10									
6HEM 080 500 S08	8	50	100	8	£90.88									
6HEM 100 250 S10	10	25	70	10	£66.97									
6HEM 100 350 S10	10	35	90	10	£86.92									
6HEM 100 450 S10	10	45	100	10	£108.24									
6HEM 100 500 S10	10	50	100	10	£113.43									
6HEM 100 600 S10	10	60	110	10	£120.27									
6HEM 120 300 S12	12	30	80	12	£84.05									
6HEM 120 400 S12	12	40	90	12	£108.10									
6HEM 120 500 S12	12	50	100	12	£117.67									
6HEM 120 600 S12	12	60	110	12	£125.73									
6HEM 120 700 S12	12	70	120	12	£135.30									
6HEM 160 350 S16	16	35	90	16	£332.10									
6HEM 160 500 S16	16	50	110	16	£182.18									
6HEM 160 650 S16	16	65	120	16	£199.94									
6HEM 160 800 S16	16	80	150	16	£206.91									
6HEM 160 900 S16	16	90	160	16	£270.60									
6HEM 160 1000 S16	16	100	160	16	£304.77									
6HEM 200 450 S20	20	45	100	20	£437.33									
6HEM 200 600 S20	20	60	120	20	£533.00									
6HEM 200 800 S20	20	80	150	20	£574.00									
6HEM 200 900 S20	20	90	160	20	£268.96									
6HEM 200 1000 S20	20	100	160	20	£304.36									
6HEM 200 1100 S20	20	110	170	20	£329.09									
6HEM 200 1200 S20	20	120	180	20	£343.99									
8HEM 250 1000 S25	25	100	160	25	£635.50									
8HEM 250 1250 S25	25	125	200	25	£999.00									





- Endmills for pre-hardened and hardened steel(HRc50~62)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and overall length for wide range application.
- Outstanding performance at high speed machining by ultra fine (0.2µm) WC grade.

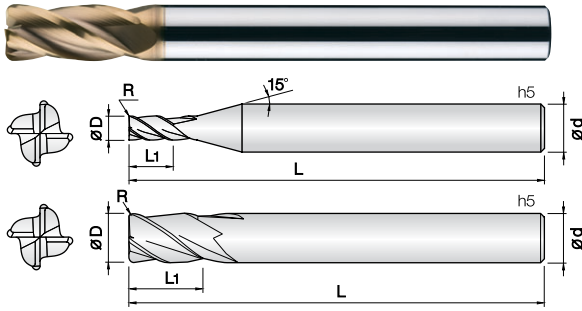


D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm
ø16 ~ 20	-0.01 ~ -0.02mm

mm

Order Number	Diameter D×R	Length of cut L1	Overall Length L	Shank Dia d	List Price	Order Number	Diameter D×R	Length of cut L1	Overall Length L	Shank Dia d	List Price
4NCR 010 0002 S04	1 X R0.02	2.5	45	4	£28.15	4NCR 040 004 060	4 X R0.4	9	60	4	£33.76
4NCR 010 0005 S04	1 X R0.05	2.5	45	4	£28.15	4NCR 040 004 080	4 X R0.4	9	80	4	£34.99
4NCR 010 001 S04	1 X R0.1	2.5	45	4	£28.15	4NCR 040 004 S06	4 X R0.4	10	70	6	£36.22
4NCR 010 002 S04	1 X R0.2	2.5	45	4	£28.15	4NCR 040 005 060	4 X R0.5	9	60	4	£33.76
4NCR 010 003 S04	1 X R0.3	2.5	45	4	£28.15	4NCR 040 005 080	4 X R0.5	9	80	4	£34.99
4NCR 012 0002 S04	1.2 X R0.02	4	45	4	£28.15	4NCR 040 005 S06	4 X R0.5	10	70	6	£36.22
4NCR 012 0005 S04	1.2 X R0.05	4	45	4	£28.15	4NCR 040 010 060	4 X R1	9	60	4	£33.76
4NCR 012 001 S04	1.2 X R0.1	4	45	4	£28.15	4NCR 040 010 080	4 X R1	9	80	4	£34.99
4NCR 012 002 S04	1.2 X R0.2	4	45	4	£28.15	4NCR 040 010 S06	4 X R1	10	70	6	£36.22
4NCR 012 003 S04	1.2 X R0.3	4	45	4	£28.15	4NCR 050 0005 S06	5 X R0.05	13	75	6	£38.13
4NCR 015 0002 S04	1.5 X R0.02	4	45	4	£28.15	4NCR 050 001 S06	5 X R0.1	13	75	6	£38.13
4NCR 015 0005 S04	1.5 X R0.05	4	45	4	£28.15	4NCR 050 002 S06	5 X R0.2	13	75	6	£38.13
4NCR 015 001 S04	1.5 X R0.1	4	45	4	£28.15	4NCR 050 003 S06	5 X R0.3	13	75	6	£38.13
4NCR 015 002 S04	1.5 X R0.2	4	45	4	£28.15	4NCR 050 004 S06	5 X R0.4	13	75	6	£38.13
4NCR 015 003 S04	1.5 X R0.3	4	45	4	£28.15	4NCR 050 005 S06	5 X R0.5	13	75	6	£38.13
4NCR 015 004 S04	1.5 X R0.4	4	45	4	£28.15	4NCR 050 010 S06	5 X R1	13	75	6	£38.13
4NCR 015 005 S04	1.5 X R0.5	4	45	4	£28.15	4NCR 060 0005 080	6 X R0.05	13	80	6	£39.91
4NCR 020 0002 S04	2 X R0.02	6	45	4	£28.15	4NCR 060 001 060	6 X R0.1	11	60	6	£35.94
4NCR 020 0005 S04	2 X R0.05	6	45	4	£28.15	4NCR 060 001 080	6 X R0.1	13	80	6	£39.91
4NCR 020 001 S04	2 X R0.1	6	45	4	£28.15	4NCR 060 002 060	6 X R0.2	11	60	6	£35.94
4NCR 020 002 S04	2 X R0.2	6	45	4	£28.15	4NCR 060 002 080	6 X R0.2	13	80	6	£39.91
4NCR 020 003 S04	2 X R0.3	6	45	4	£28.15	4NCR 060 003 060	6 X R0.3	11	60	6	£35.94
4NCR 020 004 S04	2 X R0.4	6	45	4	£28.15	4NCR 060 003 080	6 X R0.3	13	80	6	£39.91
4NCR 020 005 S04	2 X R0.5	6	45	4	£28.15	4NCR 060 004 080	6 X R0.4	13	80	6	£39.91
4NCR 025 0005 S04	2.5 X R0.05	6	50	4	£30.89	4NCR 060 005 060	6 X R0.5	11	60	6	£35.94
4NCR 025 001 S04	2.5 X R0.1	6	50	4	£30.89	4NCR 060 005 080	6 X R0.5	13	80	6	£39.91
4NCR 025 002 S04	2.5 X R0.2	6	50	4	£30.89	4NCR 060 010 060	6 X R1	11	60	6	£35.94
4NCR 025 003 S04	2.5 X R0.3	6	50	4	£30.89	4NCR 060 010 080	6 X R1	13	80	6	£39.91
4NCR 025 005 S04	2.5 X R0.5	6	50	4	£30.89	4NCR 060 015 060	6 X R1.5	11	60	6	£35.94
4NCR 030 0005 S06	3 X R0.05	8	60	6	£36.22	4NCR 060 015 080	6 X R1.5	13	80	6	£39.91
4NCR 030 001 S06	3 X R0.1	8	60	6	£36.22	4NCR 060 020 060	6 X R2	11	60	6	£35.94
4NCR 030 002 S06	3 X R0.2	8	60	6	£36.22	4NCR 060 020 080	6 X R2	13	80	6	£39.91
4NCR 030 003 S06	3 X R0.3	8	60	6	£36.22	4NCR 080 001 070	8 X R0.1	16	70	8	£51.93
4NCR 030 004 S06	3 X R0.4	8	60	6	£36.22	4NCR 080 001 090	8 X R0.1	19	90	8	£57.81
4NCR 030 005 S06	3 X R0.5	8	60	6	£36.22	4NCR 080 002 070	8 X R0.2	16	70	8	£51.93
4NCR 030 010 S06	3 X R1	8	60	6	£36.22	4NCR 080 002 090	8 X R0.2	19	90	8	£57.81
4NCR 040 0005 060	4 X R0.05	9	60	4	£33.76	4NCR 080 003 070	8 X R0.3	16	70	8	£51.93
4NCR 040 0005 080	4 X R0.05	9	80	4	£34.99	4NCR 080 003 090	8 X R0.3	19	90	8	£57.81
4NCR 040 0005 S06	4 X R0.05	10	70	6	£36.22	4NCR 080 005 070	8 X R0.5	16	70	8	£51.93
4NCR 040 001 060	4 X R0.1	9	60	4	£33.76	4NCR 080 005 090	8 X R0.5	19	90	8	£57.81
4NCR 040 001 080	4 X R0.1	9	80	4	£34.99	4NCR 080 005 110	8 X R0.5	19	110	8	£69.43
4NCR 040 001 S06	4 X R0.1	10	70	6	£36.22	4NCR 080 010 070	8 X R1	16	70	8	£51.93
4NCR 040 002 060	4 X R0.2	9	60	4	£33.76	4NCR 080 010 090	8 X R1	19	90	8	£57.81
4NCR 040 002 080	4 X R0.2	9	80	4	£34.99	4NCR 080 010 110	8 X R1	19	110	8	£69.43
4NCR 040 002 S06	4 X R0.2	10	70	6	£36.22	4NCR 080 015 070	8 X R1.5	16	70	8	£51.93
4NCR 040 003 060	4 X R0.3	9	60	4	£33.76	4NCR 080 015 090	8 X R1.5	19	90	8	£57.81
4NCR 040 003 080	4 X R0.3	9	80	4	£34.99	4NCR 080 015 110	8 X R1.5	19	110	8	£69.43
4NCR 040 003 S06	4 X R0.3	10	70	6	£36.22	4NCR 080 020 070	8 X R2	16	70	8	£51.93





- Endmills for pre-hardened and hardened steel(HRc50~62)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and overall length for wide range application.
- Outstanding performance at high speed machining by ultra fine (0.2µm) WC grade.



