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The future of WIDIN is always bright.

WIDIN will share the same vision with Customers.
Providing top quality products with competitive price,
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With the WIDIN's rapid growth, its export is also
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WIDIN®

Premium Quality of Precise machining tool made from the finest raw material



SIZE
Ø0.1~Ø12

WB512, WE512, WR514

RIB series with the highe of raw material.

Ball / Radius / Square

Feature

- Accurate R tolerance | under R3 : ±5㎛, more than R3 : ±10㎛
- Accurate cutting line tolerance | below Ø6 0~0.012, over Ø6 0~0.015
- A variety of sizes compared to the existing products

WINNER

Designed Unique Double Corner Radius
Improved wear-resistance as reducing cutting load



- R1 : Main Radius
- R2 : Corner Radius

SIZE
Ø6~Ø20

WDR503

DOUBLE C RADIUS

Feature

- For High Speed and Feed rate leading to an excellent performance rate.
- Applying the shape of double corner radius
- Multi use even for ball Endmill when machining for a floor finish and a moderately rounded shape

WIDIN®

WB542, WR544

TAPER NECK

Premium Quality of Precise Machining tool made from the finest raw material



SIZE
Ø0.1~Ø12

Feature

- The best machining by applying taper neck to increase the hardness of neck.
- Improved cutting effect and wear resistance with the finest raw materials,

WINNER

WSB502

STRAIGHT FLUTE

Applied straight flut
maximize the hardne



Feature

- Applied straight flute to minimize the vibration and improve surface roughness with maximization of hardness.
- Designed Gash shape for a better chip evacuation

WIDIN®

Applied multi helix and variable index geometry for bottom of the flute



SIZE
Ø3~Ø25

WF60

ROUG

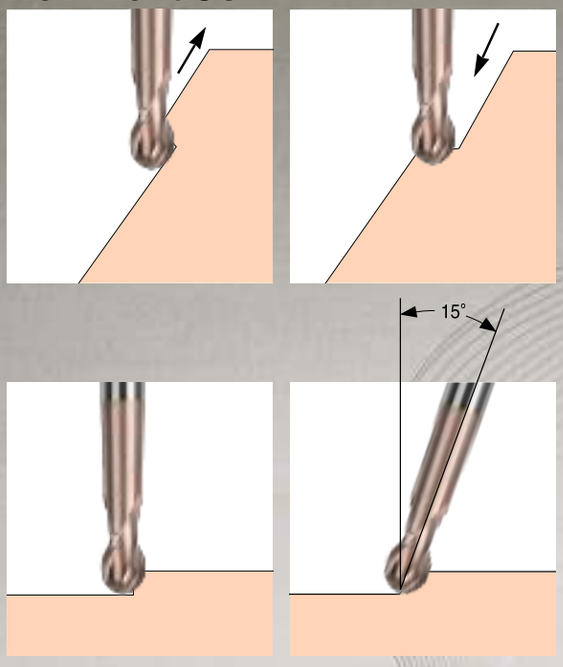
A special design for a high feed rate and a semi finishing.

Feature

- Applying flute shape for a better chip evacuation
- Designed shape of Roughing minimize the cutting load
- Corner R shape to prevent Chipping

WINNER

How to use



SIZE
Ø3~Ø12

WB532

2 Flute MMC Ball End

- *A rounded type of cutting line for a various rounded types of workpiece*
- *A rounded type of cutting line for a undercut and high feed rate.*

WIDIN®

WTE514, WTB502

TAPER

Short length, Long Shank

3mm Shank, High accuracy Ball

A variety of sizes with additional products



Feature

- Wear resistance improvement with a cutting line of a special shape near ball reducing cutting load.
- Gash shape for a better chip evacuation
- New coating suitable for Pre-harden Steel with excellent wear resistance

WINNER

WE506

Powerful cutting Square Endmill

45° Helix and a variety of sizes such as short, regular, long in the length.



SIZE
Ø6~Ø2.0

Feature

- Edge shape to minimize flute chipping and to do powerful cutting
- Increased tool life by a better wear resistance supplementing the hardness of cutting line
- Dramatically reduced cutting load using 6 flute with high helix.

WIDIN®

WB502, WB502...P

2 Flute Ball Endmill

☑ *Short Length, Long Shank, 3mm Shank, High Precision Ball*

☑ *A variety of sizes with additional products line-up*

High precision Ball

2 micron R tolerance for below3mm
3 micron R tolerance for 3~6mm
6 micron R tolerance for over 6mm



Feature

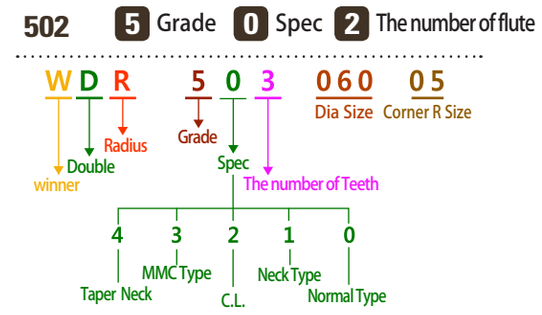
- Wear resistance improvement applying the most suitable shape to the ball reducing cutting load.
- New shape applied near Gash for a better chip disposal
- Better wear resistance with the finest raw material
- W coating best optimized for Pre-hardened steel performing excellent wear resistance
- Minimizing flute chipping.

Ball	Ø0.1 ~ Ø25
High precision Ball	Ø0.1 ~ Ø12

The structure of EDP No.

W–Series Name		
B-Ball	D–Double	X-X-Broken Index Geometry
R-Coner Radius	H–High Helix	S-Straight
E-Square Endmill	P–High Precision	M-Miniature
	F–Fine Pitch	T-Taper

Sample

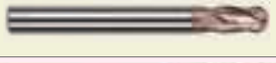
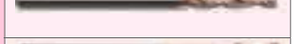
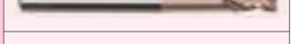
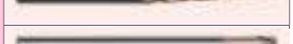


ICON GUIDE

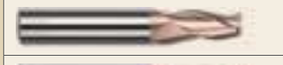
Raw-Material	UWC Ultra Fine Grade
Number of Teeth	2 2Flute; 3-5 3-5Flute; 4 4Flute; 6 6Flute
Helix Angle	0° 0° Helix; 10° 10° Helix; 29° 0° Helix; 30° 30° Helix; 31° 31° Helix; 38° 38° Helix; 45° 45° Helix
Ball Radius Tolerance	R ±0.002; R ±0.003; R ±0.005; R ±0.01
Corner Radius Tolerance	R ±0.015; R ±0.01; R ±0.02
Coating	W W Coating
Others	Cutting Condition Cutting Condition

WINNER

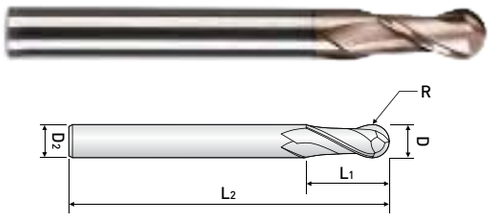
INDEX

TYPE		FLUTES	EDP No.	PROPERTY	MIN	MAX	PAGE	STOCK
Ball		2	WB502---	SHORT LENGTH + REGULAR LENGTH + LONG LENGTH	0.1	25	18	•
			WB502---P	HIGH PRECISION	0.1	12	22	•
			WB512---	for RIB PROCESSING	0.1	12	23	
			WB512---S6	for RIB PROCESSING (Shank-6)	0.5	2	30	
			WB542---	TAPER NECK	0.1	12	33	
			WB532---	MILLING MACHINE COPY	3.0	12	44	
			WSB502---	STRAIGHT FLUTE	3.0	20	45	
		3	WB503---	HIGH FEED & CENTER MATCH	1.0	12	46	
		4	WB504---	HIGH FEED	1.0	12	47	
Corner Radius		2	WR502---	SHORT LENGTH + REGULAR LENGTH + LONG LENGTH	0.2	20	48	•
			WR512---	LONG NECK	0.2	20	53	•
			WR542---	TAPER NECK	0.2	4	65	
		3	WDR503---	DOUBLE CORNER RADIUS	6.0	20	75	•
		4	WXR504---	SHORT LENGTH+REGULAR LENGTH +LONG SHANK +VARIABLE INDEX GEOMETRY	1.0	20	76	
			WXR514---	LONG NECK +VARIABLE INDEX GEOMETRY	1.0	20	80	
			WR544---	TAPER NECK	1.0	4	90	
			WSPM4---	HIGH FEED	1.0	20	97	
			WR504---	SHORT LENGTH+REGULAR LENGTH +END TEETH VARIABLE INDEX GEOMETRY	3.0	20	99	
			WR514---	LONG NECK CORNER RADIUS	6.0	12	101	
		6	WR506---	45° CORNER RADIUS	6.0	20	102	



TYPE		FLUTES	EDP No.	PROPERTY	MIN	MAX	PAGE	STOCK
SQUARE		2	**WME502---**	Ø0.03~	0.03	25	103	•
			**WE502---S4**	Ø 0.1 + SHANK4	1.0	4	105	•
			**WE502---S3**	SHANK 3	0.1	3	106	•
			**WE502---**	SHORT+REGULAR+LONG LENGTH	0.1	20	107	
			**WE522---**	LONG	1.0	25	110	•
			**WE512---**	LONG NECK	0.1	12	114	
		4	**WME504---**	VARIABLE INDEX GEOMETRY	0.8	25	121	•
			**WXE504---**	SHORT + REGULAR + LONG LENGTH +VARIABLE INDEX GEOMETRY	1.0	20	123	
			**WE524---**	LONG	1.0	25	125	•
			**WE514---**	LONG NECK	1.0	12	129	
			**WE504---H**	45° HELIX + REGULAR + LONG	1.0	20	133	
		6	**WE506---**	45° HELIX + REGULAR + LONG	6.0	20	135	
ROUGHING		3~5	**WF61---**	ROUGHING ENDMILL	3.0	25	136	•
		3~5	**WF60---**	ROUGHING ENDMILL-CORNER R	3.0	25	137	•
SQUARE TAPER		2	**WTE502---**	TAPER	0.3	10	138	
		4	**WTE504---**	TAPER	3.0	10	142	
SQUARE TAPER RIB		4	**WTE514---**	RIB	0.8	2.5	144	
BALL TAPER		2	**WTB502---**	TAPER BALL	0.3	2	149	
CORNER RADIUS TAPER		4	**WTR504---**	TAPER CORNER RADIUS	0.8	2.5	151	

2 FLUTE BALL



WB 502...

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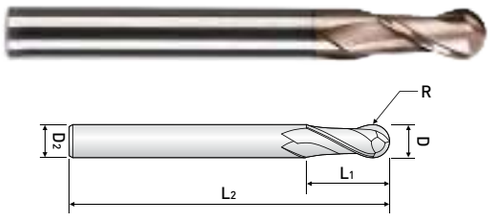
(SHORT LENGTH + REGULAR LENGTH + LONG SHANK)

UWC ULTRA FINE | 2 Flute | 30° Helix | R ±0.005 up to R3 | R ±0.01 over R3 | W W Coating | Cutting Condition P.160

EDP No.	Diameter	Radius	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WB502 001S	0.1	0.05	0.1	40	4
WB502 001			0.2	40	4
WB502 001 S3			0.2	40	3
WB502 0015S	0.15	0.075	0.15	40	4
WB502 0015			0.3	40	4
WB502 0015 S3			0.3	40	3
WB502 002S	0.2	0.1	0.2	40	4
WB502 002			0.4	40	4
WB502 002 S3			0.4	40	3
WB502 003S	0.3	0.15	0.3	40	4
WB502 003			0.6	40	4
WB502 003 S3			0.6	40	3
WB502 004S	0.4	0.2	0.4	40	4
WB502 004			0.8	40	4
WB502 004 S3			0.8	40	3
WB502 005S	0.5	0.25	0.5	40	4
WB502 005			1.0	40	4
WB502 005 S3			1.0	40	3
WB502 006S	0.6	0.3	0.6	40	4
WB502 006			1.2	40	4
WB502 006 S3			1.2	40	3
WB502 007S	0.7	0.35	0.7	40	4
WB502 007			1.4	40	4
WB502 007 S3			1.4	40	3
WB502 008S	0.8	0.4	0.8	40	4
WB502 008			1.6	40	4
WB502 008 S3			1.6	40	3
WB502 009S	0.9	0.45	0.9	40	4
WB502 009			1.8	40	4
WB502 009 S3			1.8	40	3
WB502 010S	1.0	0.5	1.5	40	6
WB502 010 S3			2.5	50	3
WB502 010 S4			2.5	50	4
WB502 010			2.5	50	6
WB502 010 070			2.5	70	6
WB502 010 100			2.5	100	6

Continued on following page

2 FLUTE BALL



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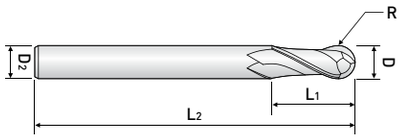


(SHORT LENGTH + REGULAR LENGTH + LONG SHANK)

EDP No.	Diameter	Radius	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WB502 0120S	1.2	0.6	2.0	40	6
WB502 012 S3			3.0	50	3
WB502 012 S4			3.0	50	4
WB502 012			3.0	50	6
WB502 012 070			3.0	70	6
WB502 012 100			3.0	100	6
WB502 015S	1.5	0.75	2.5	40	6
WB502 015 S3			4.0	50	3
WB502 015 S4			4.0	50	4
WB502 015			4.0	50	6
WB502 015 070			4.0	70	6
WB502 015 100			4.0	100	6
WB502 020S	2.0	1	3.0	40	6
WB502 020 S3			5.0	50	3
WB502 020 S4			5.0	50	4
WB502 020			5.0	50	6
WB502 020 080			5.0	80	6
WB502 020 100			5.0	100	6
WB502 025S	2.5	1.25	4.0	40	6
WB502 025 S3			6.0	60	3
WB502 025 S4			6.0	60	4
WB502 025			6.0	60	6
WB502 025 080			6.0	80	6
WB502 025 100			6.0	100	6
WB502 030S	3.0	1.5	4.5	40	6
WB502 030 S3			6.0	60	3
WB502 030 S4			6.0	60	4
WB502 030			6.0	60	6
WB502 030 080			6.0	80	6
WB502 030 100			6.0	100	6
WB502 035	3.5	1.75	8.0	70	6
WB502 040S	4.0	2	6.0	50	6
WB502 040 S4			8.0	70	4
WB502 040			8.0	70	6
WB502 040 100 S4			8.0	100	4
WB502 040 120 S4			8.0	120	4
WB502 040 100			8.0	100	6
WB502 040 120			8.0	120	6

2 FLUTE BALL





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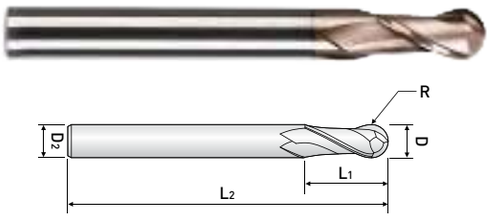
(SHORT LENGTH + REGULAR LENGTH + LONG SHANK)

UWC ULTRA FINE | 2 Flute | 30° Helix | R ±0.005 up to R3 | R ±0.01 over R3 | W W Coating | Cutting Condition P.160

EDP No.	Diameter	Radius	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WB502 045	4.5	2.25	9.0	80	6
WB502 050S	5.0	2.5	7.5	60	6
WB502 050			10.0	80	6
WB502 050 S5			10.0	80	5
WB502 055	5.5	2.75	11.0	90	6
WB502 060S	6.0	3	9.0	50	6
WB502 060 060			9.0	60	6
WB502 060 080			9.0	80	6
WB502 060			12.0	90	6
WB502 060 110			12.0	110	6
WB502 060 130			12.0	130	6
WB502 060 150			12.0	150	6
WB502 065	6.5	3.25	13.0	90	8
WB502 070	7.0	3.5	14.0	90	8
WB502 080S	8.0	4	12.0	50	8
WB502 080 060			12.0	60	8
WB502 080 080			12.0	80	8
WB502 080 090			12.0	90	8
WB502 080			14.0	100	8
WB502 080 130			14.0	130	8
WB502 080 150			14.0	150	8
WB502 085	8.5	4.25	16.0	100	10
WB502 090	9.0	4.5	18.0	100	10
WB502 100S	10.0	5	15.0	50	10
WB502 100 060			15.0	60	10
WB502 100 080			15.0	80	10
WB502 100 090			15.0	90	10
WB502 100			18.0	100	10
WB502 100 130			18.0	130	10
WB502 100 150			18.0	150	10
WB502 100 180			18.0	180	10
WB502 100 200			18.0	200	10
WB502 110	11.0	5.5	20.0	100	12
WB502 120S	12.0	6	18.0	60	12
WB502 120 080			18.0	80	12
WB502 120 090			18.0	90	12
WB502 120 100			18.0	100	12
WB502 120			24.0	110	12