R0.02 ~ 0.5 R1 ~ 1.5 R2 ~ 4

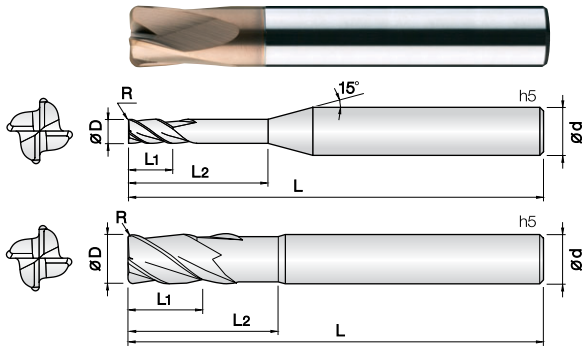
D Size	D Tolerance
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm
Ø16 ~ 20	-0.01 ~ -0.02mm

mmm

Order Number	Diameter D x R	Length of cut L1	Overall Length L	Shank Dia d	List Price	Order Number	Diameter D x R	Length of cut L1	Overall Length L	Shank Dia d	List Price
4NCR 080 020 090	8 X R2	19	90	8	£57.81	4NCR 120 030 130	12 X R3	26	130	12	£120.81
4NCR 080 020 110	8 X R2	19	110	8	£69.43	4NCR 120 035 110	12 X R3.5	26	110	12	£110.70
4NCR 080 025 090	8 X R2.5	19	90	8	£63.55	4NCR 120 040 110	12 X R4	26	110	12	£110.70
4NCR 100 001 075	10 X R0.1	19	75	10	£74.89	4NCR 160 005 110	16 X R0.5	32	110	16	£197.35
4NCR 100 001 100	10 X R0.1	22	100	10	£83.09	4NCR 160 005 160	16 X R0.5	32	160	16	£276.20
4NCR 100 002 075	10 X R0.2	19	75	10	£74.89	4NCR 160 010 110	16 X R1	32	110	16	£197.35
4NCR 100 002 100	10 X R0.2	22	100	10	£83.09	4NCR 160 010 160	16 X R1	32	160	16	£276.20
New 4NCR 100 002 120	10 X R0.2	22	120	10	£99.77	4NCR 160 015 110	16 X R1.5	32	110	16	£197.35
4NCR 100 003 075	10 X R0.3	19	75	10	£74.89	4NCR 160 020 110	16 X R2	32	110	16	£197.35
4NCR 100 003 100	10 X R0.3	22	100	10	£83.09	4NCR 160 030 110	16 X R3	32	110	16	£197.35
4NCR 100 005 075	10 X R0.5	19	75	10	£74.89	4NCR 200 005 160	20 X R0.5	38	160	20	£343.03
4NCR 100 005 100	10 X R0.5	22	100	10	£83.09	4NCR 200 010 160	20 X R1	38	160	20	£343.03
4NCR 100 005 120	10 X R0.5	22	120	10	£99.77	4NCR 200 015 160	20 X R1.5	38	160	20	£343.03
4NCR 100 010 075	10 X R1	19	75	10	£74.89	4NCR 200 020 160	20 X R2	38	160	20	£343.03
4NCR 100 010 100	10 X R1	22	100	10	£83.09						
4NCR 100 010 120	10 X R1	22	120	10	£99.77						
4NCR 100 015 075	10 X R1.5	19	75	10	£74.89						
4NCR 100 015 100	10 X R1.5	22	100	10	£83.09						
4NCR 100 015 120	10 X R1.5	22	120	10	£99.77						
4NCR 100 020 075	10 X R2	19	75	10	£74.89						
4NCR 100 020 100	10 X R2	22	100	10	£83.09						
4NCR 100 020 120	10 X R2	22	120	10	£99.77						
4NCR 100 025 075	10 X R2.5	19	75	10	£74.89						
4NCR 100 025 100	10 X R2.5	22	100	10	£83.09						
4NCR 100 025 120	10 X R2.5	22	120	10	£99.77						
4NCR 100 030 100	10 X R3	22	100	10	£91.29						
4NCR 120 002 080	12 X R0.2	22	80	12	£90.61						
4NCR 120 002 110	12 X R0.2	26	110	12	£100.72						
New 4NCR 120 002 130	12 X R0.2	26	130	12	£120.81						
4NCR 120 003 080	12 X R0.3	22	80	12	£90.61						
4NCR 120 003 110	12 X R0.3	26	110	12	£100.72						
4NCR 120 005 080	12 X R0.5	22	80	12	£90.61						
4NCR 120 005 110	12 X R0.5	26	110	12	£100.72						
4NCR 120 005 130	12 X R0.5	26	130	12	£120.81						
4NCR 120 010 080	12 X R1	22	80	12	£90.61						
4NCR 120 010 110	12 X R1	26	110	12	£100.72						
4NCR 120 010 130	12 X R1	26	130	12	£120.81						
4NCR 120 015 080	12 X R1.5	22	80	12	£90.61						
4NCR 120 015 110	12 X R1.5	26	110	12	£100.72						
4NCR 120 015 130	12 X R1.5	26	130	12	£120.81						
4NCR 120 020 080	12 X R2	22	80	12	£90.61						
4NCR 120 020 110	12 X R2	26	110	12	£100.72						
4NCR 120 020 130	12 X R2	26	130	12	£120.81						
4NCR 120 025 080	12 X R2.5	22	80	12	£90.61						
4NCR 120 025 110	12 X R2.5	26	110	12	£100.72						
4NCR 120 025 130	12 X R2.5	26	130	12	£120.81						
4NCR 120 030 080	12 X R3	22	80	12	£90.61						
4NCR 120 030 110	12 X R3	26	110	12	£100.72						



4RCU 4 Flutes High Speed Corner Radius Cutter



- **Cutter for pre-hardened and hardened steel (HRc50~62)**
- Good wear resistance by Si-based PVD coating.
- Designed for low speed with high feed condition.
- Suitable for heavy duty and roughing application.
- Minimize fracturing at high feed by high TRS fine WC grade.



D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm
ø16	-0.01 ~ -0.02mm

mm

Order Number	Diameter D x R	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price												
4RCU 010 002 025	1 X R0.2	1	2.5	50	4	£32.39												
4RCU 015 005 040	1.5 X R0.5	1.5	4	50	4	£32.39												
4RCU 020 005 060	2 X R0.5	2	6	50	6	£36.90												
4RCU 030 005 080	3 X R0.5	3	8	50	6	£36.90												
4RCU 040 005 120	4 X R0.5	4	12	60	6	£36.90												
4RCU 040 005 160	4 X R0.5	4	16	60	6	£36.90												
4RCU 040 010 120	4 X R1	4	12	60	6	£36.90												
4RCU 040 010 160	4 X R1	4	16	60	6	£36.90												
4RCU 050 005 150	5 X R0.5	5	15	60	6	£36.90												
4RCU 050 010 150	5 X R1	5	15	60	6	£36.90												
4RCU 060 003 150	6 X R0.3	6	15	60	6	£36.90												
4RCU 060 005 150	6 X R0.5	6	15	60	6	£36.90												
4RCU 060 010 150	6 X R1	6	15	60	6	£36.90												
4RCU 060 015 150	6 X R1.5	6	15	60	6	£36.90												
4RCU 080 003 160	8 X R0.3	8	16	60	8	£57.13												
4RCU 080 005 160	8 X R0.5	8	16	60	8	£57.13												
4RCU 080 005 200	8 X R0.5	8	20	80	8	£64.64												
4RCU 080 005 300	8 X R0.5	8	30	110	8	£82.68												
4RCU 080 010 160	8 X R1	8	16	60	8	£57.13												
4RCU 080 010 200	8 X R1	8	20	80	8	£64.64												
4RCU 080 010 300	8 X R1	8	30	110	8	£82.68												
4RCU 080 020 160	8 X R2	8	16	60	8	£57.13												
4RCU 080 020 200	8 X R2	8	20	80	8	£64.64												
4RCU 080 020 300	8 X R2	8	30	110	8	£82.68												
4RCU 100 003 200	10 X R0.3	10	20	70	10	£78.17												
4RCU 100 005 200	10 X R0.5	10	20	70	10	£78.17												
4RCU 100 005 250	10 X R0.5	10	25	90	10	£87.19												
4RCU 100 005 300	10 X R0.5	10	30	120	10	£109.74												
4RCU 100 010 200	10 X R1	10	20	70	10	£78.17												
4RCU 100 010 250	10 X R1	10	25	90	10	£87.19												
4RCU 100 010 300	10 X R1	10	30	120	10	£109.74												
4RCU 100 020 200	10 X R2	10	20	70	10	£78.17												
4RCU 100 020 250	10 X R2	10	25	90	10	£87.19												
4RCU 100 020 300	10 X R2	10	30	120	10	£109.74												
4RCU 120 005 250	12 X R0.5	12	25	80	12	£93.21												
4RCU 120 005 300	12 X R0.5	12	30	100	12	£108.24												
4RCU 120 005 350	12 X R0.5	12	35	130	12	£129.29												
4RCU 120 010 250	12 X R1	12	25	80	12	£93.21												
4RCU 120 010 300	12 X R1	12	30	100	12	£108.24												
4RCU 120 010 350	12 X R1	12	35	130	12	£129.29												
4RCU 120 020 250	12 X R2	12	25	80	12	£93.21												
4RCU 120 020 300	12 X R2	12	30	100	12	£108.24												
4RCU 120 020 350	12 X R2	12	35	130	12	£129.29												
4RCU 120 030 250	12 X R3	12	25	80	12	£93.21												
4RCU 160 010 300	16 X R1	16	30	110	16	£205.27												
4RCU 160 010 400	16 X R1	16	40	160	16	£292.33												
4RCU 160 020 300	16 X R2	16	30	110	16	£205.27												
4RCU 160 020 400	16 X R2	16	40	160	16	£292.33												



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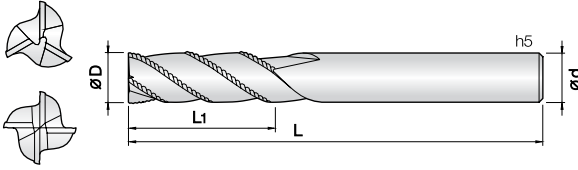
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3&4HROU

3&4 Flutes 45° Helix Fine Pitch Roughing End Mills



- **Roughing Endmills for hard to cut materials, alloy steel, SUS, Inconel and structural steel.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Long tool life with low cutting force by 45° degree helix design.
- Fine pitch shape design for high speed roughing application.

3

4

WC
마립자

JCRO
Coating

D
-0.02 -0.04

D
-0.02 -0.05

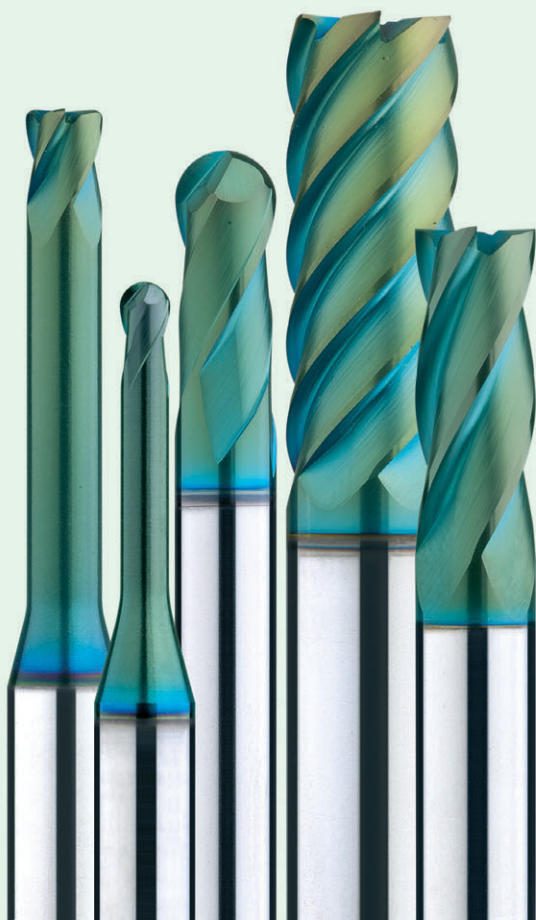
45°
Helix Angle

Shield Edge

D Size	D Tolerance
ø4 ~ 9	-0.02 ~ -0.04mm
ø10 ~ 20	-0.02 ~ -0.05mm

Order Number	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	List Price						
3HROU 040 100 S06	4	10	50	6	£44.28						
3HROU 050 130 S06	5	13	50	6	£44.28						
3HROU 060 100 050	6	10	50	6	£44.28						
3HROU 060 160 055	6	16	55	6	£46.74						
3HROU 060 200 060	6	20	60	6	£51.66						
3HROU 070 180 S08	7	18	65	8	£67.65						
3HROU 080 120 060	8	12	60	8	£60.00						
3HROU 080 190 065	8	19	65	8	£63.69						
3HROU 080 250 070	8	25	70	8	£70.11						
New 3HROU 080 300 075	8	30	75	8	£79.27						
4HROU 090 220 S10	9	22	70	10	£85.83						
4HROU 100 150 070	10	15	70	10	£77.63						
4HROU 100 220 070	10	22	70	10	£81.73						
4HROU 100 300 080	10	30	80	10	£91.57						
New 4HROU 100 400 090	10	40	90	10	£110.70						
4HROU 110 270 S12	11	27	80	12	£104.14						
4HROU 120 200 075	12	20	75	12	£92.93						
4HROU 120 250 080	12	25	80	12	£98.67						
4HROU 120 350 090	12	35	90	12	£110.70						
New 4HROU 120 500 100	12	50	100	12	£146.23						
4HROU 160 320 090	16	32	90	16	£240.53						
4HROU 160 400 110	16	40	110	16	£270.60						
4HROU 200 380 110	20	38	110	20	£307.50						
4HROU 200 500 120	20	50	120	20	£341.67						

LOW Price
HIGH Performance
JJ 



JJ series for hardened steels

HR 52~70

Endmills for pre-hardened and hardened steel (HRc52~70)

- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine(0.2 μ m) WC grade.

 **SMARTTOOLSUK**
ADVANCED MANUFACTURING TECHNOLOGIES



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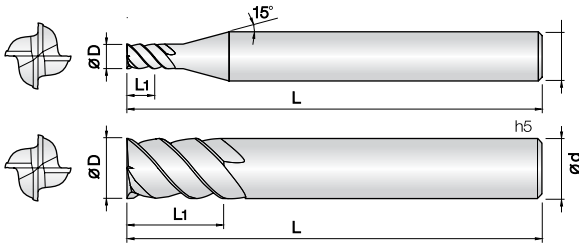
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4JJHE

4 Flutes JJ 45° Helix End Mills for Hardened Steels



- **Endmills for pre-hardened and hardened steel(HRc52~65)**
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- 45° degree helix design for high speed, feed condition.
- Outstanding performance at high speed machining by ultra fine (0.2 μm) WC grade.

4

UWC
초미립자

TISIN-S
Coating

D
+0 -0.01

D
-0.01 -0.025

D
-0.015 -0.03

45°
Helix Angle

Shield Edge

ø1 ~ 5

ø6 ~ 12

ø16 ~ 20

Shield Edge

D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø16 ~ 20	-0.015 ~ -0.03mm

: mm

Order Number	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	List Price	Order Number	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	List Price
4JJHE 010 015 S06	1	1.5	40	6	£26.65	New 4JJHE 140 350 S14	14	35	90	14	£167.83
4JJHE 010 025 S06	1	2.5	40	6	£27.47	New 4JJHE 140 550 S14	14	55	110	14	£189.56
4JJHE 010 035 S06	1	3.5	40	6	£31.43	4JJHE 160 350 S16	16	35	90	16	£166.73
New 4JJHE 010 050 S06	1	5	45	6	£34.30	4JJHE 160 500 S16	16	50	110	16	£205.00
New 4JJHE 015 040 S06	1.5	4	40	6	£27.47	New 4JJHE 160 700 S16	16	70	130	16	£228.23
New 4JJHE 015 060 S06	1.5	6	40	6	£32.94	New 4JJHE 180 380 S18	18	38	100	18	£218.67
New 4JJHE 015 080 S06	1.5	8	40	6	£34.30	New 4JJHE 200 400 S20	20	40	100	20	£233.02
4JJHE 020 030 S06	2	3	40	6	£26.65	New 4JJHE 200 550 S20	20	55	120	20	£278.80
4JJHE 020 050 S06	2	5	40	6	£27.47	New 4JJHE 200 750 S20	20	75	150	20	£338.93
4JJHE 020 080 S06	2	8	40	6	£31.43						
New 4JJHE 020 100 S06	2	10	45	6	£34.30						
4JJHE 025 060 S06	2.5	6	45	6	£27.33						
4JJHE 025 080 S06	2.5	8	45	6	£28.70						
New 4JJHE 025 100 S06	2.5	10	50	6	£34.30						
4JJHE 030 060 S06	3	6	45	6	£27.33						
4JJHE 030 080 S06	3	8	45	6	£28.70						
4JJHE 030 120 S06	3	12	50	6	£32.80						
New 4JJHE 030 150 S06	3	15	50	6	£35.81						
New 4JJHE 035 080 S06	3.5	8	45	6	£34.17						
4JJHE 040 080 S06	4	8	45	6	£28.70						
4JJHE 040 110 S06	4	11	45	6	£27.33						
4JJHE 040 150 S06	4	15	55	6	£33.48						
New 4JJHE 040 200 S06	4	20	60	6	£35.81						
New 4JJHE 045 110 S06	4.5	11	50	6	£34.17						
4JJHE 050 100 S06	5	10	50	6	£28.97						
4JJHE 050 130 S06	5	13	50	6	£30.61						
4JJHE 050 200 S06	5	20	60	6	£34.85						
New 4JJHE 050 250 S06	5	25	70	6	£38.68						
New 4JJHE 050 300 S06	5	30	75	6	£42.37						
4JJHE 060 130 S06	6	13	50	6	£30.61						
4JJHE 060 150 S06	6	15	55	6	£32.12						
4JJHE 060 200 S06	6	20	60	6	£34.85						
New 4JJHE 060 250 S06	6	25	70	6	£38.68						
New 4JJHE 060 300 S06	6	30	75	6	£42.37						
New 4JJHE 070 160 S08	7	16	60	8	£50.57						
4JJHE 080 200 S08	8	20	60	8	£48.24						
4JJHE 080 250 S08	8	25	70	8	£54.67						
New 4JJHE 080 300 S08	8	30	80	8	£60.00						
New 4JJHE 080 400 S08	8	40	90	8	£62.87						
New 4JJHE 090 220 S10	9	22	70	10	£66.97						
4JJHE 100 220 S10	10	22	70	10	£61.50						
4JJHE 100 300 S10	10	30	80	10	£73.80						
New 4JJHE 100 400 S10	10	40	90	10	£78.99						
New 4JJHE 100 500 S10	10	50	100	10	£83.37						
4JJHE 120 260 S12	12	26	75	12	£74.89						
4JJHE 120 350 S12	12	35	90	12	£86.10						
New 4JJHE 120 500 S12	12	50	100	12	£103.87						
New 4JJHE 120 600 S12	12	60	110	12	£107.56						



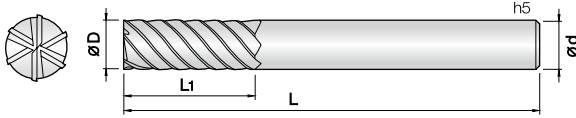
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- Endmills for pre-hardened and hardened steel (HRc52~70)
- Good wear resistance by high quality Si-based PVD coating.
- Precise run-out and tolerance for finish machining.
- Reinforced edge design for preventing edge chipping.
- 45° degree helix design for high speed, feed condition.
- Outstanding performance at high speed machining by ultra fine (0.2 μm) WC grade.

6

8

UWC
조미림자

TISIN-S
Coating

D
+0 -0.01

D
-0.01 -0.025

D
-0.015 -0.03

45°
Helix Angle

Shield Edge

D Size	D Tolerance
ø3 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø14 ~ 20	-0.015 ~ -0.03mm