Continued from previous page Continued on following page

2 FLUTE BALL



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EDP No.	Diameter	Radius	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WB502 120 130	12.0	6	24.0	130	12
WB502 120 150			24.0	150	12
WB502 120 180			24.0	180	12
WB502 120 200			24.0	200	12
WB502 130	13.0	6.5	24.0	100	12
WB502 140 S12	14.0	7	26.0	100	12
WB502 140			26.0	100	14
WB502 140 S16			26.0	100	16
WB502 150	15.0	7.5	28.0	140	16
WB502 160 100	16.0	8	24.0	100	16
WB502 160 130			24.0	130	16
WB502 160			30.0	150	16
WB502 160 180			30.0	180	16
WB502 160 200			30.0	200	16
WB502 180 S16	18.0	9	34.0	150	16
WB502 180			34.0	150	18
WB502 200 100	20.0	10	30.0	100	20
WB502 200 130			30.0	130	20
WB502 200			38.0	150	20
WB502 200 200			38.0	200	20
WB502 250 120	25.0	12.5	50.0	120	25
WB502 250			50.0	180	25

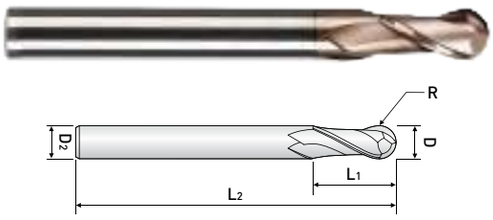
Tolerance

Mill Dia(mm)		Shank
Diameter	Tolerance	
Upto 6	0~-0.012	h6
Over 6	0~-0.015	

※ Items can be changed for quality improvement without notice

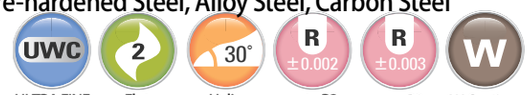
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High PRECISION BALL



WB502...P

- High precise performance with R tolerance below 3 micron
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Radius	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WB502 001P	0.1	0.05	0.2	40	4
WB502 0015P	0.15	0.075	0.3	40	4
WB502 002P	0.2	0.1	0.4	40	4
WB502 003P	0.3	0.15	0.6	40	4
WB502 004P	0.4	0.2	0.8	40	4
WB502 005P	0.5	0.25	1.0	40	4
WB502 006P	0.6	0.3	1.2	40	4
WB502 007P	0.7	0.35	1.4	40	4
WB502 008P	0.8	0.4	1.6	40	4
WB502 009P	0.9	0.45	1.8	40	4
WB502 010P	1.0	0.5	2.5	50	6
WB502 012P	1.2	0.6	3.0	50	6
WB502 015P	1.5	0.75	4.0	50	6
WB502 020P	2.0	1	5.0	50	6
WB502 025P	2.5	1.25	6.0	60	6
WB502 030P	3.0	1.5	6.0	60	6
WB502 040P	4.0	2	8.0	70	6
WB502 050P	5.0	2.5	10.0	80	6
WB502 060P	6.0	3	12.0	90	6
WB502 080P	8.0	4	14.0	100	8
WB502 100P	10.0	5	18.0	100	10
WB502 120P	12.0	6	24.0	110	12

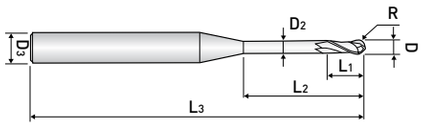
Tolerance

Mill Dia(mm)		Shank
Diameter	Tolerance	
Upto 6	0~-0.012	h6
Over 6	0~-0.015	

※ Items can be changed for quality improvement without notice

2 FLUTE RIB BALL





WB512...

- Excellent effect in preventing breakage with a shape of neck without notch
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

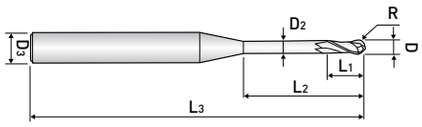


EDP No.	Diameter	Radius	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WB512 001 002	0.1	0.05	0.1	0.2	40	4
WB512 001 003				0.3		
WB512 001 005				0.5		
WB512 001 01				1.0		
WB512 002 005	0.2	0.1	0.2	0.5	40	4
WB512 002 01				1.0		
WB512 002 015				1.5		
WB512 002 02				2.0		
WB512 002 03				3.0		
WB512 003 01	0.3	0.15	0.3	1.0	40	4
WB512 003 015				1.5		
WB512 003 02				2.0		
WB512 003 025				2.5		
WB512 003 03				3.0		
WB512 003 04				4.0		
WB512 003 05				5.0		
WB512 004 01	0.4	0.2	0.4	1.0	40	4
WB512 004 015				1.5		
WB512 004 02				2.0		
WB512 004 025				2.5		
WB512 004 03				3.0		
WB512 004 04				4.0		
WB512 004 05				5.0		
WB512 004 06				6.0		
WB512 004 08				8.0		
WB512 004 10				10.0		
WB512 005 01	0.5	0.25	0.5	1.0	45	4
WB512 005 015				1.5		
WB512 005 02				2.0		
WB512 005 025				2.5		
WB512 005 03				3.0		
WB512 005 04				4.0		
WB512 005 05				5.0		
WB512 005 06				6.0		
WB512 005 08				8.0		
WB512 005 10				10.0		

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2 FLUTE RIB BALL





WB512...

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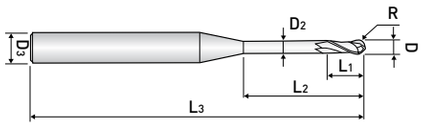


EDP No.	Diameter	Radius	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WB512 005 12	0.5	0.25	0.5	12.0	45	4
WB512 005 14				14.0		
WB512 005 16				16.0		
WB512 006 01	0.6	0.3	0.6	1.0	45	4
WB512 006 02				2.0		
WB512 006 03				3.0		
WB512 006 04				4.0		
WB512 006 05				5.0		
WB512 006 06				6.0		
WB512 006 08				8.0		
WB512 006 10				10.0		
WB512 006 12				12.0		
WB512 006 14				14.0	50	
WB512 006 16				16.0		
WB512 007 02	0.7	0.35	0.7	2.0	45	4
WB512 007 04				4.0		
WB512 007 06				6.0		
WB512 007 08				8.0		
WB512 007 10				10.0		
WB512 007 12				12.0		
WB512 008 01	0.8	0.4	0.8	1.0	45	4
WB512 008 02				2.0		
WB512 008 03				3.0		
WB512 008 04				4.0		
WB512 008 05				5.0		
WB512 008 06				6.0		
WB512 008 08				8.0		
WB512 008 10				10.0		
WB512 008 12				12.0		
WB512 008 14				14.0	50	
WB512 008 16				16.0		
WB512 008 20				20.0	55	
WB512 009 04	0.9	0.45	0.9	4.0	45	4
WB512 009 06				6.0		
WB512 009 08				8.0		
WB512 009 10				10.0		

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2 FLUTE RIB BALL





WB512...

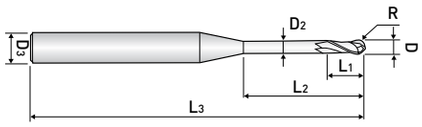
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- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Radius	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WB512 010 02	1.0	0.5	1.0	2.0	50	4
WB512 010 03				3.0		
WB512 010 04				4.0		
WB512 010 05				5.0		
WB512 010 06				6.0		
WB512 010 07				7.0		
WB512 010 08				8.0		
WB512 010 09				9.0		
WB512 010 10				10.0		
WB512 010 12				12.0		
WB512 010 14				14.0		
WB512 010 16				16.0		
WB512 010 18				18.0		
WB512 010 20				20.0	55	
WB512 010 22				22.0	60	
WB512 010 26				26.0		
WB512 010 30				30.0	70	
WB512 010 40				40.0	80	
WB512 010 50				50.0	100	
WB512 012 04	1.2	0.6	1.2	4.0	50	4
WB512 012 06				6.0		
WB512 012 08				8.0		
WB512 012 10				10.0		
WB512 012 12				12.0		
WB512 012 16				16.0		
WB512 012 20				20.0	55	
WB512 012 26				26.0	60	
WB512 014 06	1.4	0.7	1.4	6.0	50	4
WB512 014 08				8.0		
WB512 014 10				10.0		
WB512 014 12				12.0		
WB512 014 16				16.0		

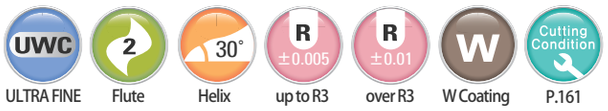
2 FLUTE RIB BALL





WB512...

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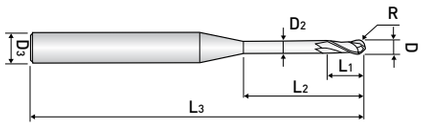


EDP No.	Diameter	Radius	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WB512 015 03	1.5	0.75	1.5	3.0	50	4
WB512 015 04				4.0		
WB512 015 05				5.0		
WB512 015 06				6.0		
WB512 015 07				7.0		
WB512 015 08				8.0		
WB512 015 10				10.0		
WB512 015 12				12.0		
WB512 015 14				14.0		
WB512 015 16				16.0		
WB512 015 18				18.0		
WB512 015 20				20.0	55	
WB512 015 22				22.0	60	
WB512 015 26				26.0		
WB512 015 30				30.0	70	
WB512 015 35				35.0		
WB512 015 40				40.0	80	
WB512 016 04	1.6	0.8	1.6	4.0	50	4
WB512 016 06				6.0		
WB512 016 08				8.0		
WB512 016 10				10.0		
WB512 016 12				12.0		
WB512 016 16				16.0		
WB512 016 20				20.0	55	
WB512 018 04	1.8	0.9	1.8	4.0	50	4
WB512 018 06				6.0		
WB512 018 08				8.0		
WB512 018 10				10.0		
WB512 018 12				12.0		
WB512 018 16				16.0		
WB512 018 20				20.0	55	
WB512 020 04	2.0	1	2.0	4.0	50	4
WB512 020 06				6.0		
WB512 020 08				8.0		
WB512 020 10				10.0		
WB512 020 12				12.0		

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2 FLUTE RIB BALL





WB512...

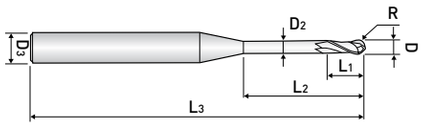
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- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Radius	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WB512 020 14	2.0	1	2.0	14.0	50	4
WB512 020 16				16.0		
WB512 020 18				18.0	55	
WB512 020 20				20.0		
WB512 020 22				22.0	60	
WB512 020 26				26.0		
WB512 020 30				30.0	70	
WB512 020 35				35.0		
WB512 020 40				40.0	80	
WB512 020 45				45.0	90	
WB512 020 50				50.0	100	
WB512 020 60				60.0	110	
WB512 025 08	2.5	1.25	2.5	8.0	50	4
WB512 025 10				10.0		
WB512 025 12				12.0		
WB512 025 16				16.0		
WB512 025 20				20.0		
WB512 025 22				22.0	60	
WB512 025 26				26.0		
WB512 025 30				30.0	70	
WB512 025 35				35.0		
WB512 025 40				40.0	80	
WB512 025 45				45.0	90	
WB512 025 50				50.0	100	
WB512 030 06	3.0	1.5	3.0	6.0	50	6
WB512 030 08				8.0		
WB512 030 10				10.0		
WB512 030 12				12.0		
WB512 030 14				14.0	60	
WB512 030 16				16.0		
WB512 030 18				18.0		
WB512 030 20				20.0		
WB512 030 22				22.0	65	
WB512 030 26				26.0		
WB512 030 30				30.0	70	
WB512 030 35				35.0		
WB512 030 40				40.0	80	
WB512 030 45				45.0	90	

2 FLUTE RIB BALL





WB512...

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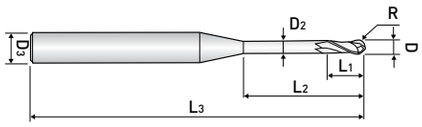


EDP No.	Diameter	Radius	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WB512 030 50	3.0	1.5	3.0	50.0	100	6
WB512 030 60				60.0		
WB512 040 08	4.0	2	4.0	8.0	50	6
WB512 040 10				10.0		
WB512 040 12				12.0		
WB512 040 14				14.0	60	
WB512 040 16				16.0		
WB512 040 18				18.0		
WB512 040 20				20.0		
WB512 040 22				22.0	65	
WB512 040 26				26.0		
WB512 040 30				30.0	70	
WB512 040 35				35.0		
WB512 040 40				40.0	80	
WB512 040 45				45.0	90	
WB512 040 50				50.0	100	
WB512 040 55				55.0		
WB512 040 60				60.0		
WB512 050 15	5.0	2.5	6.0	15.0	60	6
WB512 050 20				20.0		
WB512 050 26				26.0	65	
WB512 050 30				30.0	70	
WB512 050 35				35.0		
WB512 050 40				40.0	80	
WB512 050 45				45.0	90	
WB512 050 50				50.0	100	
WB512 050 55				55.0		
WB512 050 60				60.0		
WB512 060 20	6.0	3	8.0	20.0	60	6
WB512 060 30				30.0		
WB512 060 20 90			12.0	20.0	90	
WB512 060 30 90				30.0		

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2 FLUTE RIB BALL





WB512...

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- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Radius	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WB512 080 25	8.0	4	10.0	25.0	70	8
WB512 080 35				35.0		
WB512 080 25 100			14.0	25.0	100	
WB512 080 35 100				35.0		
WB512 100 30	10.0	5	12.0	30.0	75	10
WB512 100 40				40.0		
WB512 100 30 100			18.0	30.0	100	
WB512 100 40 100				40.0		
WB512 120 32	12.0	6	14.0	32.0	80	12
WB512 120 45				45.0		
WB512 120 32 110			22.0	32.0	110	
WB512 120 45 110				45.0		

Tolerance

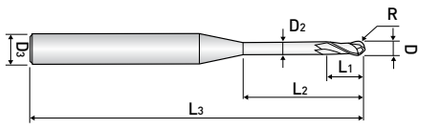
Mill Dia(mm)		Shank
Diameter	Tolerance	
Upto 6	0~-0.012	h6
Over 6	0~-0.015	

※ Items can be changed for quality improvement without notice

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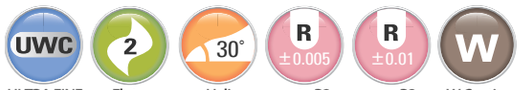
2 FLUTE RIB BALL 6mm SHANK





WB512...S6

- High efficient performance through increasing chucking power from 6mm Shank
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

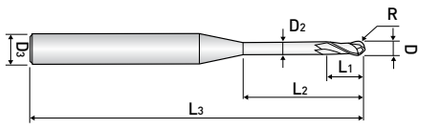


EDP No.	Diameter	Radius	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WB512 005 01 S6	0.5	0.25	0.5	1.0	45	6
WB512 005 02 S6				2.0		
WB512 005 04 S6				4.0		
WB512 006 01 S6	0.6	0.3	0.6	1.0	45	6
WB512 006 02 S6				2.0		
WB512 006 03 S6				3.0		
WB512 006 04 S6				4.0		
WB512 006 05 S6				5.0		
WB512 006 06 S6				6.0		
WB512 006 08 S6				8.0		
WB512 006 10 S6				10.0		
WB512 006 12 S6				12.0		
WB512 006 14 S6				14.0	50	
WB512 006 16 S6				16.0		
WB512 008 01 S6	0.8	0.4	0.8	1.0	45	6
WB512 008 02 S6				2.0		
WB512 008 03 S6				3.0		
WB512 008 04 S6				4.0		
WB512 008 05 S6				5.0		
WB512 008 06 S6				6.0		
WB512 008 08 S6				8.0		
WB512 008 10 S6				10.0		
WB512 008 12 S6				12.0		
WB512 008 14 S6				14.0	50	
WB512 008 16 S6				16.0		
WB512 008 20 S6				20.0	55	
WB512 010 02 S6	1.0	0.5	1.0	2.0	50	6
WB512 010 03 S6				3.0		
WB512 010 04 S6				4.0		
WB512 010 05 S6				5.0		
WB512 010 06 S6				6.0		
WB512 010 07 S6				7.0		
WB512 010 08 S6				8.0		
WB512 010 09 S6				9.0		
WB512 010 10 S6				10.0		
WB512 010 12 S6				12.0		
WB512 010 14 S6				14.0		
WB512 010 16 S6				16.0		