단위 : mm

Order Number	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	List Price	Order Number	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	List Price
6JJHE 030 100 S06	3	10	50	6	£35.12	6JJHE 200 1200 S20	20	120	180	20	£613.63
6JJHE 030 150 S06	3	15	50	6	£39.50	8JJHE 250 1000 S25	25	100	160	25	£680.60
New 6JJHE 030 200 S06	3	20	60	6	£43.60	8JJHE 250 1300 S25	25	130	200	25	£1141.17
6JJHE 040 120 S06	4	12	50	6	£35.12						
6JJHE 040 160 S06	4	16	50	6	£39.50						
New 6JJHE 040 200 S06	4	20	60	6	£43.60						
6JJHE 050 150 S06	5	15	50	6	£35.12						
6JJHE 050 200 S06	5	20	60	6	£42.09						
New 6JJHE 050 250 S06	5	25	60	6	£46.19						
6JJHE 060 150 S06	6	15	50	6	£35.12						
6JJHE 060 200 S06	6	20	60	6	£42.09						
6JJHE 060 250 S06	6	25	65	6	£54.39						
6JJHE 060 300 S06	6	30	70	6	£57.81						
6JJHE 060 350 S06	6	35	75	6	£61.36						
New 6JJHE 060 400 S06	6	40	80	6	£66.83						
6JJHE 080 200 S08	8	20	60	8	£55.08						
6JJHE 080 250 S08	8	25	65	8	£65.33						
6JJHE 080 300 S08	8	30	75	8	£75.58						
6JJHE 080 350 S08	8	35	80	8	£85.69						
6JJHE 080 400 S08	8	40	90	8	£87.06						
6JJHE 080 450 S08	8	45	100	8	£92.11						
6JJHE 080 500 S08	8	50	100	8	£97.31						
6JJHE 100 250 S10	10	25	70	10	£71.61						
6JJHE 100 350 S10	10	35	90	10	£92.93						
6JJHE 100 450 S10	10	45	100	10	£115.76						
6JJHE 100 500 S10	10	50	100	10	£121.36						
6JJHE 100 600 S10	10	60	110	10	£128.74						
6JJHE 120 300 S12	12	30	80	12	£89.93						
6JJHE 120 400 S12	12	40	90	12	£115.62						
6JJHE 120 500 S12	12	50	100	12	£124.64						
6JJHE 120 600 S12	12	60	110	12	£134.62						
6JJHE 120 700 S12	12	70	120	12	£144.87						
New 6JJHE 140 350 S14	14	35	90	14	£174.93						
New 6JJHE 140 550 S14	14	55	110	14	£200.90						
6JJHE 160 350 S16	16	35	90	16	£195.43						
6JJHE 160 500 S16	16	50	110	16	£214.57						
6JJHE 160 650 S16	16	65	120	16	£221.40						
6JJHE 160 800 S16	16	80	150	16	£289.73						
6JJHE 160 900 S16	16	90	160	16	£326.63						
6JJHE 160 1000 S16	16	100	160	16	£355.33						
New 6JJHE 180 400 S18	18	40	100	18	£241.90						
New 6JJHE 180 650 S18	18	65	120	18	£280.17						
6JJHE 200 450 S20	20	45	100	20	£288.37						
6JJHE 200 600 S20	20	60	120	20	£325.27						
6JJHE 200 800 S20	20	80	150	20	£352.60						
6JJHE 200 900 S20	20	90	160	20	£367.63						
6JJHE 200 1000 S20	20	100	160	20	£468.77						
6JJHE 200 1100 S20	20	110	170	20	£571.27						



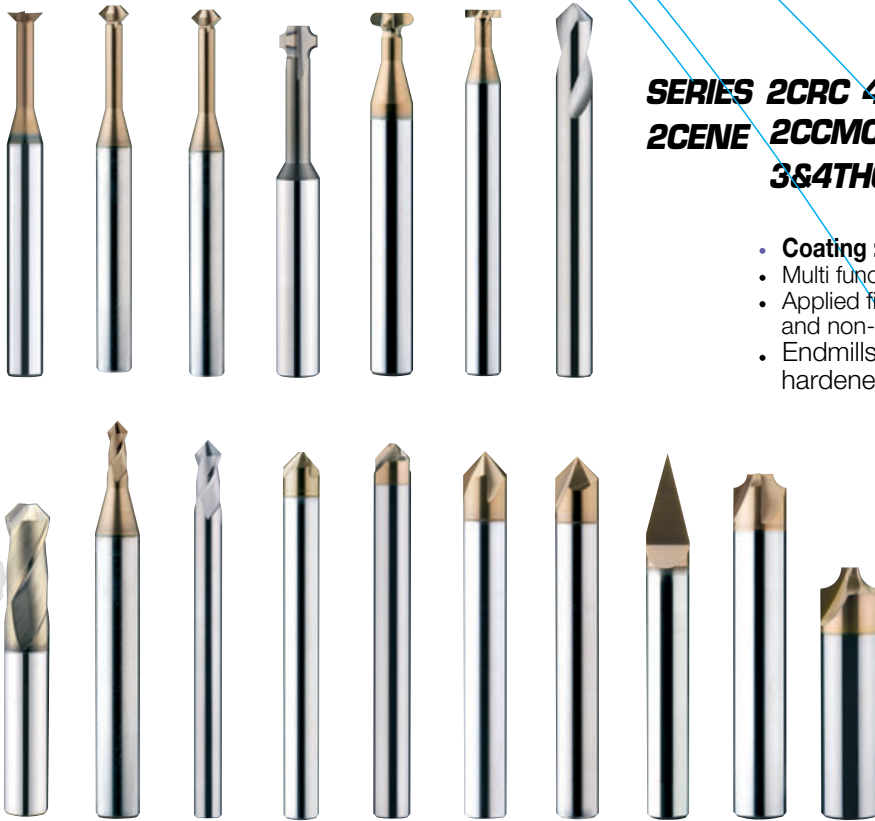
LOW Price**HIGH Performance****JCRO-TISIN**

coating

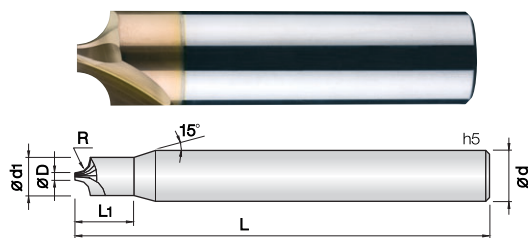
FTS-SERIES*End Mills for various Materials*

**SERIES 2CRC 4CRC 1STE 2STE 2CHA 3CHA 2CEN
2CENE 2CCMC 2SPO 4TES 4TRS 3TRC 4&6TDA
3&4THC 3&6TAC**

- **Coating : Pre-hardened steel, Cast iron, Non-metallic materials**
- Multi function endmill for corner chamfering, side wall and centering.
- Applied fine WC grade optimized for various non-ferrous and non-metallic work materials.
- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron. (HRC ~50)



2CRC 2 Flutes Corner Rounding Cutter



- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Minimize fracturing by high TRS fine(0.5 μ m) WC grade.



0.1 ~ 2.5R 3 ~ 8R

D Size	D Tolerance
Ø0.5 ~ 0.9	+0 ~ -0.01mm
Ø1.4 ~ 5.9	+0 ~ -0.02mm

: mm

Order Number	Diameter D x R	Length of cut d1	Effective Length L2	Overall Length L	Shank Dia d	List Price
2CRC 005 001 S04	0.5 X R0.1	0.8	2.5	45	4	£52.89
2CRC 005 0015 S04	0.5 X R0.15	0.9	2.5	45	4	£52.89
2CRC 005 002 S04	0.5 X R0.2	1	2.5	45	4	£52.89
2CRC 005 0025 S04	0.5 X R0.25	1.1	2.5	45	4	£52.89
2CRC 005 003 S04	0.5 X R0.3	1.2	2.5	45	4	£52.89
2CRC 005 0035 S04	0.5 X R0.35	1.3	2.5	45	4	£52.89
2CRC 005 004 S04	0.5 X R0.4	1.4	2.5	45	4	£49.75
2CRC 005 0045 S04	0.5 X R0.45	1.5	2.5	45	4	£49.75
2CRC 005 005 S04	0.5 X R0.5	1.6	2.5	45	4	£52.62
2CRC 009 005 S04	0.9 X R0.5	2	3	45	4	£49.75
2CRC 049 005 S06	4.9 X R0.5	6	-	50	6	£52.62
2CRC 005 0055 S04	0.5 X R0.55	1.7	3	45	4	£49.75
2CRC 005 006 S04	0.5 X R0.6	1.8	3	45	4	£52.62
2CRC 005 0065 S04	0.5 X R0.65	1.9	3	45	4	£49.75
2CRC 005 007 S04	0.5 X R0.7	2	3	45	4	£49.75
2CRC 009 0075 S04	0.9 X R0.75	2.5	4	45	4	£49.75
2CRC 009 008 S04	0.9 X R0.8	2.6	4	45	4	£49.75
2CRC 009 0085 S04	0.9 X R0.85	2.7	4	45	4	£49.75
2CRC 009 009 S04	0.9 X R0.9	2.8	4	45	4	£49.75
2CRC 009 0095 S04	0.9 X R0.95	2.9	4	45	4	£42.37
2CRC 009 010 S06	0.9 X R1	3	5	50	6	£42.37
2CRC 039 010 S06	3.9 X R1	6	-	50	6	£42.37
2CRC 059 010 S08	5.9 X R1	8	-	60	8	£42.37
2CRC 009 0125 S06	0.9 X R1.25	3.5	5	50	6	£49.75
2CRC 034 0125 S06	3.4 X R1.25	6	-	50	6	£49.75
2CRC 014 015 S06	1.4 X R1.5	4.5	8	50	6	£62.87
2CRC 049 015 S08	4.9 X R1.5	8	-	60	8	£62.87
2CRC 014 020 S06	1.4 X R2	5.5	10	50	6	£99.49
2CRC 039 020 S08	3.9 X R2	8	-	60	8	£99.49
2CRC 019 025 S08	1.9 X R2.5	7	13	60	8	£42.37
2CRC 019 030 S08	1.9 X R3	8	-	60	8	£42.37
2CRC 019 035 S10	1.9 X R3.5	9	13	70	10	£49.75
2CRC 019 040 S10	1.9 X R4	10	-	70	10	£136.80
2CRC 019 045 S12	1.9 X R4.5	11	13	80	12	£177.39
2CRC 019 050 S12	1.9 X R5	12	-	80	12	£42.37
2CRC 039 060 S16	3.9 X R6	16	-	90	16	£49.75
2CRC 059 070 S20	5.9 X R7	20	-	90	20	£49.75
2CRC 039 080 S20	3.9 X R8	20	-	90	20	£177.39



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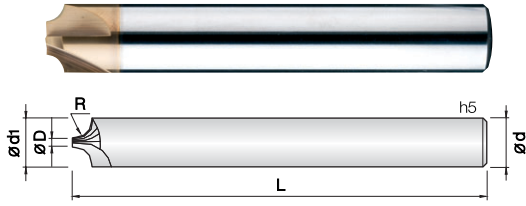


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4CRC 4 Flutes Corner Rounding Cutter



- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Minimize fracturing at high feed by high TRS fine WC grade.



0.5 ~ 2.5R 3 ~ 6R

D Size	D Tolerance
Ø1.4 ~ 5.9	+0 ~ -0.02mm

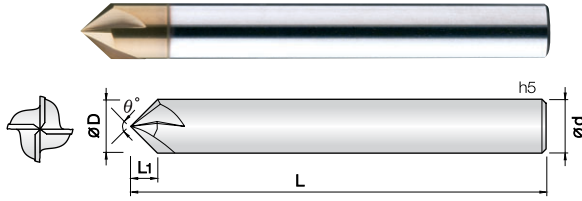
Order Number	Diameter D×R	Length of cut d1	Overall Length L	Shank Dia d	List Price
4CRC 029 005 S04	2.9 X R0.5	4	50	4	£38.27
4CRC 024 0075 S04	2.4 X R0.75	4	50	4	£38.27
4CRC 019 010 S04	1.9 X R1	4	50	4	£38.27
4CRC 044 005 S06	4.4 X R0.5	6	50	6	£43.73
4CRC 044 0075 S06	4.4 X R0.75	6	50	6	£43.73
4CRC 039 010 S06	3.9 X R1	6	50	6	£43.73
4CRC 059 010 S08	5.9 X R1	8	60	8	£51.93
4CRC 049 015 S08	4.9 X R1.5	8	60	8	£51.93
4CRC 039 020 S08	3.9 X R2	8	60	8	£51.93
4CRC 059 020 S10	5.9 X R2	10	70	10	£71.07
4CRC 049 025 S10	4.9 X R2.5	10	70	10	£71.07
4CRC 039 030 S10	3.9 X R3	10	70	10	£71.07
4CRC 059 030 S12	5.9 X R3	12	75	12	£106.60
4CRC 039 040 S12	3.9 X R4	12	75	12	£106.60
4CRC 059 050 S16	5.9 X R5	16	80	16	£157.17
4CRC 039 060 S16	3.9 X R6	16	80	16	£157.17

Order Number	Diameter D×R	Length of cut d1	Overall Length L	Shank Dia d	

: mm



4STE 4 Flutes Straight Flute Taper End Mills



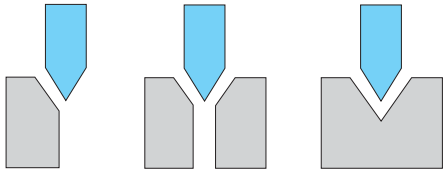
- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.
- Good wear resistance by Si-based PVD coating.
- Optimum for chamfering with straight 4flutes.
- Minimize fracturing at high feed by high TRS fine WC grade.



D Size	D Tolerance
∅0	+0.05~ -0mm

Order Number	Diameter D	Angle θ	Length of cut L1	Overall Length L	Shank Dia d	List Price								
4STE 000 600 S03	0	60°	2.5	50	3	£31.43								
4STE 000 900 S03	0	90°	1.5	50	3	£32.80								
4STE 000 600 S04	0	60°	3.4	50	4	£38.27								
4STE 000 900 S04	0	90°	2	50	4	£47.83								
4STE 000 600 S06	0	60°	5.1	60	6	£64.23								
4STE 000 900 S06	0	90°	3	60	6	£82.00								
4STE 000 600 S08	0	60°	6.9	65	8	£28.70								
4STE 000 900 S08	0	90°	4	65	8	£31.43								
4STE 000 600 S10	0	60°	8.6	75	10	£35.53								
4STE 000 900 S10	0	90°	5	75	10	£45.10								
4STE 000 600 S12	0	60°	10.3	80	12	£64.23								
4STE 000 900 S12	0	90°	6	80	12	£82.00								

Available Cutting Shape



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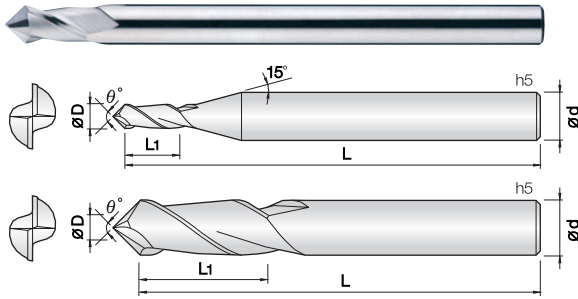


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2GEN 2 Flutes Multi Application Centering End Mills



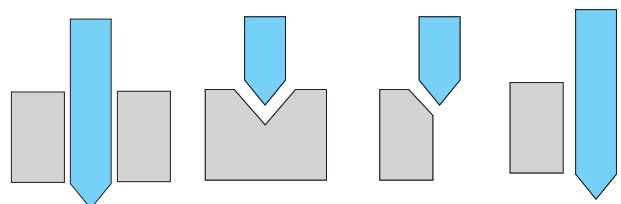
- **Non coating : Acryl, A.B.S, Aluminum, non-ferrous and non-metallic materials.**
- **Coating : Pre-hardened steel, Cast iron, Non-metallic materials**
- Multi function endmill for corner chamfering, side wall and centering.
- Applied fine WC grade optimized for various non-ferrous and non-metallic work materials.
- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.



: mm

Order Number		Diameter D	Angle θ	Length of cut L1	Overall Length L	Shank Dia d	Price	
Uncoated	Coated						Uncoated	Coated
2CEN 003 600 S03	2CENC 003 600 S03	0.3	60°	0.6	45	3	£36.22	£38.95
2CEN 003 900 S03	2CENC 003 900 S03	0.3	90°	0.6	45	3	£36.22	£38.95
2CEN 005 600 S03	2CENC 005 600 S03	0.5	60°	1	50	3	£33.48	£36.76
2CEN 005 900 S03	2CENC 005 900 S03	0.5	90°	1	50	3	£33.48	£36.76
2CEN 008 600 S03	2CENC 008 600 S03	0.8	60°	1.6	50	3	£32.12	£35.40
2CEN 008 900 S03	2CENC 008 900 S03	0.8	90°	1.6	50	3	£32.12	£35.40
2CEN 010 600 S03	2CENC 010 600 S03	1	60°	2	50	3	£30.75	£34.03
2CEN 010 900 S03	2CENC 010 900 S03	1	90°	2	50	3	£30.75	£34.03
2CEN 020 600 S03	2CENC 020 600 S03	2	60°	4	50	3	£30.75	£34.03
2CEN 020 900 S03	2CENC 020 900 S03	2	90°	4	50	3	£30.75	£34.03
2CEN 030 600 S03	2CENC 030 600 S03	3	60°	6	50	3	£30.75	£34.03
2CEN 030 900 S03	2CENC 030 900 S03	3	90°	6	50	3	£35.81	£40.32
2CEN 030 600 S06	2CENC 030 600 S06	3	60°	6	50	6	£30.75	£34.03
2CEN 030 900 S06	2CENC 030 900 S06	3	90°	6	50	6	£35.81	£40.32
2CEN 040 600 S06	2CENC 040 600 S06	4	60°	8	50	6	£35.81	£40.32
2CEN 040 900 S06	2CENC 040 900 S06	4	90°	8	50	6	£35.81	£40.32
2CEN 050 600 S06	2CENC 050 600 S06	5	60°	10	50	6	£35.81	£40.32
2CEN 050 900 S06	2CENC 050 900 S06	5	90°	10	50	6	£35.81	£40.32
2CEN 060 600 S06	2CENC 060 600 S06	6	60°	12	60	6	£39.50	£44.01
2CEN 060 900 S06	2CENC 060 900 S06	6	90°	12	60	6	£39.50	£44.01
2CEN 080 600 S08	2CENC 080 600 S08	8	60°	16	70	8	£50.57	£56.44
2CEN 080 900 S08	2CENC 080 900 S08	8	90°	16	70	8	£50.57	£56.44
2CEN 100 600 S10	2CENC 100 600 S10	10	60°	18	70	10	£66.69	£73.80
2CEN 100 900 S10	2CENC 100 900 S10	10	90°	18	70	10	£66.69	£73.80
2CEN 120 600 S12	2CENC 120 600 S12	12	60°	20	75	12	£88.97	£98.13
2CEN 120 900 S12	2CENC 120 900 S12	12	90°	20	75	12	£88.97	£98.13
2CEN 140 600 S14	2CENC 140 600 S14	14	60°	26	80	14	£130.24	£141.86
2CEN 140 900 S14	2CENC 140 900 S14	14	90°	26	80	14	£130.24	£141.86
2CEN 160 600 S16	2CENC 160 600 S16	16	60°	32	100	16	£158.12	£171.11
2CEN 160 900 S16	2CENC 160 900 S16	16	90°	32	100	16	£158.12	£171.11

Multiple Applications



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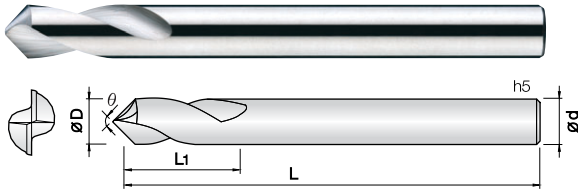


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2SPO 2 Flutes NC Spotting Drill



- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.
- Good wear resistance by Si-based PVD coating.
- Optimum for centering with helix 2flutes.
- Resin, plastic machining applicable with coated or non coated endmill.
- Applied fine WC grade optimized for various non-ferrous and non-metallic work materials.

2

WC
미립자

TISIN
Coating

D
+0 -0.01
ø0.3~ø4

D
-0.01 -0.025
ø6~ø12

D
-0.015 -0.03
ø16

30°
Helix Angle

D Size	D Tolerance
ø2 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø16	-0.015 ~ -0.03mm