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2 FLUTE RIB BALL 6mm SHANK





WB512...S6

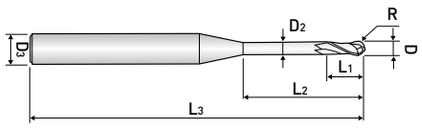
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- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Radius	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WB512 010 18 S6	1.0	0.5	1.0	18.0	50	6
WB512 010 20 S6				20.0	55	
WB512 010 22 S6				22.0	60	
WB512 010 26 S6				26.0		
WB512 010 30 S6				30.0	70	
WB512 015 03 S6	1.5	0.75	1.5	3.0	50	6
WB512 015 04 S6				4.0		
WB512 015 06 S6				6.0		
WB512 015 08 S6				8.0		
WB512 015 10 S6				10.0		
WB512 015 12 S6				12.0		
WB512 015 14 S6				14.0		
WB512 015 16 S6				16.0		
WB512 015 18 S6				18.0		
WB512 015 20 S6				20.0	55	
WB512 015 22 S6				22.0	60	
WB512 015 26 S6				26.0		
WB512 015 30 S6				30.0	70	
WB512 015 35 S6				35.0		
WB512 015 40 S6				40.0	80	
WB512 020 04 S6	2.0	1	2.0	4.0	50	6
WB512 020 06 S6				6.0		
WB512 020 08 S6				8.0		
WB512 020 10 S6				10.0		
WB512 020 12 S6				12.0		
WB512 020 14 S6				14.0		
WB512 020 16 S6				16.0		
WB512 020 18 S6				18.0	55	
WB512 020 20 S6				20.0		
WB512 020 22 S6				22.0	60	
WB512 020 26 S6				26.0		

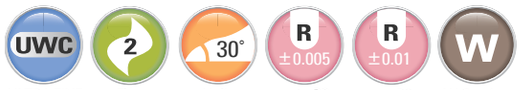
2 FLUTE RIB BALL 6mm SHANK





WB512...S6

- High efficient performance through increasing chucking power from 6mm Shank
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Radius	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WB512 020 30 S6	2.0	1	2.0	30.0	70	6
WB512 020 35 S6				35.0		
WB512 020 40 S6				40.0	80	
WB512 020 45 S6				45.0	90	
WB512 020 50 S6				50.0	100	

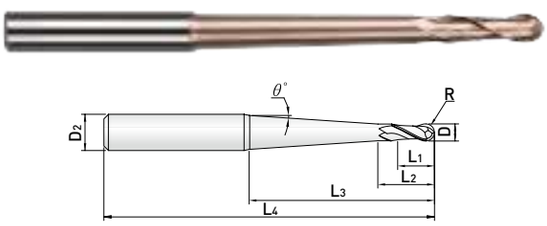
Tolerance

Mill Dia(mm)		Shank
Diameter	Tolerance	
Upto 6	0~-0.012	h6
Over 6	0~-0.015	

※ Items can be changed for quality improvement without notice

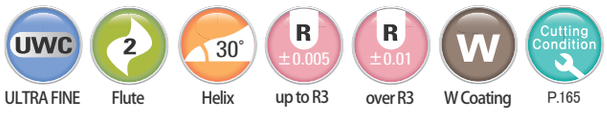
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2 FLUTE TAPER NECK BALL



WB542...

- Strengthen the hardness of neck by applying Taper neck
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

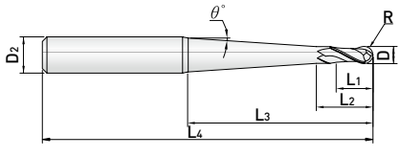


EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WB542 001 05 005	0.1	0.05	30`	0.1	-	0.5	40	4
WB542 001 05 01						1.0		
WB542 001 10 005			1°			0.5		
WB542 001 10 01						1.0		
WB542 001 15 005			1°30`			0.5		
WB542 001 15 01						1.0		
WB542 001 20 005			2°			0.5		
WB542 001 20 01						1.0		
WB542 001 30 005			3°			0.5		
WB542 001 30 01						1.0		
WB542 002 05 01	0.2	0.1	30`	0.2	0.4	1.0	40	4
WB542 002 05 02						2.0		
WB542 002 05 03						3.0		
WB542 002 10 01			1°			1.0		
WB542 002 10 02						2.0		
WB542 002 10 03						3.0		
WB542 002 15 01			1°30`			1.0		
WB542 002 15 02						2.0		
WB542 002 15 03						3.0		
WB542 002 20 01			2°			1.0		
WB542 002 20 02						2.0		
WB542 002 20 03						3.0		
WB542 002 30 01			3°			1.0		
WB542 002 30 02						2.0		
WB542 002 30 03						3.0		
WB542 002 50 02			5°			2.0		
WB542 002 50 03						3.0		
WB542 003 05 02	0.3	0.15	30`	0.3	0.6	2.0	40	4
WB542 003 05 03						3.0		
WB542 003 05 04						4.0		
WB542 003 05 05						5.0		
WB542 003 10 02			1°			2.0		
WB542 003 10 03						3.0		
WB542 003 10 04						4.0		
WB542 003 10 05						5.0		
WB542 003 15 02			1°30′			2.0		
WB542 003 15 03						3.0		
WB542 003 15 04						4.0		

Continued on following page

2 FLUTE TAPER NECK BALL





WB542...

- Strengthen the hardness of neck by applying Taper neck
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

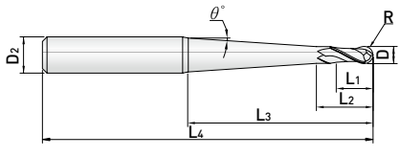


EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WB542 003 15 05	0.3	0.15	1°30′	0.3	0.6	5.0	40	4
WB542 003 20 02			2°			2.0		
WB542 003 20 03						3.0		
WB542 003 20 04						4.0		
WB542 003 20 05						5.0		
WB542 003 30 02			3°			2.0		
WB542 003 30 03						3.0		
WB542 003 30 04						4.0		
WB542 003 30 05						5.0		
WB542 003 50 05			5°			5.0		
WB542 004 05 02	0.4	0.2	30`	0.4	0.8	2.0	50	4
WB542 004 05 03						3.0		
WB542 004 05 04						4.0		
WB542 004 05 05						5.0		
WB542 004 05 06						6.0		
WB542 004 10 02			1°			2.0		
WB542 004 10 03						3.0		
WB542 004 10 04						4.0		
WB542 004 10 05						5.0		
WB542 004 10 06						6.0		
WB542 004 15 02			1°30`			2.0		
WB542 004 15 03						3.0		
WB542 004 15 04						4.0		
WB542 004 15 05						5.0		
WB542 004 15 06						6.0		
WB542 004 20 02			2°			2.0		
WB542 004 20 03						3.0		
WB542 004 20 04						4.0		
WB542 004 20 05						5.0		
WB542 004 20 06						6.0		
WB542 004 30 02			3°			2.0		
WB542 004 30 03						3.0		
WB542 004 30 04						4.0		
WB542 004 30 05						5.0		
WB542 004 30 06						6.0		
WB542 004 50 04			5°			4.0		
WB542 004 50 06						6.0		

Continued from previous page Continued on following page

2 FLUTE TAPER NECK BALL





WB542...

- Strengthen the hardness of neck by applying Taper neck
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

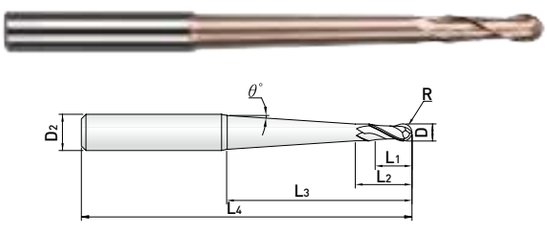


ULTRA FINE | Flute | Helix | up to R3 | over R3 | W Coating | P.165

EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WB542 005 05 04	0.5	0.25	30`	0.5	1.0	4.0	50	4
WB542 005 05 06						6.0		
WB542 005 05 08						8.0		
WB542 005 05 10						10.0		
WB542 005 10 04			1°			4.0		
WB542 005 10 06						6.0		
WB542 005 10 08						8.0		
WB542 005 10 10						10.0		
WB542 005 15 04			1°30`			4.0		
WB542 005 15 06						6.0		
WB542 005 15 08						8.0		
WB542 005 15 10						10.0		
WB542 005 20 04			2°			4.0		
WB542 005 20 06						6.0		
WB542 005 20 08						8.0		
WB542 005 20 10						10.0		
WB542 005 30 04			3°			4.0		
WB542 005 30 06						6.0		
WB542 005 30 08						8.0		
WB542 005 30 10						10.0		
WB542 006 05 04	0.6	0.3	30`	0.6	1.2	4.0	50	4.0
WB542 006 05 06						6.0		
WB542 006 05 08						8.0		
WB542 006 05 10						10.0		
WB542 006 05 12						12.0		
WB542 006 10 04			1°			4.0		
WB542 006 10 06						6.0		
WB542 006 10 08						8.0		
WB542 006 10 10						10.0		
WB542 006 10 12						12.0		
WB542 006 15 04			1°30`			4.0		
WB542 006 15 06						6.0		
WB542 006 15 08						8.0		
WB542 006 15 10						10.0		
WB542 006 15 12						12.0		
WB542 006 20 04			2°			4.0		
WB542 006 20 06						6.0		
WB542 006 20 08						8.0		

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2 FLUTE TAPER NECK BALL



WB542...

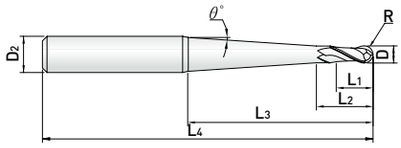
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- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WB542 006 20 10	0.6	0.3	2°	0.6	1.2	10.0	50	4.0
WB542 006 20 12						12.0		
WB542 006 30 04			3°			4.0		
WB542 006 30 06						6.0		
WB542 006 30 08						8.0		
WB542 006 30 10						10.0		
WB542 006 30 12						12.0		
WB542 008 05 04	0.8	0.4	30`	0.8	1.6	4.0	50	4
WB542 008 05 06						6.0		
WB542 008 05 08						8.0		
WB542 008 05 10						10.0		
WB542 008 05 12						12.0		
WB542 008 05 16						16.0		
WB542 008 10 04			1°			4.0		
WB542 008 10 06						6.0		
WB542 008 10 08						8.0		
WB542 008 10 10						10.0		
WB542 008 10 12						12.0		
WB542 008 10 16						16.0		
WB542 008 15 04			1°30`			4.0		
WB542 008 15 06						6.0		
WB542 008 15 08						8.0		
WB542 008 15 10						10.0		
WB542 008 15 12						12.0		
WB542 008 15 16						16.0		
WB542 008 20 04			2°			4.0		
WB542 008 20 06						6.0		
WB542 008 20 08						8.0		
WB542 008 20 10						10.0		
WB542 008 20 12						12.0		
WB542 008 20 16						16.0		
WB542 008 30 04			3°			4.0		
WB542 008 30 06						6.0		
WB542 008 30 08						8.0		
WB542 008 30 10						10.0		
WB542 008 30 12						12.0		
WB542 008 30 16						16.0		

2 FLUTE TAPER NECK BALL





WB542...

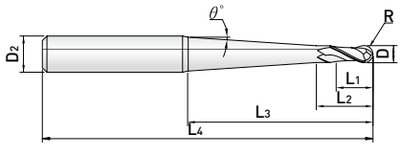
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EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WB542 010 05 06	1.0	0.5	30`	1.0	2.5	6.0	50	4
WB542 010 05 08						8.0		
WB542 010 05 10						10.0		
WB542 010 05 12						12.0		
WB542 010 05 16						16.0		
WB542 010 05 20						20.0		
WB542 010 05 25						25.0	60	
WB542 010 05 30						30.0	70	
WB542 010 05 40						40.0	80	
WB542 010 05 50						50.0	90	
WB542 010 10 06			1°			6.0	50	
WB542 010 10 08						8.0		
WB542 010 10 10						10.0		
WB542 010 10 12						12.0		
WB542 010 10 16						16.0		
WB542 010 10 20						20.0		
WB542 010 10 25						25.0	60	
WB542 010 10 30						30.0	70	
WB542 010 10 40						40.0	80	
WB542 010 10 50						50.0	90	
WB542 010 15 06			1°30`			6.0	50	
WB542 010 15 08						8.0		
WB542 010 15 10						10.0		
WB542 010 15 12						12.0		
WB542 010 15 16						16.0		
WB542 010 15 20						20.0		
WB542 010 15 25						25.0	60	
WB542 010 15 30						30.0	70	
WB542 010 15 40						40.0	80	
WB542 010 15 50						50.0	90	
WB542 010 20 06			2°			6.0	50	
WB542 010 20 08						8.0		
WB542 010 20 10						10.0		
WB542 010 20 12						12.0		
WB542 010 20 16						16.0		
WB542 010 20 20						20.0		
WB542 010 20 25						25.0	60	
WB542 010 20 30						30.0	70	

2 FLUTE TAPER NECK BALL





WB542...

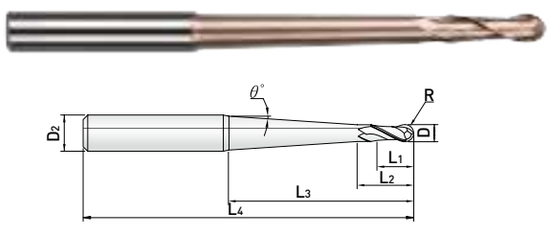
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EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WB542 010 20 40	1.0	0.5	2°	1.0	2.5	40.0	80	4
WB542 010 20 50						50.0	90	6
WB542 010 30 06			3°			6.0	50	4
WB542 010 30 08						8.0		
WB542 010 30 10						10.0		
WB542 010 30 12						12.0		
WB542 010 30 16						16.0		
WB542 010 30 20						20.0		
WB542 010 30 25						25.0	60	
WB542 010 30 30						30.0	70	6
WB542 010 30 40						40.0	80	
WB542 010 30 50						50.0	90	
WB542 010 50 30			5°			30.0	70	
WB542 012 05 08	1.2	0.6	30`	1.2	3.0	8.0	50	4
WB542 012 05 12						12.0		
WB542 012 05 16						16.0		
WB542 012 05 20						20.0		
WB542 012 05 25						25.0	60	
WB542 012 05 30						30.0	70	
WB542 012 10 08			1°			8.0	50	
WB542 012 10 12						12.0		
WB542 012 10 16						16.0		
WB542 012 10 20						20.0		
WB542 012 10 25						25.0	60	
WB542 012 10 30						30.0	70	
WB542 012 15 08			1°30`			8.0	50	
WB542 012 15 12						12.0		
WB542 012 15 16						16.0		
WB542 012 15 20						20.0		
WB542 012 15 25						25.0	60	
WB542 012 15 30						30.0	70	
WB542 012 20 08			2°			8.0	50	
WB542 012 20 12						12.0		
WB542 012 20 16						16.0		
WB542 012 20 20						20.0		
WB542 012 20 25						25.0	60	
WB542 012 20 30						30.0	70	
WB542 012 30 08			3°			8.0	50	
WB542 012 30 12						12.0		

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2 FLUTE TAPER NECK BALL



WB542...

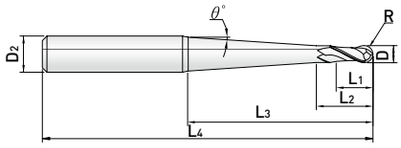
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EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WB542 012 30 16	1.2	0.6	3°	1.2	3.0	16.0	50	4
WB542 012 30 20						20.0		
WB542 012 30 25						25.0	60	
WB542 012 30 30						30.0	70	6
WB542 015 05 08	1.5	0.75	30`	1.5	4.0	8.0	50	4
WB542 015 05 10						10.0		
WB542 015 05 12						12.0		
WB542 015 05 16						16.0		
WB542 015 05 20						20.0		
WB542 015 05 25						25.0	60	
WB542 015 05 30						30.0	70	
WB542 015 05 40						40.0	80	
WB542 015 05 50						50.0	90	
WB542 015 10 08			1°			8.0	50	
WB542 015 10 10						10.0		
WB542 015 10 12						12.0		
WB542 015 10 16						16.0		
WB542 015 10 20						20.0		
WB542 015 10 25						25.0	60	
WB542 015 10 30						30.0	70	
WB542 015 10 40						40.0	80	
WB542 015 10 50						50.0	90	
WB542 015 15 08			1°30`			8.0	50	
WB542 015 15 10						10.0		
WB542 015 15 12						12.0		
WB542 015 15 16						16.0		
WB542 015 15 20						20.0		
WB542 015 15 25						25.0	60	
WB542 015 15 30						30.0	70	
WB542 015 15 40						40.0	80	
WB542 015 15 50						50.0	90	
WB542 015 20 08			2°			8.0	50	
WB542 015 20 10						10.0		
WB542 015 20 12						12.0		
WB542 015 20 16						16.0		
WB542 015 20 20						20.0		
WB542 015 20 25						25.0	60	
WB542 015 20 30						30.0	70	
WB542 015 20 40						40.0	80	6

2 FLUTE TAPER NECK BALL





WB542...

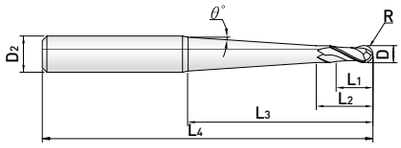
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- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WB542 015 20 50	1.5	0.75	2°	1.5	4.0	50.0	90	6
WB542 015 30 20			3°			20.0	50	
WB542 015 30 30						30.0	70	
WB542 015 30 40						40.0	80	
WB542 015 30 50						50.0	90	8
WB542 015 50 30			5°			30.0	70	
WB542 020 05 10	2.0	1	30`	2.0	5.0	10.0	50	4
WB542 020 05 12						12.0		
WB542 020 05 16						16.0		
WB542 020 05 20						20.0		
WB542 020 05 25						25.0	60	
WB542 020 05 30						30.0	70	
WB542 020 05 40						40.0	80	
WB542 020 05 50						50.0	100	6
WB542 020 05 60						60.0		
WB542 020 05 80						80.0	140	
WB542 020 10 10			1°			10.0	50	4
WB542 020 10 12						12.0		
WB542 020 10 16						16.0		
WB542 020 10 20						20.0		
WB542 020 10 25						25.0	60	
WB542 020 10 30						30.0	70	
WB542 020 10 40						40.0	80	6
WB542 020 10 50						50.0	100	
WB542 020 10 60						60.0		
WB542 020 10 80						80.0	140	
WB542 020 15 10			1°30`			10.0	50	4
WB542 020 15 12						12.0		
WB542 020 15 16						16.0		
WB542 020 15 20						20.0		
WB542 020 15 25						25.0	60	
WB542 020 15 30						30.0	70	6
WB542 020 15 40						40.0	80	
WB542 020 15 50						50.0	100	
WB542 020 15 60						60.0		
WB542 020 15 80						80.0	140	
WB542 020 20 10			2°			10.0	50	4
WB542 020 20 12						12.0		
WB542 020 20 16						16.0		

2 FLUTE TAPER NECK BALL





WB542...

- Strengthen the hardness of neck by applying Taper neck
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

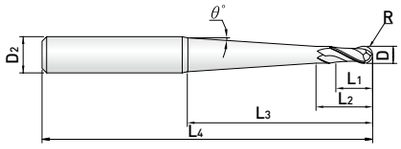


EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WB542 020 20 20	2.0	1	2°	2.0	5.0	20.0	55	4
WB542 020 20 25						25.0	60	
WB542 020 20 30						30.0	70	
WB542 020 20 40						40.0	80	6
WB542 020 20 50						50.0	90	
WB542 020 20 60						60.0	100	
WB542 020 20 80						80.0	140	8
WB542 020 30 30			3°			30.0	70	6
WB542 020 30 40						40.0	80	
WB542 020 30 50						50.0	90	8
WB542 020 30 60						60.0	100	
WB542 020 30 80						80.0	140	10
WB542 020 50 30			5°			30.0	70	8
WB542 020 50 40						40.0	90	10
WB542 030 05 16	3.0	1.5	30`	4.5	6.0	16.0	60	6
WB542 030 05 20						20.0	65	
WB542 030 05 30						30.0	70	
WB542 030 05 40						40.0	80	
WB542 030 05 50						50.0	90	
WB542 030 05 60						60.0	100	
WB542 030 10 16			1°			16.0	60	
WB542 030 10 20						20.0	65	
WB542 030 10 30						30.0	70	
WB542 030 10 40						40.0	80	
WB542 030 10 50						50.0	90	
WB542 030 10 60						60.0	100	
WB542 030 10 70						70.0	120	
WB542 030 15 16			1°30`			16.0	60	
WB542 030 15 20						20.0	65	
WB542 030 15 30						30.0	70	
WB542 030 15 40						40.0	80	
WB542 030 15 50						50.0	90	
WB542 030 15 60						60.0	100	
WB542 030 20 16			2°			16.0	60	
WB542 030 20 20						20.0	65	
WB542 030 20 30						30.0	70	
WB542 030 20 40						40.0	80	
WB542 030 20 50						50.0	90	8
WB542 030 30 30			3°			30.0	70	6

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2 FLUTE TAPER NECK BALL





WB542...

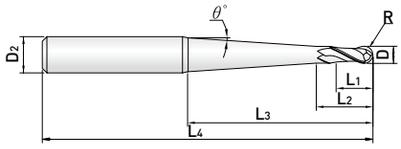
- Strengthen the hardness of neck by applying Taper neck
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WB542 030 30 40	3.0	1.5	3°	4.5	6.0	40.0	90	6
WB542 030 50 30			5°			30.0	70	8
WB542 030 50 40						40.0	90	10
WB542 040 05 40	4.0	2	30`	6.0	8.0	40.0	90	6
WB542 040 05 50						50.0	100	
WB542 040 05 60						60.0	110	
WB542 040 05 70						70.0	120	
WB542 040 10 40			1°			40.0	90	
WB542 040 10 50						50.0	100	
WB542 040 10 60						60.0	110	8
WB542 040 10 70						70.0	120	
WB542 040 15 40			1°30`			40.0	90	6
WB542 040 15 50						50.0	100	8
WB542 040 15 60						60.0	110	
WB542 040 15 70						70.0	120	
WB542 040 30 50			3°			50.0	100	10
WB542 040 50 50			5°			50.0	100	12
WB542 050 10 60	5.0	2.5	1°	10.0	13.0	60.0	120	8
WB542 050 15 60			1°30`			60.0		
WB542 050 30 40			3°			40.0		
WB542 060 10 60	6.0	3	1°	12.0	15.0	60.0	120	8
WB542 060 10 90						90.0	150	10
WB542 060 15 60			1°30`			60.0	120	
WB542 060 15 90						90.0	150	
WB542 060 20 60			2°			60.0	120	
WB542 060 20 90						90.0	150	12
WB542 060 30 60			3°			60.0	120	
WB542 060 30 90						90.0	150	14
WB542 080 10 70	8.0	4	1°	14.0	18.0	70.0	130	10
WB542 080 10 100						100.0	150	12
WB542 080 15 70			1°30`			70.0	130	
WB542 080 15 100						100.0	150	14
WB542 080 20 70			2°			70.0	130	12
WB542 080 20 100						100.0	150	14
WB542 080 30 70			3°			70.0	130	
WB542 080 30 100						100.0	150	18

2 FLUTE TAPER NECK BALL





WB542...

- Strengthen the hardness of neck by applying Taper neck
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WB542 100 10 70	10.0	5	1°	18.0	22.0	70.0	130	12
WB542 100 10 80						80.0	150	14
WB542 100 10 100						100.0	200	
WB542 100 15 70			1°30`			70.0	130	
WB542 100 15 80						80.0	150	
WB542 100 15 100						100.0	200	16
WB542 100 20 70			2°			70.0	130	14
WB542 100 20 80						80.0	150	16
WB542 100 20 100						100.0	200	
WB542 100 30 70			3°			70.0	130	
WB542 100 30 80						80.0	150	18
WB542 100 30 100						100.0	200	20
WB542 120 10 60	12.0	6	1°	22.0	25.0	60.0	130	14
WB542 120 10 80						80.0	150	
WB542 120 10 90						90.0	180	16
WB542 120 10 100						100.0	200	
WB542 120 15 60			1°30`			60.0	130	14
WB542 120 15 80						80.0	150	16
WB542 120 15 90						90.0	180	
WB542 120 15 100						100.0	200	
WB542 120 20 60			2°			60.0	130	
WB542 120 20 80						80.0	150	
WB542 120 20 90						90.0	180	18
WB542 120 20 100						100.0	200	
WB542 120 30 60			3°			60.0	130	16
WB542 120 30 80						80.0	150	18
WB542 120 30 90						90.0	180	20
WB542 120 30 100						100.0	200	

Tolerance

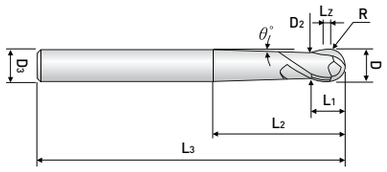
Mill Dia(mm)		Shank
Diameter	Tolerance	
Upto 6	0~-0.012	h6
Over 6	0~-0.015	

※ Items can be changed for quality improvement without notice

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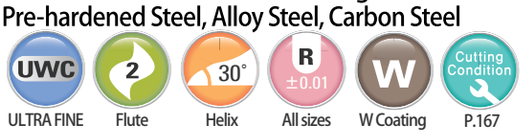
2 FLUTE MMC SPHERE BALL





WB532...

- A rounded cutting line enable to machining a various curved shape
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Neck Length	Overall Length	Neck Diameter	Shank Diameter
	D	R	θ	L_1	L_2	L_3	D_2	D_3
WB532 030	3.0	1.5	1°30`	2.3	16.0	80	2.5	6
WB532 040	4.0	2	1°30`	3.1	20.0	80	3.3	6
WB532 050	5.0	2.5	1°30`	3.9	25.0	80	4.1	6
WB532 060	6.0	3	1°30`	4.9	30.0	100	4.7	6
WB532 080	8.0	4	1°30`	6.3	35.0	100	6.5	8
WB532 100	10.0	5	1°30`	7.9	40.0	100	8.2	10
WB532 120	12.0	6	1°30`	9.5	50.0	100	9.8	12

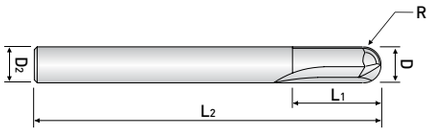
Tolerance

Mill Dia(mm)	Shank
0~-0.03	h6

※ Items can be changed for quality improvement without notice

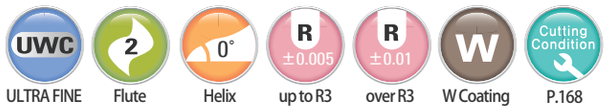
2 FLUTE STRAIGHT BALL





WSB502...

- Strengthened the hardness through Straight flute lead to reduce vibration & excellent surface roughness
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel Alloy Steel, Carbon Steel



ULTRA FINE | Flute | Helix | up to R3 | over R3 | W Coating | P.168

EDP No.	Diameter	Radius	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WSB502 030	3.0	1.5	10.0	70	6
WSB502 040	4.0	2	12.0	70	6
WSB502 050	5.0	2.5	18.0	90	6
WSB502 060	6.0	3	20.0	90	6
WSB502 080	8.0	4	25.0	100	8
WSB502 100	10.0	5	30.0	100	10
WSB502 120	12.0	6	32.0	110	12
WSB502 160	16.0	8	35.0	150	16
WSB502 200	20.0	10	40.0	150	20

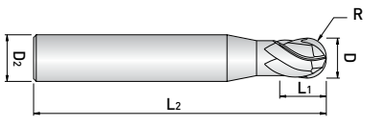
Tolerance

Mill Dia(mm)		Shank
Diameter	Tolerance	
Upto 6	0~-0.012	h6
Over 6	0~-0.015	

※ Items can be changed for quality improvement without notice

3 FLUTE BALL





WB503...

- Increased tool life and excellent surface roughness with a ball type in the shape of 3 flute center match
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel Alloy Steel, Carbon Steel



ULTRA FINE | Flute | Helix | up to R3 | over R3 | W Coating | P.168

EDP No.	Diameter	Radius	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WB503 010	1.0	0.5	1.0	50	6
WB503 015	1.5	0.75	1.5	50	6
WB503 020	2.0	1	2.0	50	6
WB503 030	3.0	1.5	3.0	60	6
WB503 040	4.0	2	4.0	70	6
WB503 050	5.0	2.5	5.0	80	6
WB503 060	6.0	3	6.0	90	6
WB503 080	8.0	4	8.0	100	8
WB503 100	10.0	5	10.0	100	10
WB503 120	12.0	6	12.0	110	12

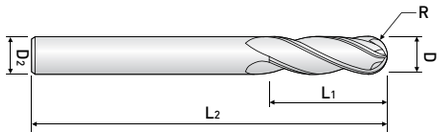
Tolerance

Mill Dia(mm)	Shank
0~-0.02	h6

※ Items can be changed for quality improvement without notice

4 FLUTE BALL





WB504...

- Increased tool life and excellent surface roughness with a ball type in the shape of 4 flute center match
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



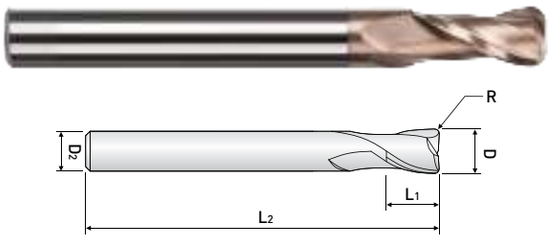
EDP No.	Diameter	Radius	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WB504 010	1.0	0.5	1.0	50	6
WB504 015	1.5	0.75	1.5	50	6
WB504 020	2.0	1	2.0	50	6
WB504 030	3.0	1.5	3.0	60	6
WB504 040	4.0	2	4.0	70	6
WB504 050	5.0	2.5	5.0	80	6
WB504 060	6.0	3	6.0	90	6
WB504 080	8.0	4	8.0	100	8
WB504 100	10.0	5	10.0	100	10
WB504 120	12.0	6	12.0	110	12

Tolerance

Mill Dia(mm)	Shank
0~-0.02	h6

※ Items can be changed for quality improvement without notice

2 FLUTE CORNER RADIUS



WR502...

- A variety of sizes on 2 flute corner R radius
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

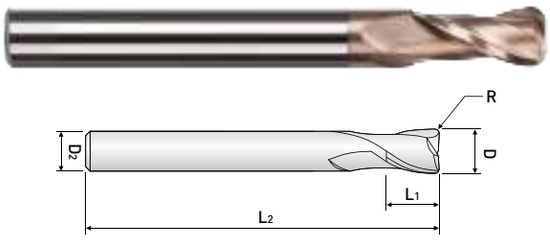


(SHORT LENGTH + REGULAR LENGTH + LONG SHANK)

EDP No.	Diameter	Corner R	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WR502 002 002	0.2	0.02	0.4	40	4
WR502 002 005		0.05			
WR502 003 002	0.3	0.02	0.6	40	4
WR502 003 005		0.05			
WR502 004 005	0.4	0.05	0.8	40	4
WR502 004 01		0.10			
WR502 005 005	0.5	0.05	1.0	40	4
WR502 005 01		0.10			
WR502 006 005	0.6	0.05	1.2	40	4
WR502 006 01		0.10			
WR502 006 02		0.20			
WR502 007 005	0.7	0.05	1.4	40	4
WR502 007 01		0.10			
WR502 007 02		0.20			
WR502 008 005	0.8	0.05	1.6	40	4
WR502 008 01		0.10			
WR502 008 02		0.20			
WR502 009 005	0.9	0.05	1.8	40	4
WR502 009 01		0.10			
WR502 010 005	1.0	0.05	2.5	50	6
WR502 010 01		0.10			
WR502 010 02		0.20			
WR502 010 03		0.30			
WR502 012 005	1.2	0.05	3.0	50	6
WR502 012 01		0.10			
WR502 012 02		0.20			
WR502 012 03		0.30			
WR502 015 005	1.5	0.05	4.0	50	6
WR502 015 01		0.10			
WR502 015 02		0.20			
WR502 015 03		0.30			
WR502 015 05		0.50			
WR502 020 01	2.0	0.10	6.0	50	6
WR502 020 02		0.20			
WR502 020 03		0.30			
WR502 020 05		0.50			

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2 FLUTE CORNER RADIUS



WR502...

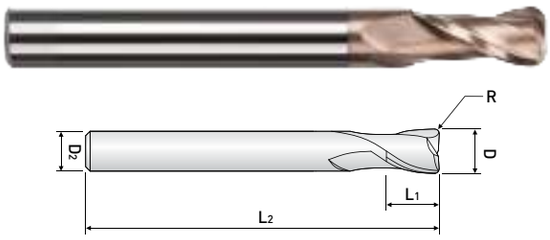
- A variety of sizes on 2 flute corner R radius
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

(SHORT LENGTH + REGULAR LENGTH + LONG SHANK)

UWC ULTRA FINE | 2 Flute | 30° Helix | R ±0.01 Up to 6 | R ±0.015 Over 6Ø | W W Coating | Cutting Condition P.169

EDP No.	Diameter	Corner R	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WR502 025 01	2.5	0.10	7.0	60	6
WR502 025 02		0.20			
WR502 025 03		0.30			
WR502 025 05		0.50			
WR502 030 01	3.0	0.10	8.0	60	6
WR502 030 02		0.20			
WR502 030 03		0.30			
WR502 030 05		0.50			
WR502 030 10		1.00			
WR502 035 01	3.5	0.10	10.0	70	6
WR502 035 02		0.20			
WR502 035 03		0.30			
WR502 035 05		0.50			
WR502 040 01 S4	4.0	0.10	10.0	70	4
WR502 040 02 S4		0.20			
WR502 040 03 S4		0.30			
WR502 040 05 S4		0.50			
WR502 040 10 S4		1.00			
WR502 040 01 100 S4		0.10	10.0	100	4
WR502 040 02 100 S4		0.20			
WR502 040 03 100 S4		0.30			
WR502 040 05 100 S4		0.50			
WR502 040 10 100 S4		1.00			
WR502 040 01		0.10	10.0	70	6
WR502 040 02		0.20			
WR502 040 03		0.30			
WR502 040 05		0.50			
WR502 040 10		1.00			
WR502 045 01	4.5	0.10	11.0	80	6
WR502 045 02		0.20			
WR502 045 03		0.30			
WR502 045 05		0.50			
WR502 050 01	5.0	0.10	13.0	90	6
WR502 050 02		0.20			
WR502 050 03		0.30			
WR502 050 05		0.50			
WR502 050 10		1.00			

2 FLUTE CORNER RADIUS



WR502...