: mm

Order Number		Diameter	Angle	Length of cut	Overall Length	Shank Dia	Uncoated	Coated
Uncoated	Coated	D	θ	L1	L	d	Uncoated	Coated
New 2SPO 003 090 040	New 2SPOC 003 090 040	0.3	90°	0.9	40	3	£30.75	£33.48
New 2SPO 005 090 040	New 2SPOC 005 090 040	0.5	90°	1.5	40	3	£29.38	£32.12
New 2SPO 008 090 040	New 2SPOC 008 090 040	0.8	90°	2.4	40	3	£28.02	£30.75
2SPO 010 090 050	2SPOC 010 090 050	1	90°	3	50	3	£24.60	£27.88
	New 2SPOC 010 090 080	1	90°	3	80	3		£34.85
2SPO 010 120 050	2SPOC 010 120 050	1	120°	3	50	3	£24.60	£27.88
New 2SPO 015 090 050	New 2SPOC 015 090 050	1.5	90°	4.5	50	3	£24.60	£27.88
2SPO 020 090 050	2SPOC 020 090 050	2	90°	6	50	3	£24.60	£27.88
	New 2SPOC 020 090 080	2	90°	6	80	3		£34.85
2SPO 020 120 050	2SPOC 020 120 050	2	120°	6	50	3	£24.60	£27.88
2SPO 030 090 050	2SPOC 030 090 050	3	90°	10	50	3	£24.60	£27.88
2SPO 030 120 050	2SPOC 030 120 050	3	120°	10	50	3	£31.98	£35.26
2SPO 030 090 100	2SPOC 030 090 100	3	90°	10	100	3	£24.60	£27.88
2SPO 030 120 100	2SPOC 030 120 100	3	120°	10	100	3	£31.98	£35.26
2SPO 040 090 050	2SPOC 040 090 050	4	90°	12	50	4	£24.60	£27.88
2SPO 040 120 050	2SPOC 040 120 050	4	120°	12	50	4	£31.98	£35.26
2SPO 040 090 100	2SPOC 040 090 100	4	90°	12	100	4	£24.60	£27.88
2SPO 040 120 100	2SPOC 040 120 100	4	120°	12	100	4	£31.98	£35.26
2SPO 060 090 070	2SPOC 060 090 070	6	90°	15	70	6	£28.29	£32.80
2SPO 060 120 070	2SPOC 060 120 070	6	120°	15	70	6	£36.76	£41.27
2SPO 060 090 110	2SPOC 060 090 110	6	90°	15	110	6	£28.29	£64.23
	New 2SPOC 060 090 150	6	90°	15	150	6		£32.80
2SPO 060 120 110	2SPOC 060 120 110	6	120°	15	110	6	£36.76	£41.27
2SPO 080 090 080	2SPOC 080 090 080	8	90°	25	80	8	£45.92	£51.80
	New 2SPOC 080 090 150	8	90°	25	150	8		£90.20
2SPO 080 120 080	2SPOC 080 120 080	8	120°	25	80	8	£45.92	£51.80
2SPO 100 090 090	2SPOC 100 090 090	10	90°	25	90	10	£64.23	£71.34
2SPO 100 120 090	2SPOC 100 120 090	10	120°	25	90	10	£105.23	£112.34
2SPO 100 090 150	2SPOC 100 090 150	10	90°	25	150	10	£64.23	£71.34
2SPO 100 120 150	2SPOC 100 120 150	10	120°	25	150	10	£105.23	£112.34
2SPO 120 090 090	2SPOC 120 090 090	12	90°	30	90	12	£82.96	£92.11
2SPO 120 120 090	2SPOC 120 120 090	12	120°	30	90	12	£123.96	£133.11
2SPO 120 090 150	2SPOC 120 090 150	12	90°	30	150	12	£82.96	£92.11
2SPO 120 120 150	2SPOC 120 120 150	12	120°	30	150	12	£123.96	£133.11
2SPO 160 090 110	2SPOC 160 090 110	16	90°	35	110	16	£141.59	£154.57
2SPO 160 120 110	2SPOC 160 120 110	16	120°	35	110	16	£141.59	£154.57



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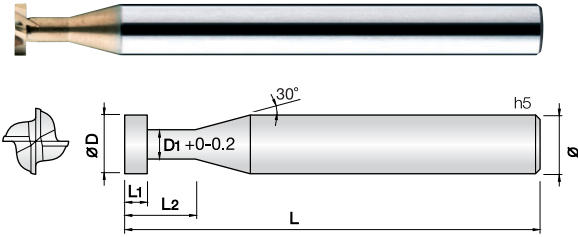


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4TES 4 Flutes T-Slot Cutter



- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize edge chipping by applying 4flutes design.
- Various shapes and length provides optimum efficiency.
- Resin, plastic machining applicable with coated or non coated endmill.

4

WC
미립자

JCRO
Coating

D
+0 -0.02

D
-0.01 -0.03

L1
±0.03

L1
±0.05

15°
Helix Angle

ø2- ø5 ø6- ø10 ø2 ~ 5 ø6 ~ 10

Size	D Tolerance
ø2 ~ 5	+0 ~ -0.02mm
ø6 ~ 10	-0.01 ~ -0.03mm

: mm

Order Number		Diameter	Length of cut	Effective Length	Neck Diameter	Overall Length	Shank Dia		
Uncoated	Coated	D	L1	L2	D1	L	d	Uncoated	Coated
4TES 020 003 040	4TESC 020 003 040	2	0.3	4	1	50	6	£49.20	£51.93
4TES 020 005 040	4TESC 020 005 040	2	0.5	4	1	50	6	£49.20	£51.93
4TES 030 003 045	4TESC 030 003 045	3	0.3	4.5	1.5	50	6	£49.20	£51.93
4TES 030 005 045	4TESC 030 005 045	3	0.5	4.5	1.5	50	6	£49.20	£51.93
4TES 030 010 045	4TESC 030 010 045	3	1	4.5	1.5	50	6	£49.20	£51.93
4TES 040 003 050	4TESC 040 003 050	4	0.3	5	2	50	6	£49.20	£51.93
4TES 040 005 050	4TESC 040 005 050	4	0.5	5	2	50	6	£49.20	£51.93
4TES 040 010 050	4TESC 040 010 050	4	1	5	2	50	6	£49.20	£51.93
4TES 050 005 045	4TESC 050 005 045	5	0.5	4.5	2.5	50	6	£49.20	£51.93
4TES 050 010 050	4TESC 050 010 050	5	1	5	2.5	50	6	£49.20	£51.93
4TES 050 015 055	4TESC 050 015 055	5	1.5	5.5	2.5	50	6	£49.20	£51.93
4TES 050 020 060	4TESC 050 020 060	5	2	6	2.5	50	6	£49.20	£51.93
4TES 060 005 045	4TESC 060 005 045	6	0.5	4.5	3	60	6	£49.20	£51.93
4TES 060 010 050	4TESC 060 010 050	6	1	5	3	60	6	£49.20	£51.93
4TES 060 015 055	4TESC 060 015 055	6	1.5	5.5	3	60	6	£49.20	£51.93
4TES 060 020 060	4TESC 060 020 060	6	2	6	3	60	6	£49.20	£51.93
4TES 080 005 045	4TESC 080 005 045	8	0.5	4.5	4	60	8	£75.85	£79.27
4TES 080 010 050	4TESC 080 010 050	8	1	5	4	60	8	£75.85	£79.27
4TES 080 015 055	4TESC 080 015 055	8	1.5	5.5	4	60	8	£75.85	£79.27
4TES 080 020 060	4TESC 080 020 060	8	2	6	4	60	8	£75.85	£79.27
4TES 080 030 070	4TESC 080 030 070	8	3	7	4	60	8	£75.85	£79.27
4TES 100 010 070	4TESC 100 010 070	10	1	7	5	70	10	£99.08	£103.87
4TES 100 020 080	4TESC 100 020 080	10	2	8	5	70	10	£99.08	£103.87
4TES 100 030 090	4TESC 100 030 090	10	3	9	5	70	10	£99.08	£103.87



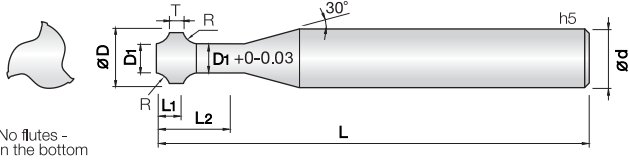
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- Endmills for various work materials, **hardened steel, pre-hardened steel, tool steel and cast iron.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize edge chipping by applying straight 3flutes design.
- Various shapes and length provides optimum efficiency.

3

WC
 미립자

JCRO
 Coating

± 0.02

$+0 - 0.03$

0°
 Helix Angle

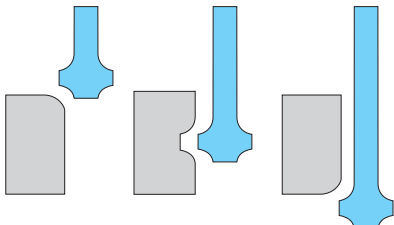
0.2R~3R ø1.9~ø12

D Size	D Tolerance
ø1.9 ~ 12	0 ~ -0.03mm

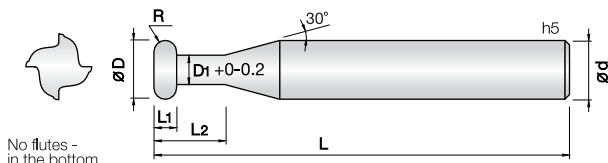
: mm

Order Number	Diameter D x R	Front Diameter D1	Thickness T	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	List Price
3TRC 019 002 080	1.9 X R0.2	1.45	0.9	1.45	8	60	4	£66.36
3TRC 024 003 090	2.4 X R0.3	1.75	1.2	1.95	9	60	4	£66.36
3TRC 026 004 100	2.6 X R0.4	1.75	1.5	2.5	10	60	4	£66.36
3TRC 029 005 120	2.9 X R0.5	1.85	1.8	3	12	60	4	£66.36
3TRC 049 005 150	4.9 X R0.5	3.8	2	3.3	15	80	6	£75.17
3TRC 068 010 200	6.8 X R1	4.7	2.2	4.3	20	80	8	£114.66
3TRC 079 015 250	7.9 X R1.5	4.7	2.5	5.8	25	80	8	£114.66
3TRC 099 020 300	9.9 X R2	5.8	2.8	6.8	30	80	10	£164.00
3TRC 119 030 350	11.9 X R3	5.8	3	8.8	35	80	12	£164.00

Available Cutting Shape



4TRS 4 Flutes T-R Slot Cutter



- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize edge chipping by applying straight 4flutes design.
- Various shapes and length provides optimum efficiency.



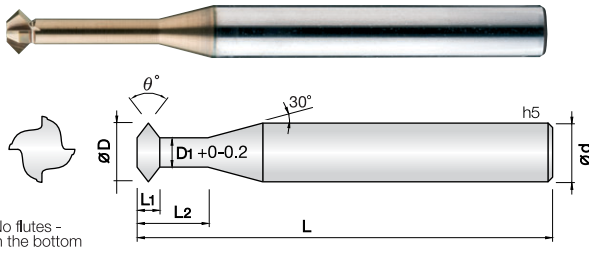
D Size	D Tolerance
∅5 ~ 12	-0.01 ~ -0.025mm

: mm

Order Number	Diameter D×R	Length of cut L1	Effective Length L2	Neck Diameter D1	Overall Length L	Shank Dia d	List Price
4TRS 050 010 045	5 X 0.5R	1	4.5	2.5	50	6	£62.87
New 4TRS 050 010 070	5 X 0.5R	1	7	2.5	50	6	£69.70
4TRS 050 020 055	5 X 1R	2	5.5	2.5	50	6	£62.87
4TRS 060 010 050	6 X 0.5R	1	5	3	50	6	£62.87
New 4TRS 060 010 080	6 X 0.5R	1	8	3	50	6	£69.70
4TRS 060 015 055	6 X 0.75R	1.5	5.5	3	50	6	£62.87
4TRS 060 020 060	6 X 1R	2	6	3	50	6	£62.87
New 4TRS 060 020 100	6 X 1R	2	10	3	50	6	£69.70
4TRS 080 020 070	8 X 1R	2	7	4	60	8	£84.73
New 4TRS 080 020 130	8 X 1R	2	13	4	60	8	£91.57
4TRS 080 030 080	8 X 1.5R	3	8	4	60	8	£84.73
4TRS 100 040 100	10 X 2R	4	10	4.5	70	10	£114.80
New 4TRS 100 040 160	10 X 2R	4	16	4.5	70	10	£123.00
4TRS 120 060 150	12 X 3R	6	15	5	75	12	£133.93
New 4TRS 120 060 210	12 X 3R	6	21	5	75	12	£143.50

4&6TDA

4&6 Flutes T-Double Angular Cutter



- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize edge chipping by applying straight 4flutes design.
- Various shapes and length provides optimum efficiency.

4

6

WC
미립자

JCRO
Coating

D
+0 -0.02

D
-0.01 -0.03

L1
±0.03

L1
±0.05

0°
Helix Angle

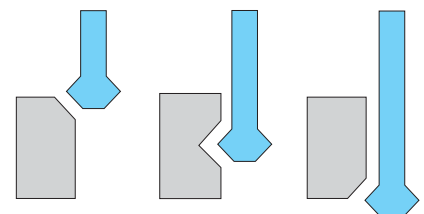
ø1.5-ø5 ø6-ø12 ø1.5-ø5 ø6 ~ 12

D Size	D Tolerance
ø1.5 ~ 5	+0 ~ -0.02mm
ø6 ~ 12	-0.01 ~ -0.03mm

: mm

Order Number	Diameter D	Angle θ	Length of cut L1	Effective Length L2	Neck Diameter D1	Overall Length L	Shank Dia d	List Price
4TDA 015 600 030	1.5	60°	0.43	3	0.75	45	4	£49.20
4TDA 015 900 030	1.5	90°	0.75	3	0.75	45	4	£49.20
4TDA 020 600 050	2	60°	0.57	5	1	50	4	£49.20
4TDA 020 900 050	2	90°	1	5	1	50	4	£49.20
4TDA 025 600 060	2.5	60°	0.75	6	1.2	50	4	£49.20
4TDA 025 900 060	2.5	90°	1.3	6	1.2	50	4	£49.20
4TDA 030 600 075	3	60°	0.86	7.5	1.5	50	4	£49.20
New 4TDA 030 600 120	3	60°	0.86	12	1.5	50	4	£56.03
4TDA 030 900 075	3	90°	1.5	7.5	1.5	50	4	£49.20
New 4TDA 030 900 120	3	90°	1.5	12	1.5	50	4	£56.03
4TDA 040 600 100	4	60°	1.15	10	2	50	4	£49.20
New 4TDA 040 600 160	4	60°	1.15	16	2	50	4	£56.03
4TDA 040 900 100	4	90°	2	10	2	50	4	£49.20
New 4TDA 040 900 160	4	90°	2	16	2	50	4	£56.03
4TDA 050 600 125	5	60°	1.44	12.5	2.5	60	6	£53.30
New 4TDA 050 600 200	5	60°	1.44	20	2.5	60	6	£61.50
4TDA 050 900 125	5	90°	2.4	12.5	2.5	60	6	£53.30
New 4TDA 050 900 200	5	90°	2.4	20	2.5	60	6	£61.50
4TDA 060 600 150	6	60°	1.73	15	3	60	6	£53.30
New 4TDA 060 600 250	6	60°	1.73	25	3	60	6	£61.50
4TDA 060 900 150	6	90°	2.8	15	3	60	6	£53.30
New 4TDA 060 900 250	6	90°	2.8	25	3	60	6	£61.50
6TDA 080 600 200	8	60°	2.3	20	4	70	8	£84.73
New 6TDA 080 600 280	8	60°	2.3	28	4	70	8	£92.93
6TDA 080 900 200	8	90°	3.8	20	4	70	8	£84.73
New 6TDA 080 900 280	8	90°	3.8	28	4	70	8	£92.93
6TDA 100 600 250	10	60°	2.8	25	5	75	10	£106.60
New 6TDA 100 600 350	10	60°	2.8	35	5	75	10	£116.17
6TDA 100 900 250	10	90°	4.8	25	6	80	10	£106.60
New 6TDA 100 900 350	10	90°	4.8	35	6	80	10	£116.17
6TDA 120 600 300	12	60°	3.4	30	6	80	12	£120.27
New 6TDA 120 600 420	12	60°	3.4	42	6	80	12	£129.83
6TDA 120 900 300	12	90°	5.8	30	6	80	12	£120.27
New 6TDA 120 900 420	12	90°	5.8	42	6	80	12	£129.83

Available Cutting Shape



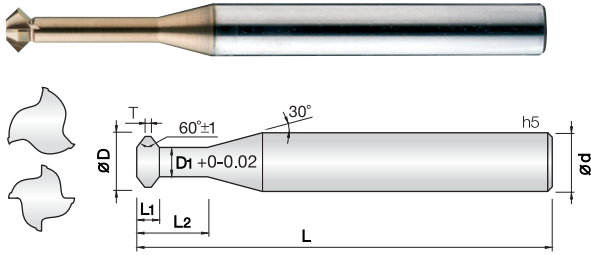
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- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize edge chipping and fracturing by applying straight flutes design which is appropriate to screw groove cutting.
- Various shapes and length provides optimum efficiency.

3 4 WC 미립자 JCRO Coating |D| +0 -0.02 |T| ±0.01 0° Helix Angle

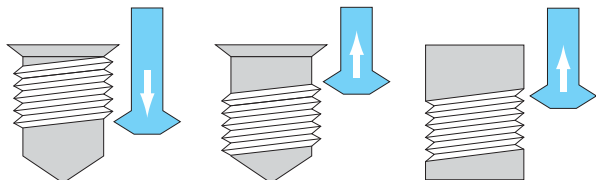
∅0.57~∅8 ∅0.01-∅0.09

D Size	D Tolerance
∅5 ~ 12	-0.01 ~ -0.025mm

: mm

Order Number	Diameter D	Thickness T	Length of cut L1	Effective Length L2	Neck Diameter D1	Overall Length L	Shank Dia d	List Price
3THC 0057 025 M008	0.57	0.01	0.16	2.5	0.3	40	4	£90.56
3THC 0065 028 M009	0.65	0.01	0.18	2.8	0.35	40	4	£90.56
3THC 007 030 M01	0.7	0.015	0.19	3	0.4	40	4	£90.56
3THC 009 036 M012	0.9	0.015	0.2	3.6	0.57	40	4	£90.56
3THC 0105 045 M014	1.05	0.02	0.24	4.5	0.66	40	4	£90.56
3THC 012 050 M016	1.2	0.02	0.28	5	0.75	40	4	£90.56
4THC 015 060 M02	1.5	0.025	0.31	6	1	45	4	£90.56
4THC 019 070 M025	1.9	0.025	0.34	7	1.35	45	4	£90.56
4THC 023 090 M03	2.3	0.03	0.43	9	1.6	65	6	£100.93
4THC 031 120 M04	3.1	0.04	0.56	12	2.2	65	6	£100.93
4THC 040 150 M05	4	0.05	0.62	15	3	65	6	£100.93
4THC 048 180 M06	4.8	0.07	0.79	18	3.55	75	6	£100.93
4THC 065 230 M08	6.5	0.08	0.94	23	5	80	8	£156.17
4THC 079 260 M10	7.9	0.09	1.13	26	6.1	80	8	£156.17

Available Cutting Shape



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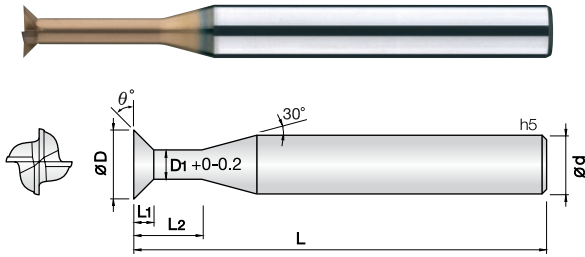
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4&6TAC 4&6 Flutes T-Angular Cutter

4&6날 T-앵글 커터



- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize edge chipping by applying straight 4flutes design.
- Various shapes and length provides optimum efficiency.

4

6

WC
미립자

JCRO
Coating

D
+0 -0.02
ø1.5~ø5

D
-0.01 -0.03
ø6~ø12

L1
±0.03
ø1.5~ø5

L1
±0.05
ø6~12

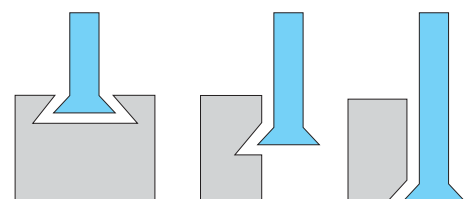
0°
Helix Angle

D Size	D Tolerance
ø1.5 ~ 5	+0 ~ -0.02mm
ø6 ~ 12	-0.01 ~ -0.03mm

: mm

Order Number	Diameter D	Angle θ	Length of cut L1	Effective Length L2	Neck Diameter D1	Overall Length L	Shank Dia d	List Price
4TAC 015 300 030	1.5	30°	0.21	3	0.75	45	4	£49.20
4TAC 015 450 030	1.5	45°	0.37	3	0.75	45	4	£49.20
4TAC 020 300 050	2	30°	0.28	5	1	50	4	£49.20
4TAC 020 450 050	2	45°	0.5	5	1	50	4	£49.20
4TAC 025 300 060	2.5	30°	0.37	6	1.2	50	4	£49.20
4TAC 025 450 060	2.5	45°	0.65	6	1.2	50	4	£49.20
4TAC 030 300 075	3	30°	0.43	7.5	1.5	50	4	£49.20
New 4TAC 030 300 120	3	30°	0.43	12	1.5	50	4	£56.03
4TAC 030 450 075	3	45°	0.75	7.5	1.5	50	4	£49.20
New 4TAC 030 450 120	3	45°	0.75	12	1.5	50	4	£56.03
4TAC 040 300 100	4	30°	0.57	10	2	50	4	£49.20
New 4TAC 040 300 160	4	30°	0.57	16	2	50	4	£56.03
4TAC 040 450 100	4	45°	1	10	2	50	4	£49.20
New 4TAC 040 450 160	4	45°	1	16	2	50	4	£56.03
4TAC 050 300 125	5	30°	0.72	12.5	2.5	60	6	£53.30
4TAC 050 450 125	5	45°	1.25	12.5	2.5	60	6	£53.30
4TAC 060 300 150	6	30°	0.86	15	3	60	6	£53.30
New 4TAC 060 300 240	6	30°	0.86	24	3	60	6	£61.50
4TAC 060 450 150	6	45°	1.5	15	3	60	6	£53.30
New 4TAC 060 450 240	6	45°	1.5	24	3	60	6	£61.50
6TAC 080 300 200	8	30°	1.15	20	4	70	8	£84.73
New 6TAC 080 300 280	8	30°	1.15	28	4	70	8	£92.93
6TAC 080 450 200	8	45°	2	20	4	70	8	£84.73
New 6TAC 080 450 280	8	45°	2	28	4	70	8	£92.93
6TAC 100 300 250	10	30°	1.44	25	5	75	10	£106.60
New 6TAC 100 300 350	10	30°	1.44	35	5	75	10	£116.17
6TAC 100 450 250	10	45°	2.5	25	5	75	10	£106.60
New 6TAC 100 450 350	10	45°	2.5	35	5	75	10	£116.17
6TAC 120 300 300	12	30°	1.73	30	6	80	12	£120.27
New 6TAC 120 300 420	12	30°	1.73	42	6	80	12	£129.83
6TAC 120 450 300	12	45°	3	30	6	80	12	£120.27
New 6TAC 120 450 420	12	45°	3	42	6	80	12	£129.83