- A variety of sizes on 2 flute corner R radius
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

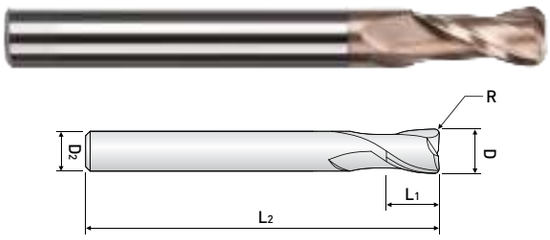
(SHORT LENGTH + REGULAR LENGTH + LONG SHANK)



EDP No.	Diameter	Corner R	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WR502 055 01	5.5	0.10	13.0	90	6
WR502 055 02		0.20			
WR502 055 03		0.30			
WR502 055 05		0.50			
WR502 055 10		1.00			
WR502 060 03 60	6.0	0.30	15.0	60	6
WR502 060 05 60		0.50			
WR502 060 10 60		1.00			
WR502 060 01		0.10		90	
WR502 060 02		0.20			
WR502 060 03		0.30			
WR502 060 05		0.50			
WR502 060 10		1.00			
WR502 060 15		1.50			
WR502 060 20		2.00			
WR502 060 05 110		0.50		110	
WR502 060 10 110		1.00			
WR502 060 05 130		0.50		130	
WR502 060 10 130		1.00			
WR502 070 01	7.0	0.10	16.0	90	8
WR502 070 02		0.20			
WR502 070 03		0.30			
WR502 070 05		0.50			
WR502 070 10		1.00			
WR502 070 20		2.00			
WR502 080 03 70	8.0	0.30	20.0	70	8
WR502 080 05 70		0.50			
WR502 080 10 70		1.00			
WR502 080 01		0.10		100	
WR502 080 02		0.20			
WR502 080 03		0.30			
WR502 080 05		0.50			
WR502 080 10		1.00			
WR502 080 15		1.50			
WR502 080 20		2.00			
WR502 080 25		2.50			
WR502 080 30		3.00			

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2 FLUTE CORNER RADIUS



WR502...

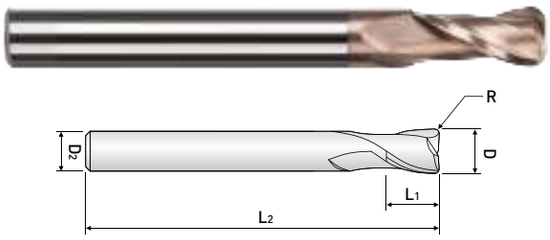
- A variety of sizes on 2 flute corner R radius
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

(SHORT LENGTH + REGULAR LENGTH + LONG SHANK)

UWC ULTRA FINE | 2 Flute | 30° Helix | R ±0.01 Up to 6 | R ±0.015 over Φ6 | W W Coating | Cutting Condition P.169

EDP No.	External Diameter	Corner R	Cutting Length	Overall Length	Shank Diameter
	D	R	L1	L2	D2
WR502 080 05 120	8.0	0.50	20.0	120	8
WR502 080 10 120		1.00			
WR502 080 05 150		0.50		150	
WR502 080 10 150		1.00			
WR502 100 03 75	10.0	0.30	25.0	75	10
WR502 100 05 75		0.50			
WR502 100 10 75		1.00			
WR502 100 01		0.10		100	
WR502 100 02		0.20			
WR502 100 03		0.30			
WR502 100 05		0.50			
WR502 100 10		1.00			
WR502 100 15		1.50			
WR502 100 20		2.00			
WR502 100 25		2.50			
WR502 100 30		3.00			
WR502 100 40		4.00			
WR502 100 05 130		0.50		130	
WR502 100 10 130		1.00			
WR502 100 05 150		0.50		150	
WR502 100 10 150		1.00			
WR502 110 02	11.0	0.20	25.0	110	12
WR502 110 03		0.30			
WR502 110 05		0.50			
WR502 110 10		1.00			
WR502 110 20		2.00			
WR502 120 03 80	12.0	0.30	30.0	80	12
WR502 120 05 80		0.50			
WR502 120 10 80		1.00			
WR502 120 01		0.10		110	
WR502 120 02		0.20			
WR502 120 03		0.30			
WR502 120 05		0.50			
WR502 120 10		1.00			
WR502 120 15		1.50			
WR502 120 20		2.00			

2 FLUTE CORNER RADIUS



WR502...

- A variety of sizes on 2 flute corner R radius
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



(SHORT LENGTH + REGULAR LENGTH + LONG SHANK)

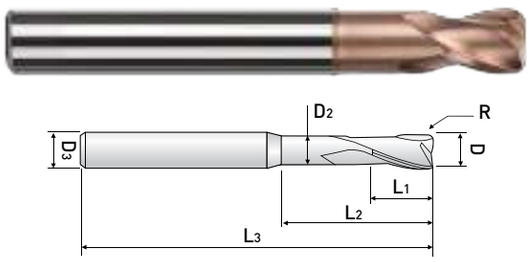
EDP No.	Diameter	Corner R	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WR502 120 25	12.0	2.50	30.0	110	12
WR502 120 30		3.00			
WR502 120 40		4.00			
WR502 120 50		5.00			
WR502 120 05 130		0.50	130	130	
WR502 120 10 130		1.00			
WR502 120 05 150		0.50	150	150	
WR502 120 10 150		1.00			
WR502 140 05	14.0	0.50	30.0	150	16
WR502 140 10		1.00			
WR502 140 20		2.00			
WR502 160 05	16.0	0.50	32.0	150	16
WR502 160 10		1.00			
WR502 160 15		1.50			
WR502 160 20		2.00			
WR502 200 05	20.0	0.50	38.0	150	20
WR502 200 10		1.00			
WR502 200 15		1.50			
WR502 200 20		2.00			

Tolerance

Mill Dia(mm)		Shank
Diameter	Tolerance	
Upto 6	0~-0.012	h6
Over 6	0~-0.015	

※ Items can be changed for quality improvement without notice

2 FLUTE LONG NECK CORNER RADIUS



WR512...

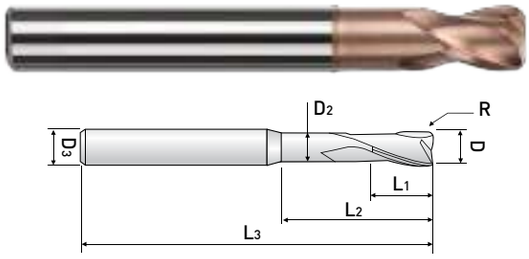
- Excellent effect in preventing breakage with a shape on neck without notch
- A variety of sizes on 2 flute long neck corner R radius
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating

UWC ULTRA FINE | 2 Flute | 30° Helix | R ±0.01 Up to 6 | R ±0.015 Over 6Ø | W W Coating | Cutting Condition P.173

EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WR512 002 002 005	0.2	0.02	0.3	0.5	40.0	4.0
WR512 002 002 01				1.0		
WR512 002 002 015				1.5		
WR512 002 002 02				2.0		
WR512 002 005 005		0.05		0.5		
WR512 002 005 01				1.0		
WR512 002 005 015				1.5		
WR512 002 005 02				2.0		
WR512 003 002 01	0.3	0.02	0.5	1.0	40.0	4.0
WR512 003 002 02				2.0		
WR512 003 002 03				3.0		
WR512 003 005 01		0.05		1.0		
WR512 003 005 02				2.0		
WR512 003 005 03				3.0		
WR512 004 005 01	0.4	0.05	0.6	1.0	40.0	4.0
WR512 004 005 015				1.5		
WR512 004 005 02				2.0		
WR512 004 005 025				2.5		
WR512 004 005 03				3.0		
WR512 004 005 04				4.0		
WR512 004 01 01		1.00		1.0		
WR512 004 01 015				1.5		
WR512 004 01 02				2.0		
WR512 004 01 025				2.5		
WR512 004 01 03				3.0		
WR512 004 01 04				4.0		
WR512 005 005 01	0.5	0.05	0.7	1.0	45.0	4.0
WR512 005 005 015				1.5		
WR512 005 005 02				2.0		
WR512 005 005 025				2.5		
WR512 005 005 03				3.0		
WR512 005 005 04				4.0		
WR512 005 005 05				5.0		
WR512 005 005 06				6.0		
WR512 005 01 01		0.10		1.0		
WR512 005 01 015				1.5		
WR512 005 01 02				2.0		

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2 FLUTE LONG NECK CORNER RADIUS



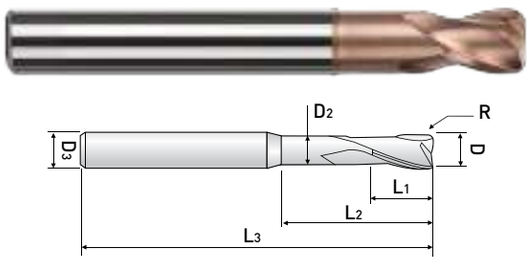
WR512...

- Excellent effect in preventing breakage with a shape on neck without notch
- A variety of sizes on 2 flute long neck corner R radius
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating



EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WR512 005 01 025	0.5	0.10	0.7	2.5	45.0	4.0
WR512 005 01 03				3.0		
WR512 005 01 04				4.0		
WR512 005 01 05				5.0		
WR512 005 01 06				6.0		
WR512 006 005 02	0.6	0.05	0.9	2.0	45.0	4.0
WR512 006 005 03				3.0		
WR512 006 005 04				4.0		
WR512 006 005 06				6.0		
WR512 006 005 08				8.0		
WR512 006 005 10				10.0		
WR512 006 01 02		0.10		2.0		
WR512 006 01 03				3.0		
WR512 006 01 04				4.0		
WR512 006 01 06				6.0		
WR512 006 01 08				8.0		
WR512 006 01 10				10.0		
WR512 006 02 02		0.20		2.0		
WR512 006 02 03				3.0		
WR512 006 02 04				4.0		
WR512 006 02 06				6.0		
WR512 006 02 08				8.0		
WR512 006 02 10				10.0		
WR512 007 005 02	0.7	0.05	1.2	2.0	45.0	4.0
WR512 007 005 04				4.0		
WR512 007 005 06				6.0		
WR512 007 005 08				8.0		
WR512 007 005 10				10.0		
WR512 007 01 02		0.10		2.0		
WR512 007 01 04				4.0		
WR512 007 01 06				6.0		
WR512 007 01 08				8.0		
WR512 007 01 10				10.0		
WR512 007 02 02		0.20		2.0		
WR512 007 02 04				4.0		
WR512 007 02 06				6.0		
WR512 007 02 08				8.0		
WR512 007 02 10				10.0		

2 FLUTE LONG NECK CORNER RADIUS



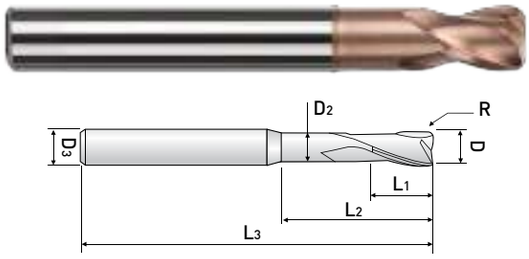
WR512...

- Excellent effect in preventing breakage with a shape on neck without notch
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- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating

UWC ULTRA FINE | 2 Flute | 30° Helix | R ±0.01 Up to 6 | R ±0.015 Over 6Ø | W W Coating | Cutting Condition P.173

EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WR512 008 005 02	0.8	0.05	1.2	2.0	45.0	4.0
WR512 008 005 03				3.0		
WR512 008 005 04				4.0		
WR512 008 005 06				6.0		
WR512 008 005 08				8.0		
WR512 008 005 10				10.0		
WR512 008 01 02		0.10		2.0		
WR512 008 01 03				3.0		
WR512 008 01 04				4.0		
WR512 008 01 06				6.0		
WR512 008 01 08				8.0		
WR512 008 01 10				10.0		
WR512 008 02 02		0.20		2.0		
WR512 008 02 03				3.0		
WR512 008 02 04				4.0		
WR512 008 02 06				6.0		
WR512 008 02 08				8.0		
WR512 008 02 10				10.0		
WR512 010 005 03	1.0	0.05	1.5	3.0	50.0	4.0
WR512 010 005 04				4.0		
WR512 010 005 06				6.0		
WR512 010 005 08				8.0		
WR512 010 005 10				10.0		
WR512 010 005 12				12.0		
WR512 010 005 14				14.0		
WR512 010 005 16				16.0		
WR512 010 005 20				20.0		
WR512 010 01 03		0.10		3.0		
WR512 010 01 04				4.0		
WR512 010 01 06				6.0		
WR512 010 01 08				8.0		
WR512 010 01 10				10.0		
WR512 010 01 12				12.0		
WR512 010 01 14				14.0		
WR512 010 01 16				16.0		
WR512 010 01 20				20.0		

2 FLUTE LONG NECK CORNER RADIUS



WR512...

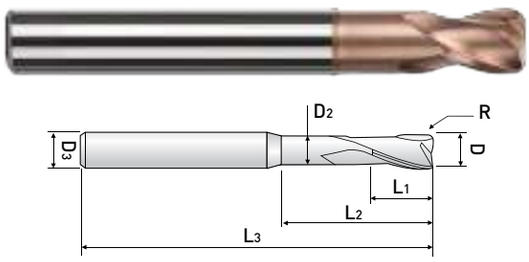
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EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WR512 010 02 03	1.0	0.20	1.5	3.0	50.0	4.0
WR512 010 02 04				4.0		
WR512 010 02 06				6.0		
WR512 010 02 08				8.0		
WR512 010 02 10				10.0		
WR512 010 02 12				12.0		
WR512 010 02 14				14.0		
WR512 010 02 16				16.0		
WR512 010 02 20				20.0		
WR512 010 03 03		0.30		3.0		
WR512 010 03 04				4.0		
WR512 010 03 06				6.0		
WR512 010 03 08				8.0		
WR512 010 03 10				10.0		
WR512 010 03 12				12.0		
WR512 010 03 14				14.0		
WR512 010 03 16				16.0		
WR512 010 03 20				20.0		
WR512 012 005 03	1.2	0.05	1.8	3.0	50.0	4.0
WR512 012 005 04				4.0		
WR512 012 005 06				6.0		
WR512 012 005 08				8.0		
WR512 012 005 10				10.0		
WR512 012 005 12				12.0		
WR512 012 005 16				16.0		
WR512 012 005 20				20.0		
WR512 012 01 03		0.10		3.0		
WR512 012 01 04				4.0		
WR512 012 01 06				6.0		
WR512 012 01 08				8.0		
WR512 012 01 10				10.0		
WR512 012 01 12				12.0		
WR512 012 01 16				16.0		
WR512 012 01 20				20.0		
WR512 012 02 03		0.20		3.0		
WR512 012 02 04				4.0		
WR512 012 02 06				6.0		
WR512 012 02 08				8.0		
WR512 012 02 10				10.0		

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2 FLUTE LONG NECK CORNER RADIUS



WR512...

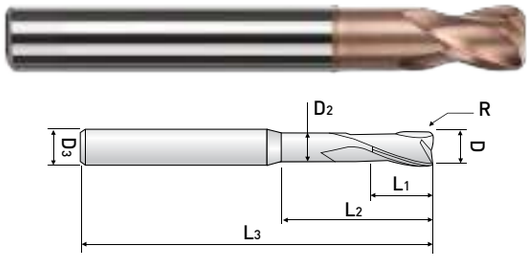
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UWC ULTRA FINE | 2 Flute | 30° Helix | R ±0.01 up to 6 | R ±0.015 Over 6Ø | W W Coating | Cutting Condition P.173

EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WR512 012 02 12	1.2	0.20	1.8	12.0	50.0	4.0
WR512 012 02 16				16.0		
WR512 012 02 20				20.0		
WR512 012 03 03		0.30		3.0		
WR512 012 03 04				4.0		
WR512 012 03 06				6.0		
WR512 012 03 08				8.0		
WR512 012 03 10				10.0		
WR512 012 03 12				12.0		
WR512 012 03 16				16.0		
WR512 012 03 20				20.0		
WR512 015 005 04	1.5	0.05	2.3	4.0	50	4.0
WR512 015 005 06				6.0		
WR512 015 005 08				8.0		
WR512 015 005 10				10.0		
WR512 015 005 12				12.0		
WR512 015 005 14				14.0		
WR512 015 005 16				16.0		
WR512 015 005 20				20.0		
WR512 015 005 22				22.0	60	
WR512 015 005 26				26.0		
WR512 015 01 04		0.10		4.0	50	
WR512 015 01 06				6.0		
WR512 015 01 08				8.0		
WR512 015 01 10				10.0		
WR512 015 01 12				12.0		
WR512 015 01 14				14.0		
WR512 015 01 16				16.0		
WR512 015 01 20				20.0		
WR512 015 01 22				22.0	60	
WR512 015 01 26				26.0		
WR512 015 02 04		0.20		4.0	50	
WR512 015 02 06				6.0		
WR512 015 02 08				8.0		
WR512 015 02 10				10.0		
WR512 015 02 12				12.0		
WR512 015 02 14				14.0		
WR512 015 02 16				16.0		
WR512 015 02 20				20.0		

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2 FLUTE LONG NECK CORNER RADIUS



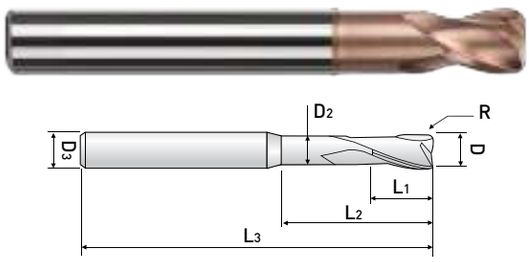
WR512...

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- Longer tool life and improvement on stable machining with W coating



EDP No.	External Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WR512 015 02 22	1.5	0.20	2.3	22.0	60	4.0
WR512 015 02 26				26.0		
WR512 015 03 04		0.30		4.0	50	
WR512 015 03 06				6.0		
WR512 015 03 08				8.0		
WR512 015 03 10				10.0		
WR512 015 03 12				12.0		
WR512 015 03 14				14.0		
WR512 015 03 16				16.0		
WR512 015 03 20				20.0		
WR512 015 03 22				22.0	60	
WR512 015 03 26				26.0		
WR512 015 05 04		0.50		4.0	50	
WR512 015 05 06				6.0		
WR512 015 05 08				8.0		
WR512 015 05 10				10.0		
WR512 015 05 12				12.0		
WR512 015 05 14				14.0		
WR512 015 05 16				16.0		
WR512 015 05 20				20.0		
WR512 015 05 22				22.0	60	
WR512 015 05 26				26.0		
WR512 020 01 06	2.0	0.10	3.0	6.0	50	4.0
WR512 020 01 08				8.0		
WR512 020 01 10				10.0		
WR512 020 01 12				12.0		
WR512 020 01 14				14.0		
WR512 020 01 16				16.0		
WR512 020 01 20				20.0		
WR512 020 01 22				22.0	60	
WR512 020 01 26				26.0		
WR512 020 01 30				30.0	70	
WR512 020 02 06		0.20		6.0	50	
WR512 020 02 08				8.0		
WR512 020 02 10				10.0		
WR512 020 02 12				12.0		
WR512 020 02 14				14.0		
WR512 020 02 16				16.0		
WR512 020 02 20				20.0		

2 FLUTE LONG NECK CORNER RADIUS



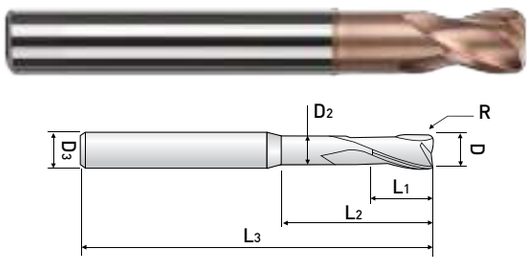
WR512...

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- Longer tool life and improvement on stable machining with W coating

ULTRA FINE | Flute | Helix | Up to 6 | Over 6Ø | W Coating | P.173

EDP No.	External Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WR512 020 02 22	2.0	0.20	3.0	22.0	60	4.0
WR512 020 02 26				26.0		
WR512 020 02 30				30.0	70	
WR512 020 03 06		0.30		6.0	50	
WR512 020 03 08				8.0		
WR512 020 03 10				10.0		
WR512 020 03 12				12.0		
WR512 020 03 14				14.0		
WR512 020 03 16				16.0		
WR512 020 03 20				20.0		
WR512 020 03 22				22.0	60	
WR512 020 03 26				26.0		
WR512 020 03 30				30.0	70	
WR512 020 05 06		0.50		6.0	50	
WR512 020 05 08				8.0		
WR512 020 05 10				10.0		
WR512 020 05 12				12.0		
WR512 020 05 14				14.0		
WR512 020 05 16				16.0		
WR512 020 05 20				20.0		
WR512 020 05 22				22.0	60	
WR512 020 05 26				26.0		
WR512 020 05 30				30.0	70	
WR512 025 01 08	2.5	0.10	4.0	8.0	50	4.0
WR512 025 01 10				10.0		
WR512 025 01 12				12.0		
WR512 025 01 14				14.0		
WR512 025 01 16				16.0		
WR512 025 01 20				20.0		
WR512 025 01 26				26.0	60	
WR512 025 01 30				30.0	70	
WR512 025 02 08		0.20		8.0	50	
WR512 025 02 10				10.0		
WR512 025 02 12				12.0		
WR512 025 02 14				14.0		
WR512 025 02 16				16.0		
WR512 025 02 20				20.0		
WR512 025 02 26				26.0	60	
WR512 025 02 30				30.0	70	

2 FLUTE LONG NECK CORNER RADIUS



WR512...

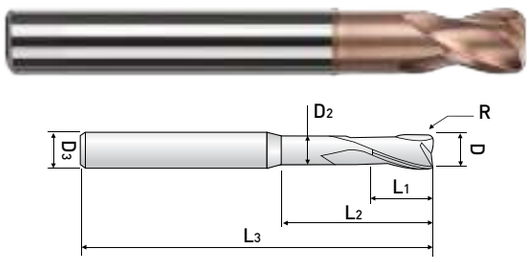
- Excellent effect in preventing breakage with a shape on neck without notch
- A variety of sizes on 2 flute long neck corner R radius
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating



EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WR512 025 03 08	2.5	0.30	4.0	8.0	50	4.0
WR512 025 03 10				10.0		
WR512 025 03 12				12.0		
WR512 025 03 14				14.0		
WR512 025 03 16				16.0		
WR512 025 03 20				20.0		
WR512 025 03 26				26.0	60	
WR512 025 03 30				30.0	70	
WR512 025 05 08		0.50		8.0	50	
WR512 025 05 10				10.0		
WR512 025 05 12				12.0		
WR512 025 05 14				14.0		
WR512 025 05 16				16.0		
WR512 025 05 20				20.0		
WR512 025 05 26				26.0	60	
WR512 025 05 30				30.0	70	
WR512 030 01 08	3.0	0.10	4.5	8.0	50	6.0
WR512 030 01 10				10.0		
WR512 030 01 12				12.0		
WR512 030 01 14				14.0	60	
WR512 030 01 16				16.0		
WR512 030 01 20				20.0		
WR512 030 01 26				26.0	65	
WR512 030 01 30				30.0	70	
WR512 030 01 35				35.0		
WR512 030 01 40				40.0	80	
WR512 030 02 08		0.20		8.0	50	
WR512 030 02 10				10.0		
WR512 030 02 12				12.0		
WR512 030 02 14				14.0	60	
WR512 030 02 16				16.0		
WR512 030 02 20				20.0		
WR512 030 02 26				26.0	65	
WR512 030 02 30				30.0	70	
WR512 030 02 35				35.0		
WR512 030 02 40				40.0	80	

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2 FLUTE LONG NECK CORNER RADIUS



WR512...

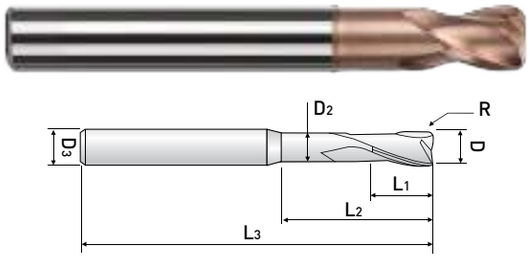
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- Longer tool life and improvement on stable machining with W coating



ULTRA FINE | Flute | Helix | Up to 6 | Over 6Ø | W Coating | P.173

EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WR512 030 03 08	3.0	0.30	4.5	8.0	50	6.0
WR512 030 03 10				10.0		
WR512 030 03 12				12.0		
WR512 030 03 14				14.0	60	
WR512 030 03 16				16.0		
WR512 030 03 20				20.0		
WR512 030 03 26				26.0	65	
WR512 030 03 30				30.0	70	
WR512 030 03 35				35.0		
WR512 030 03 40				40.0	80	
WR512 030 05 08		0.50		8.0	50	
WR512 030 05 10				10.0		
WR512 030 05 12				12.0		
WR512 030 05 14				14.0	60	
WR512 030 05 16				16.0		
WR512 030 05 20				20.0		
WR512 030 05 26				26.0	65	
WR512 030 05 30				30.0	70	
WR512 030 05 35				35.0		
WR512 030 05 40				40.0	80	
WR512 030 10 08		1.00		8.0	50	
WR512 030 10 10				10.0		
WR512 030 10 12				12.0		
WR512 030 10 14				14.0	60	
WR512 030 10 16				16.0		
WR512 030 10 20				20.0		
WR512 030 10 26				26.0	65	
WR512 030 10 30				30.0	70	
WR512 030 10 35				35.0		
WR512 030 10 40				40.0	80	
WR512 040 01 10	4.0	0.10	6.0	10.0	50	6.0
WR512 040 01 12				12.0		
WR512 040 01 14				14.0	60	
WR512 040 01 16				16.0		
WR512 040 01 20				20.0		
WR512 040 01 26				26.0	65	
WR512 040 01 30				30.0		

2 FLUTE LONG NECK CORNER RADIUS



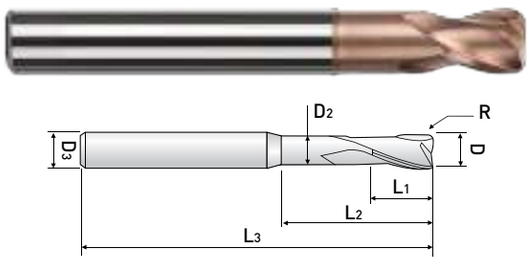
WR512...

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ULTRA FINE | Flute | Helix | Up to 6 | Over 6Ø | W Coating | P.173

EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WR512 040 01 35	4.0	0.10	6.0	35.0	70	6.0
WR512 040 01 40				40.0	80	
WR512 040 01 45				45.0	90	
WR512 040 01 50				50.0	100	
WR512 040 02 10		0.20		10.0	50	
WR512 040 02 12				12.0		
WR512 040 02 14				14.0	60	
WR512 040 02 16				16.0		
WR512 040 02 20				20.0		
WR512 040 02 26				26.0	65	
WR512 040 02 30				30.0		
WR512 040 02 35				35.0	70	
WR512 040 02 40				40.0	80	
WR512 040 02 45				45.0	90	
WR512 040 02 50				50.0	100	
WR512 040 03 10		0.30		10.0	50	
WR512 040 03 12				12.0		
WR512 040 03 14				14.0	60	
WR512 040 03 16				16.0		
WR512 040 03 20				20.0		
WR512 040 03 26				26.0	65	
WR512 040 03 30				30.0		
WR512 040 03 35				35.0	70	
WR512 040 03 40				40.0	80	
WR512 040 03 45				45.0	90	
WR512 040 03 50				50.0	100	
WR512 040 05 10		0.50		10.0	50	
WR512 040 05 12				12.0		
WR512 040 05 14				14.0	60	
WR512 040 05 16				16.0		
WR512 040 05 20				20.0		
WR512 040 05 26				26.0	65	
WR512 040 05 30				30.0		
WR512 040 05 35				35.0	70	
WR512 040 05 40				40.0	80	
WR512 040 05 45				45.0	90	
WR512 040 05 50				50.0	100	

2 FLUTE LONG NECK CORNER RADIUS



WR512...

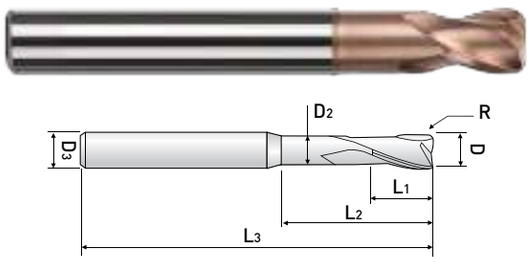
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UWC ULTRA FINE | 2 Flute | 30° Helix | R ±0.01 Up to 6 | R ±0.015 Over 6Ø | W W Coating | Cutting Condition P.173

EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_3
WR512 040 10 10	4.0	1.00	6.0	10.0	50	6.0
WR512 040 10 12				12.0		
WR512 040 10 14				14.0	60	
WR512 040 10 16				16.0		
WR512 040 10 20				20.0		
WR512 040 10 26				26.0	65	
WR512 040 10 30				30.0		
WR512 040 10 35				35.0	70	
WR512 040 10 40				40.0	80	
WR512 040 10 45				45.0	90	
WR512 040 10 50				50.0	100	
WR512 050 01	5.0	0.10	8.0	15.0	60.0	6.0
WR512 050 02		0.20				
WR512 050 03		0.30				
WR512 050 05		0.50				
WR512 050 10		1.00				
WR512 050 15		1.50				
WR512 050 20		2.00				
WR512 060 01	6.0	0.10	9.0	20.0	60.0	6.0
WR512 060 02		0.20				
WR512 060 03		0.30				
WR512 060 05		0.50				
WR512 060 10		1.00				
WR512 060 15		1.50				
WR512 060 20		2.00				
WR512 060 03 90		0.30	15.0	30.0	90.0	6.0
WR512 060 05 90		0.50				
WR512 060 10 90		1.00				
WR512 080 01	8.0	0.10	12.0	25.0	70.0	8.0
WR512 080 02		0.20				
WR512 080 03		0.30				
WR512 080 05		0.50				
WR512 080 10		1.00				
WR512 080 15		1.50				
WR512 080 20		2.00				
WR512 080 03 100		0.30	20.0	35.0	100.0	8.0
WR512 080 05 100		0.50				
WR512 080 10 100		1.00				

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2 FLUTE LONG NECK CORNER RADIUS



WR512...

- Excellent effect in preventing breakage with a shape on neck without notch
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ULTRA FINE | Flute | Helix | Up to 6 | over R3 | W Coating | P.173

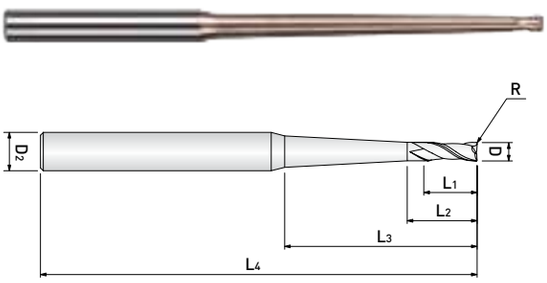
EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L1	L2	L3	D3
WR512 100 01	10.0	0.10	15.0	30.0	75.0	10.0
WR512 100 02		0.20				
WR512 100 03		0.30				
WR512 100 05		0.50				
WR512 100 10		1.00				
WR512 100 15		1.50				
WR512 100 20		2.00				
WR512 100 03 100		0.30	25.0	40.0	100.0	
WR512 100 05 100		0.50				
WR512 100 10 100		1.00				
WR512 120 02	12.0	0.20	18.0	32.0	80.0	12.0
WR512 120 03		0.30				
WR512 120 05		0.50				
WR512 120 10		1.00				
WR512 120 15		1.50				
WR512 120 20		2.00				
WR512 120 03 110		0.30	30.0	45.0	110.0	
WR512 120 05 110		0.50				
WR512 120 10 110		1.00				
WR512 160 05	16.0	0.50	20.0	35.0	100.0	16.0
WR512 160 10		1.00				
WR512 160 05 150		0.50	35.0	50.0	150.0	
WR512 160 10 150		1.00				
WR512 200 05	20.0	0.50	25.0	40.0	100.0	20.0
WR512 200 10		1.00				
WR512 200 05 150		0.50	40.0	55.0	150.0	
WR512 200 10 150		1.00				

Tolerance

Mill Dia(mm)		Shank
Diameter	Tolerance	
Upto 6	0~-0.012	h6
Over 6	0~-0.015	

※ Items can be changed for quality improvement without notice

2 FLUTE TAPER LONG LECK CORNER RADIUS



WR542...