Available Cutting Shape



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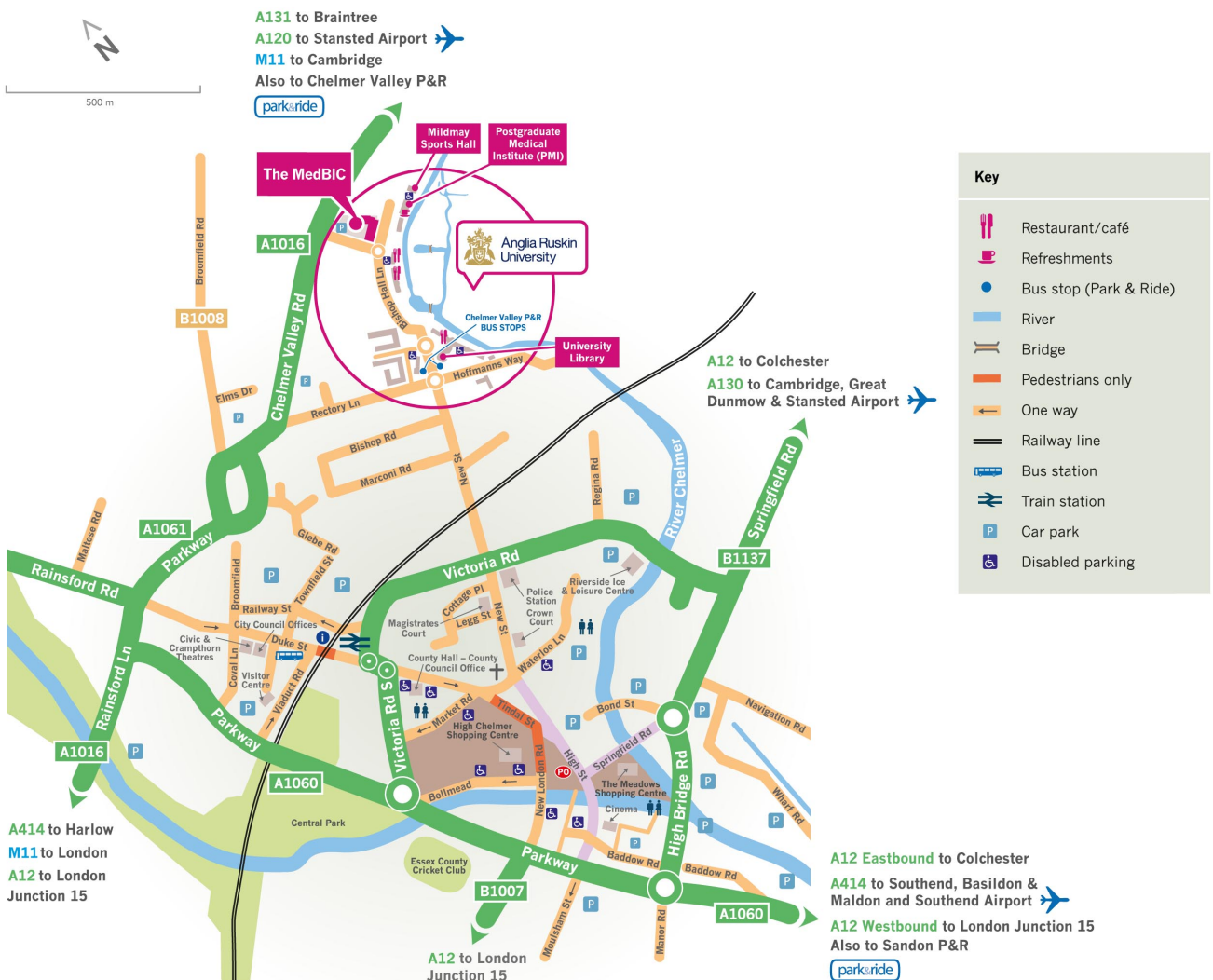
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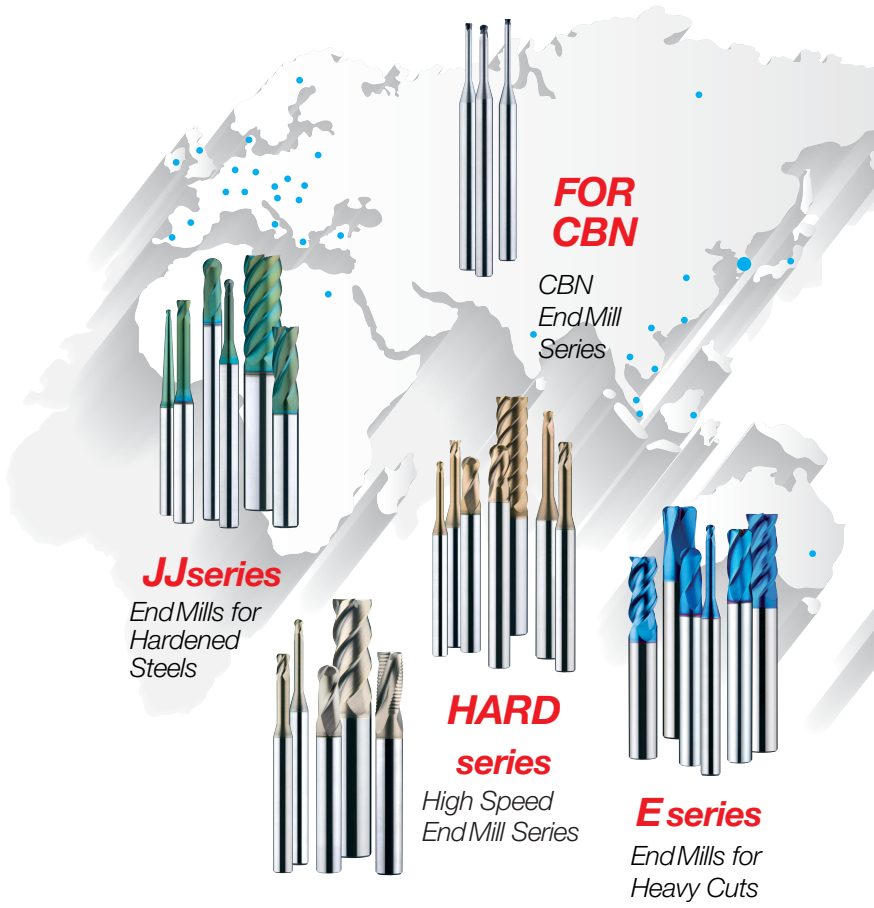
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Notes:



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End Mill
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JJseries

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Steels

**HARD
series**

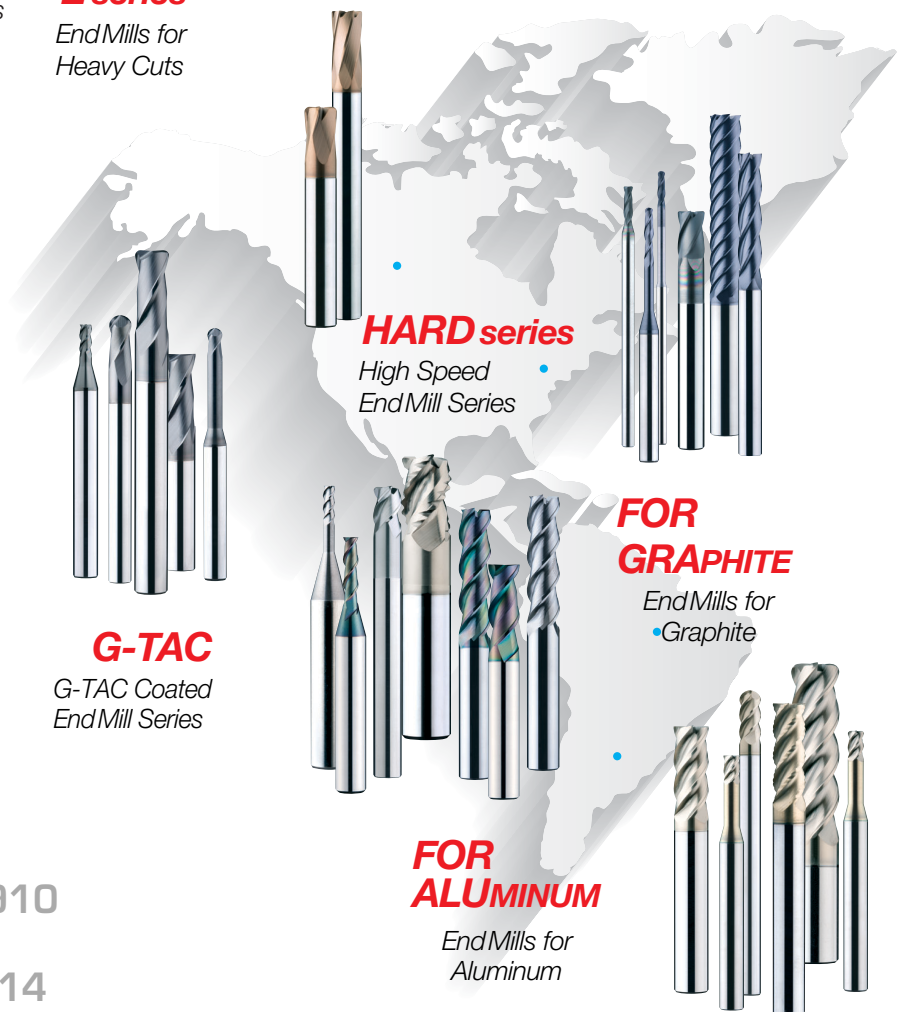
High Speed
End Mill Series

Eseries

End Mills for
Heavy Cuts

Gseries

End Mills for
General
purpose



HARD series

High Speed
End Mill Series

G-TAC

G-TAC Coated
End Mill Series

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End Mills for
• Graphite

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End Mills for
Aluminum

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End Mills
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