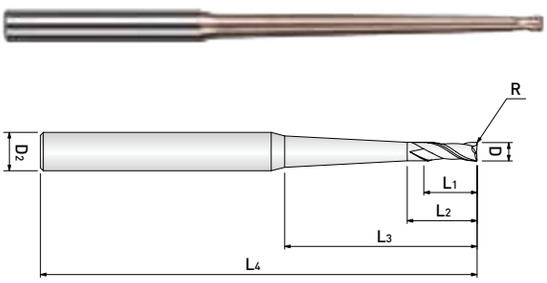
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- Strengthen the hardness of flute by applying the minute corner R to prevent chipping
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- Longer tool life and improvement on stable machining with W coating

UWC ULTRA FINE | 2 Flute | 30° Helix | R ±0.01 Up to 6 | W W Coating | Cutting Condition P.170

EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WR542 002 005 01 01	0.2	0.05	1°	0.3	0.4	1.0	40	4
WR542 002 005 01 02						2.0		
WR542 002 005 01 03						3.0		
WR542 002 005 02 01			2°			1.0		
WR542 002 005 02 02						2.0		
WR542 002 005 02 03						3.0		
WR542 003 005 01 02	0.3	0.05	1°	0.5	0.6	2.0	40	4
WR542 003 005 01 03						3.0		
WR542 003 005 01 04						4.0		
WR542 003 005 01 05						5.0		
WR542 003 005 02 02			2°			2.0		
WR542 003 005 02 03						3.0		
WR542 003 005 02 04						4.0		
WR542 003 005 02 05						5.0		
WR542 004 005 01 02	0.4	0.05	1°	0.6	0.8	2.0	50	4
WR542 004 005 01 03						3.0		
WR542 004 005 01 04						4.0		
WR542 004 005 01 05						5.0		
WR542 004 005 01 06						6.0		
WR542 004 005 02 02			2°			2.0		
WR542 004 005 02 03						3.0		
WR542 004 005 02 04						4.0		
WR542 004 005 02 05						5.0		
WR542 004 005 02 06						6.0		
WR542 004 01 01 02		0.10	1°			2.0		
WR542 004 01 01 03						3.0		
WR542 004 01 01 04						4.0		
WR542 004 01 01 05						5.0		
WR542 004 01 01 06						6.0		
WR542 004 01 02 02			2°			2.0		
WR542 004 01 02 03						3.0		
WR542 004 01 02 04						4.0		
WR542 004 01 02 05						5.0		
WR542 004 01 02 06						6.0		
WR542 005 005 01 04	0.50	0.05	1°	0.70	1.0	4.0	50	4
WR542 005 005 01 06						6.0		
WR542 005 005 01 08						8.0		

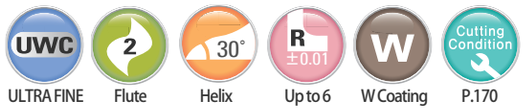
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2 FLUTE TAPER LONG LECK CORNER RADIUS



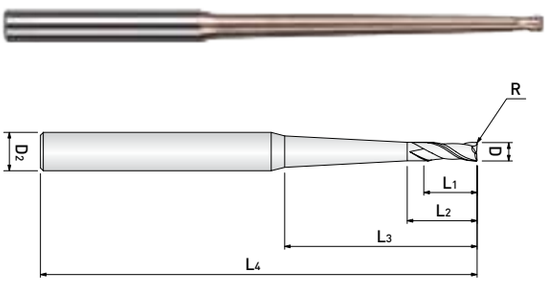
WR542...

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EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WR542 005 005 01 10	0.50	0.05	1°	0.70	1.0	10.0	50	4
WR542 005 005 02 04			2°			4.0		
WR542 005 005 02 06						6.0		
WR542 005 005 02 08						8.0		
WR542 005 005 02 10						10.0		
WR542 005 01 01 04		0.10	1°			4.0		
WR542 005 01 01 06						6.0		
WR542 005 01 01 08						8.0		
WR542 005 01 01 10						10.0		
WR542 005 01 02 04			2°			4.0		
WR542 005 01 02 06						6.0		
WR542 005 01 02 08						8.0		
WR542 005 01 02 10						10.0		
WR542 006 01 01 04	0.6	0.10	1°	0.9	1.2	4.0	50.0	4.0
WR542 006 01 01 06						6.0		
WR542 006 01 01 08						8.0		
WR542 006 01 01 10						10.0		
WR542 006 01 01 12						12.0		
WR542 006 01 02 04			2°			4.0		
WR542 006 01 02 06						6.0		
WR542 006 01 02 08						8.0		
WR542 006 01 02 10						10.0		
WR542 006 01 02 12						12.0		
WR542 006 02 01 04		0.20	1°			4.0		
WR542 006 02 01 06						6.0		
WR542 006 02 01 08						8.0		
WR542 006 02 01 10						10.0		
WR542 006 02 01 12						12.0		
WR542 006 02 02 04			2°			4.0		
WR542 006 02 02 06						6.0		
WR542 006 02 02 08						8.0		
WR542 006 02 02 10						10.0		
WR542 006 02 02 12						12.0		
WR542 008 01 01 04	0.8	0.10	1°	1.2	1.6	4.0	50.0	4.0
WR542 008 01 01 06						6.0		
WR542 008 01 01 08						8.0		
WR542 008 01 01 10						10.0		

2 FLUTE TAPER LONG LECK CORNER RADIUS



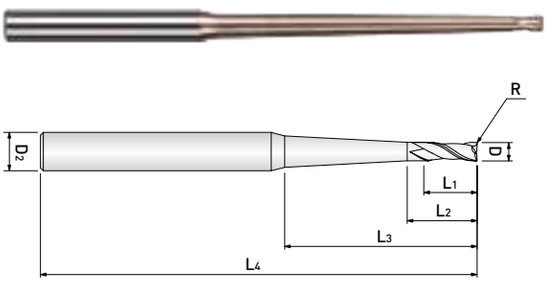
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UWC ULTRA FINE | 2 Flute | 30° Helix | R ±0.01 Up to 6 | W W Coating | Cutting Condition P.170

EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WR542 008 01 01 12	0.8	0.10	1°	1.2	1.6	12.0	50.0	4.0
WR542 008 01 01 16						16.0		
WR542 008 01 02 04			2°			4.0		
WR542 008 01 02 06						6.0		
WR542 008 01 02 08						8.0		
WR542 008 01 02 10						10.0		
WR542 008 01 02 12						12.0		
WR542 008 01 02 16						16.0		
WR542 008 02 01 04		0.20	1°			4.0		
WR542 008 02 01 06						6.0		
WR542 008 02 01 08						8.0		
WR542 008 02 01 10						10.0		
WR542 008 02 01 12						12.0		
WR542 008 02 01 16						16.0		
WR542 008 02 02 04			2°			4.0		
WR542 008 02 02 06						6.0		
WR542 008 02 02 08						8.0		
WR542 008 02 02 10						10.0		
WR542 008 02 02 12						12.0		
WR542 008 02 02 16						16.0		
WR542 010 01 01 06	1.0	0.10	1°	1.5	2.5	6.0	50	4
WR542 010 01 01 08						8.0		
WR542 010 01 01 10						10.0		
WR542 010 01 01 12						12.0		
WR542 010 01 01 16						16.0		
WR542 010 01 01 20						20.0		
WR542 010 01 01 25						25.0	60	
WR542 010 01 01 30						30.0	70	
WR542 010 01 01 40						40.0	80	
WR542 010 01 01 50						50.0	90	6
WR542 010 01 02 06			2°			6.0	50	4
WR542 010 01 02 08						8.0		
WR542 010 01 02 10						10.0		
WR542 010 01 02 12						12.0		
WR542 010 01 02 16						16.0		
WR542 010 01 02 20						20.0		
WR542 010 01 02 25						25.0	60	
WR542 010 01 02 30						30.0	70	

2 FLUTE TAPER LONG LECK CORNER RADIUS



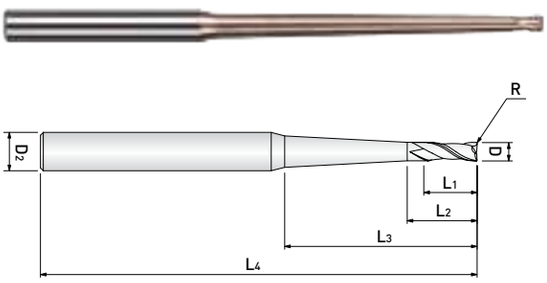
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UWC ULTRA FINE | 2 Flute | 30° Helix | R ±0.01 Up to 6 | W W Coating | Cutting Condition P.170

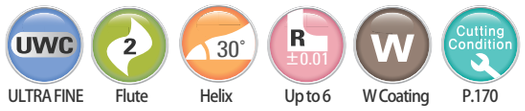
EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WR542 010 01 02 40	1.0	0.10	2°	1.5	2.5	40.0	80	4
WR542 010 01 02 50						50.0	90	6
WR542 010 02 01 06		0.20	1°			6.0	50	4
WR542 010 02 01 08						8.0		
WR542 010 02 01 10						10.0		
WR542 010 02 01 12						12.0		
WR542 010 02 01 16						16.0		
WR542 010 02 01 20						20.0		
WR542 010 02 01 25						25.0	60	
WR542 010 02 01 30						30.0	70	
WR542 010 02 01 40						40.0	80	
WR542 010 02 01 50						50.0	90	6
WR542 010 02 02 06			2°			6.0	50	4
WR542 010 02 02 08						8.0		
WR542 010 02 02 10						10.0		
WR542 010 02 02 12						12.0		
WR542 010 02 02 16						16.0		
WR542 010 02 02 20						20.0		
WR542 010 02 02 25						25.0	60	
WR542 010 02 02 30						30.0	70	
WR542 010 02 02 40						40.0	80	
WR542 010 02 02 50						50.0	90	6
WR542 012 01 01 08	1.2	0.10	1°	1.8	3.0	8.0	50	4
WR542 012 01 01 12						12.0		
WR542 012 01 01 16						16.0		
WR542 012 01 01 20						20.0		
WR542 012 01 01 25						25.0	60	
WR542 012 01 01 30						30.0	70	
WR542 012 01 02 08			2°			8.0	50	
WR542 012 01 02 12						12.0		
WR542 012 01 02 16						16.0		
WR542 012 01 02 20						20.0		
WR542 012 01 02 25						25.0	60	
WR542 012 01 02 30						30.0	70	
WR542 012 02 01 08		0.20	1°			8.0	50	
WR542 012 02 01 12						12.0		
WR542 012 02 01 16						16.0		
WR542 012 02 01 20						20.0		

2 FLUTE TAPER LONG LECK CORNER RADIUS



WR542...

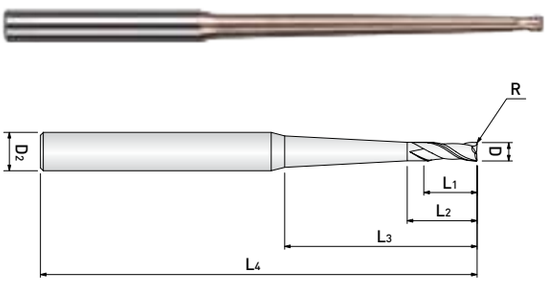
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EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WR542 012 02 01 25	1.2	0.20	1°	1.8	3.0	25.0	60	4
WR542 012 02 01 30						30.0	70	
WR542 012 02 02 08			2°			8.0	50	
WR542 012 02 02 12						12.0		
WR542 012 02 02 16						16.0		
WR542 012 02 02 20						20.0		
WR542 012 02 02 25						25.0	60	
WR542 012 02 02 30						30.0	70	
WR542 015 01 01 08	1.5	0.10	1°	2.3	3.0	8.0	50	4
WR542 015 01 01 10						10.0		
WR542 015 01 01 12						12.0		
WR542 015 01 01 16						16.0		
WR542 015 01 01 20						20.0		
WR542 015 01 01 25						25.0	60	
WR542 015 01 01 30						30.0	70	
WR542 015 01 01 40						40.0	80	
WR542 015 01 01 50						50.0	90	
WR542 015 01 02 08			2°			8.0	50	
WR542 015 01 02 10						10.0		
WR542 015 01 02 12						12.0		
WR542 015 01 02 16						16.0		
WR542 015 01 02 20						20.0		
WR542 015 01 02 25						25.0	60	
WR542 015 01 02 30						30.0	70	
WR542 015 01 02 40						40.0	80	6
WR542 015 01 02 50						50.0	90	
WR542 015 02 01 08		0.20	1°			8.0	50	4
WR542 015 02 01 10						10.0		
WR542 015 02 01 12						12.0		
WR542 015 02 01 16						16.0		
WR542 015 02 01 20						20.0		
WR542 015 02 01 25						25.0	60	
WR542 015 02 01 30						30.0	70	
WR542 015 02 01 40						40.0	80	
WR542 015 02 01 50						50.0	90	
WR542 015 02 02 08			2°			8.0	50	
WR542 015 02 02 10						10.0		
WR542 015 02 02 12						12.0		

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2 FLUTE TAPER LONG LECK CORNER RADIUS



WR542...

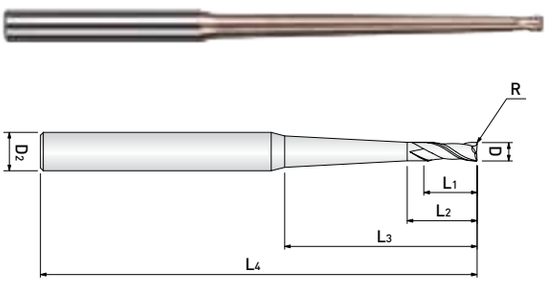
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- Strengthen the hardness of flute by applying the minute corner R to prevent chipping
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- Longer tool life and improvement on stable machining with W coating

UWC ULTRA FINE | 2 Flute | 30° Helix | R ±0.01 Up to 6 | W W Coating | Cutting Condition P.170

EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WR542 015 02 02 16	1.5	0.20	2°	2.3	3.0	16.0	50	4
WR542 015 02 02 20						20.0		
WR542 015 02 02 25						25.0	60	
WR542 015 02 02 30						30.0	70	
WR542 015 02 02 40						40.0	80	6
WR542 015 02 02 50						50.0	90	
WR542 015 03 01 08		0.30	1°			8.0	50	4
WR542 015 03 01 10						10.0		
WR542 015 03 01 12						12.0		
WR542 015 03 01 16						16.0		
WR542 015 03 01 20						20.0		
WR542 015 03 01 25						25.0	60	
WR542 015 03 01 30						30.0	70	
WR542 015 03 01 40						40.0	80	
WR542 015 03 01 50						50.0	90	
WR542 015 03 02 08			2°			8.0	50	
WR542 015 03 02 10						10.0		
WR542 015 03 02 12						12.0		
WR542 015 03 02 16						16.0		
WR542 015 03 02 20						20.0		
WR542 015 03 02 25						25.0	60	
WR542 015 03 02 30						30.0	70	
WR542 015 03 02 40						40.0	80	6
WR542 015 03 02 50						50.0	90	
WR542 020 01 01 10	2.0	0.10	1°	2.0	5.0	10.0	50	4
WR542 020 01 01 12						12.0		
WR542 020 01 01 16						16.0		
WR542 020 01 01 20						20.0		
WR542 020 01 01 25						25.0	60	
WR542 020 01 01 30						30.0	70	
WR542 020 01 01 40						40.0	80	6
WR542 020 01 01 50						50.0	100	
WR542 020 01 01 60						60.0		
WR542 020 01 01 80						80.0	140	
WR542 020 01 02 10			2°			10.0	50	4
WR542 020 01 02 12						12.0		
WR542 020 01 02 16						16.0		

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2 FLUTE TAPER LONG LECK CORNER RADIUS



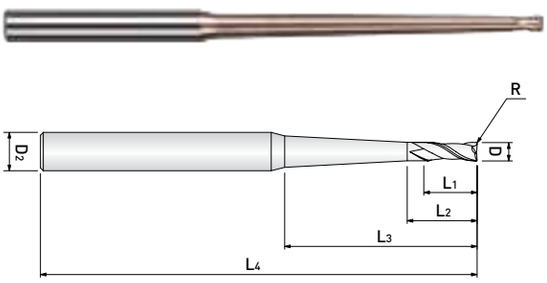
WR542...

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- Longer tool life and improvement on stable machining with W coating



EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WR542 020 01 02 20	2.0	0.10	2°	2.0	5.0	20.0	50	4
WR542 020 01 02 25						25.0	60	
WR542 020 01 02 30						30.0	70	
WR542 020 01 02 40						40.0	80	6
WR542 020 01 02 50						50.0	100	
WR542 020 01 02 60						60.0		
WR542 020 01 02 80						80.0	140	8
WR542 020 02 01 10		0.20	1°			10.0	50	4
WR542 020 02 01 12						12.0		
WR542 020 02 01 16						16.0		
WR542 020 02 01 20						20.0		
WR542 020 02 01 25						25.0	60	
WR542 020 02 01 30						30.0	70	
WR542 020 02 01 40						40.0	80	6
WR542 020 02 01 50						50.0	100	
WR542 020 02 01 60						60.0		
WR542 020 02 01 80						80.0	140	
WR542 020 02 02 10			2°			10.0	50	4
WR542 020 02 02 12						12.0		
WR542 020 02 02 16						16.0		
WR542 020 02 02 20						20.0		
WR542 020 02 02 25						25.0	60	
WR542 020 02 02 30						30.0	70	
WR542 020 02 02 40						40.0	80	6
WR542 020 02 02 50						50.0	100	
WR542 020 02 02 60						60.0		
WR542 020 02 02 80						80.0	140	8
WR542 020 03 01 10		0.30	1°			10.0	50	4
WR542 020 03 01 12						12.0		
WR542 020 03 01 16						16.0		
WR542 020 03 01 20						20.0		
WR542 020 03 01 25						25.0	60	
WR542 020 03 01 30						30.0	70	
WR542 020 03 01 40						40.0	80	6
WR542 020 03 01 50						50.0	100	
WR542 020 03 01 60						60.0		
WR542 020 03 01 80						80.0	140	

2 FLUTE TAPER LONG LECK CORNER RADIUS



WR542...

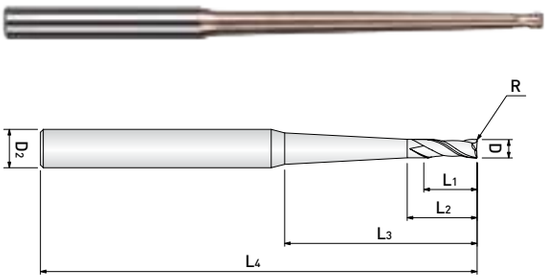
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UWC ULTRA FINE | 2 Flute | 30° Helix | R ±0.01 Up to 6 | W W Coating | Cutting Condition P.170

EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
EDP No.	D	R	θ	L1	L2	L3	L4	D2
WR542 020 03 02 10	2.0	0.30	2°	2.0	5.0	10.0	50	4
WR542 020 03 02 12						12.0		
WR542 020 03 02 16						16.0		
WR542 020 03 02 20						20.0		
WR542 020 03 02 25						25.0	60	
WR542 020 03 02 30						30.0	70	
WR542 020 03 02 40						40.0	80	6
WR542 020 03 02 50						50.0	100	
WR542 020 03 02 60						60.0		
WR542 020 03 02 80						80.0	140	8
WR542 020 05 01 10		0.50	1°			10.0	50	4
WR542 020 05 01 12						12.0		
WR542 020 05 01 16						16.0		
WR542 020 05 01 20						20.0		
WR542 020 05 01 25						25.0	60	
WR542 020 05 01 30						30.0	70	
WR542 020 05 01 40						40.0	80	6
WR542 020 05 01 50						50.0	100	
WR542 020 05 01 60						60.0		
WR542 020 05 01 80						80.0	140	
WR542 020 05 02 10			2°			10.0	50	4
WR542 020 05 02 12						12.0		
WR542 020 05 02 16						16.0		
WR542 020 05 02 20						20.0		
WR542 020 05 02 25						25.0	60	
WR542 020 05 02 30						30.0	70	
WR542 020 05 02 40						40.0	80	6
WR542 020 05 02 50						50.0	100	
WR542 020 05 02 60						60.0		
WR542 020 05 02 80						80.0	140	8
WR542 030 02 01 16	3.0	0.20	1°	4.5	6.0	16.0	60	6
WR542 030 02 01 20						20.0	65	
WR542 030 02 01 30						30.0	70	
WR542 030 02 01 40						40.0	80	
WR542 030 02 01 50						50.0	90	
WR542 030 02 01 60						60.0	100	
WR542 030 02 02 16			2°			16.0	60	

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2 FLUTE TAPER LONG LECK CORNER RADIUS



WR542...

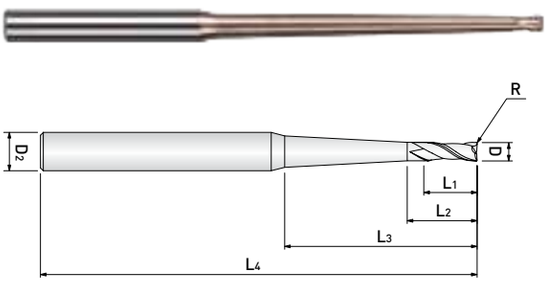
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- Longer tool life and improvement on stable machining with W coating

UWC ULTRA FINE | 2 Flute | 30° Helix | R ±0.01 Up to 6 | W W Coating | Cutting Condition P.170

EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WR542 030 02 02 20	3.0	0.20	2°	4.5	6.0	20.0	65	6
WR542 030 02 02 30						30.0	70	
WR542 030 02 02 40						40.0	80	
WR542 030 02 02 50						50.0	90	8
WR542 030 02 02 60						60.0	100	
WR542 030 02 02 70						70.0	120	
WR542 030 03 01 16		0.30	1°			16.0	60	6
WR542 030 03 01 20						20.0	65	
WR542 030 03 01 30						30.0	70	
WR542 030 03 01 40						40.0	80	
WR542 030 03 01 50						50.0	90	
WR542 030 03 01 60						60.0	100	
WR542 030 03 02 16			2°			16.0	60	8
WR542 030 03 02 20						20.0	65	
WR542 030 03 02 30						30.0	70	
WR542 030 03 02 40						40.0	80	
WR542 030 03 02 50						50.0	90	
WR542 030 03 02 60						60.0	100	
WR542 030 03 02 70						70.0	120	
WR542 030 05 01 16		0.50	1°			16.0	60	6
WR542 030 05 01 20						20.0	65	
WR542 030 05 01 30						30.0	70	
WR542 030 05 01 40						40.0	80	
WR542 030 05 01 50						50.0	90	
WR542 030 05 01 60						60.0	100	
WR542 030 05 02 16			2°			16.0	60	8
WR542 030 05 02 20						20.0	65	
WR542 030 05 02 30						30.0	70	
WR542 030 05 02 40						40.0	80	
WR542 030 05 02 50						50.0	90	
WR542 030 05 02 60						60.0	100	
WR542 030 05 02 70						70.0	120	

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2 FLUTE TAPER LONG LECK CORNER RADIUS



WR542...

- Increasing the hardness of neck by applying Taper neck
- Strengthen the hardness of flute by applying the minute corner R to prevent chipping
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating



EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Neck Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WR542 040 02 01 40	4.0	0.20	1°	6.0	8.0	40.0	90	6
WR542 040 02 01 50						50.0	100	
WR542 040 02 01 60						60.0	110	
WR542 040 02 01 70						70.0	120	8
WR542 040 02 02 40			2°			40.0	90	
WR542 040 02 02 50						50.0	100	
WR542 040 02 02 60						60.0	110	
WR542 040 02 02 70						70.0	120	10
WR542 040 03 01 40		0.30	1°			40.0	90	6
WR542 040 03 01 50						50.0	100	
WR542 040 03 01 60						60.0	110	
WR542 040 03 01 70						70.0	120	8
WR542 040 03 02 40			2°			40.0	90	
WR542 040 03 02 50						50.0	100	
WR542 040 03 02 60						60.0	110	
WR542 040 03 02 70						70.0	120	10
WR542 040 05 01 40		0.50	1°			40.0	90	6
WR542 040 05 01 50						50.0	100	
WR542 040 05 01 60						60.0	110	
WR542 040 05 01 70						70.0	120	8
WR542 040 05 02 40			2°			40.0	90	
WR542 040 05 02 50						50.0	100	
WR542 040 05 02 60						60.0	110	
WR542 040 05 02 70						70.0	120	10

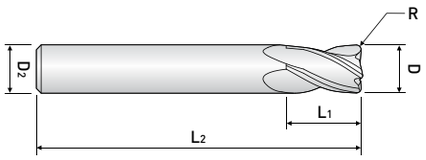
Tolerance

Mill Dia(mm)	Shank
0~-0.012	h6

※ Items can be changed for quality improvement without notice

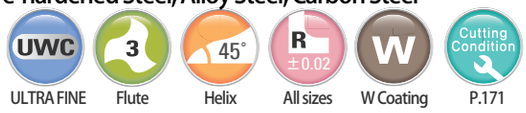
3 FLUTE DOUBLE CORNER RADIUS





WDR503...

- High speed and feed rate lead to an improved productivity due to the choice of unique double corner radius
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



ULTRA FINE | Flute | Helix | All sizes | W Coating | P.171

EDP No.	Diameter	Corner R	Corner R	Cutting Length	Overall Length	Shank Diameter
	D	R	R_2	L_1	L_2	D_2
WDR503 060 05	6.0	0.50	6.0	10.0	90.0	6.0
WDR503 060 10		1.00				
WDR503 060 20		2.00				
WDR503 080 05	8.0	0.50	8.0	16.0	100.0	8.0
WDR503 080 10		1.00				
WDR503 080 20		2.00				
WDR503 100 05	10.0	0.50	10.0	20.0	100.0	10.0
WDR503 100 10		1.00				
WDR503 100 20		2.00				
WDR503 120 05	12.0	0.50	12.0	24.0	110.0	12.0
WDR503 120 10		1.00				
WDR503 120 20		2.00				
WDR503 160 05	16.0	0.50	16.0	32.0	150.0	16.0
WDR503 160 10		1.00				
WDR503 200 05	20.0	0.50	20.0	40.0	150.0	20.0
WDR503 200 10		1.00				

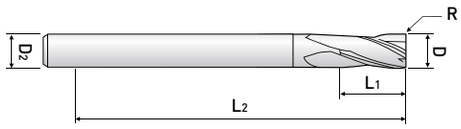
Tolerance

Mill Dia(mm)	Shank
0~-0.012	h6

※ Items can be changed for quality improvement without notice

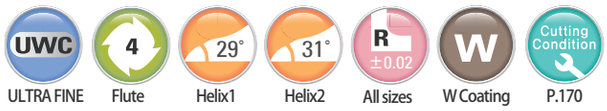
VARIABLE INDEX 4 FLUTE CORNER RADIUS





WXR504...

- Excellent surface roughness with a variable index geometry for more than 3Ø
- Increased tool life with a reduced chatter vibration and resonance by irregular exciting force
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating

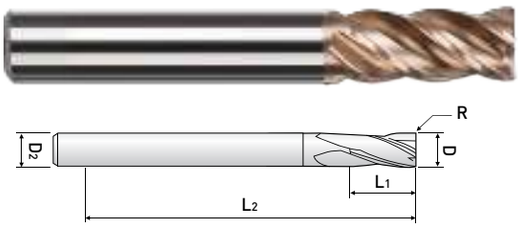


(SHORT LENGTH + REGULAR LENGTH + LONG SHANK)

EDP No.	Diameter	Corner R	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WXR504 010 005	1.0	0.05	2.5	50	6
WXR504 010 01		0.10			
WXR504 010 02		0.20			
WXR504 010 03		0.30			
WXR504 012 005	1.2	0.05	3.0	50	6
WXR504 012 01		0.10			
WXR504 012 02		0.20			
WXR504 012 03		0.30			
WXR504 015 005	1.5	0.05	4.0	50	6
WXR504 015 01		0.10			
WXR504 015 02		0.20			
WXR504 015 03		0.30			
WXR504 015 05		0.50			
WXR504 020 01	2.0	0.10	6.0	50	6
WXR504 020 02		0.20			
WXR504 020 03		0.30			
WXR504 020 05		0.50			
WXR504 025 01	2.5	0.10	7.0	60	6
WXR504 025 02		0.20			
WXR504 025 03		0.30			
WXR504 025 05		0.50			
WXR504 030 01	3.0	0.10	8.0	60	6
WXR504 030 02		0.20			
WXR504 030 03		0.30			
WXR504 030 05		0.50			
WXR504 030 10		1.00			
WXR504 035 01	3.5	0.10	10.0	70	6
WXR504 035 02		0.20			
WXR504 035 03		0.30			
WXR504 035 05		0.50			
WXR504 040 01 S4	4.0	0.10	10.0	70	4
WXR504 040 02 S4		0.20			
WXR504 040 03 S4		0.30			
WXR504 040 05 S4		0.50			
WXR504 040 10 S4		1.00			
WXR504 040 01 100 S4		0.10		100	
WXR504 040 02 100 S4		0.20			
WXR504 040 03 100 S4		0.30			

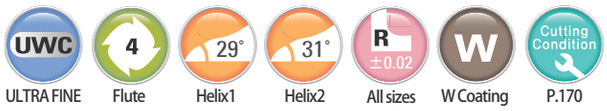
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VARIABLE INDEX 4 FLUTE CORNER RADIUS



WXR504...

- Excellent surface roughness with a variable index geometry for more than 3Ø
- Increased tool life with a reduced chatter vibration and resonance by irregular exciting force
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating

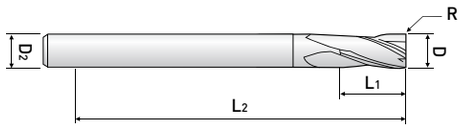


(SHORT LENGTH + REGULAR LENGTH + LONG SHANK)

EDP No.	Diameter	Corner R	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WXR504 040 05 100 S4	4.0	0.50	10.0	100	4
WXR504 040 10 100 S4		1.00			
WXR504 040 01		0.10		70	6
WXR504 040 02		0.20			
WXR504 040 03		0.30			
WXR504 040 05		0.50			
WXR504 040 10		1.00			
WXR504 045 01	4.5	0.10	11.0	80	6
WXR504 045 02		0.20			
WXR504 045 03		0.30			
WXR504 045 05		0.50			
WXR504 050 01	5.0	0.10	13.0	90	6
WXR504 050 02		0.20			
WXR504 050 03		0.30			
WXR504 050 05		0.50			
WXR504 050 10		1.00			
WXR504 055 01	5.5	0.10	13.0	90	6
WXR504 055 02		0.20			
WXR504 055 03		0.30			
WXR504 055 05		0.50			
WXR504 055 10		1.00			
WXR504 060 01 060	6.0	0.10	15.0	60	6
WXR504 060 02 060		0.20			
WXR504 060 01		0.10		90	
WXR504 060 02		0.20			
WXR504 060 03		0.30			
WXR504 060 05		0.50			
WXR504 060 10		1.00			
WXR504 060 15		1.50			
WXR504 060 20		2.00			
WXR504 060 05 110		0.50		110	
WXR504 060 10 110		1.00			
WXR504 060 05 130		0.50		130	
WXR504 060 10 130		1.00			
WXR504 070 01	7.0	0.10	16.0	90	8
WXR504 070 02		0.20			
WXR504 070 03		0.30			
WXR504 070 05		0.50			

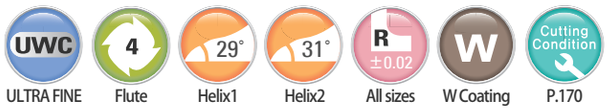
VARIABLE INDEX 4 FLUTE CORNER RADIUS





WXR504...

- Excellent surface roughness with a variable index geometry for more than 3Ø
- Increased tool life with a reduced chatter vibration and resonance by irregular exciting force
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating

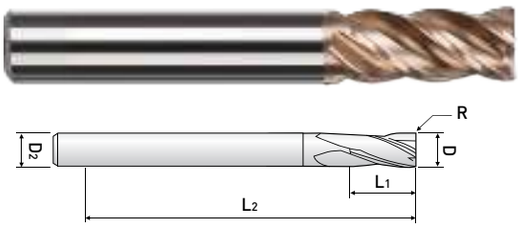


(SHORT LENGTH + REGULAR LENGTH + LONG SHANK)

EDP No.	Diameter	Corner R	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WXR504 070 10	7.0	1.00	16.0	90	8
WXR504 070 20		2.00			
WXR504 080 03 070	8.0	0.30	20.0	70	8
WXR504 080 05 070		0.50			
WXR504 080 10 070		1.00			
WXR504 080 01		0.10		100	
WXR504 080 02		0.20			
WXR504 080 03		0.30			
WXR504 080 05		0.50			
WXR504 080 10		1.00			
WXR504 080 15		1.50			
WXR504 080 20		2.00			
WXR504 080 25		2.50			
WXR504 080 30		3.00			
WXR504 080 05 120		0.50		120	
WXR504 080 10 120		1.00			
WXR504 080 05 150		0.50		150	
WXR504 080 10 150		1.00			
WXR504 100 03 075	10.0	0.30	25.0	75	10
WXR504 100 05 075		0.50			
WXR504 100 10 075		1.00			
WXR504 100 01		0.10		100	
WXR504 100 02		0.20			
WXR504 100 03		0.30			
WXR504 100 05		0.50			
WXR504 100 10		1.00			
WXR504 100 15		1.50			
WXR504 100 20		2.00			
WXR504 100 25		2.50			
WXR504 100 30		3.00			
WXR504 100 40		4.00			
WXR504 100 05 130		0.50	22.0	130	
WXR504 100 10 130		1.00			
WXR504 100 05 150		0.50		150	
WXR504 100 10 150		1.00			
WXR504 110 02	11.0	0.20	25	110	12
WXR504 110 03		0.30			

Continued from previous page Continued on following page

VARIABLE INDEX 4 FLUTE CORNER RADIUS



WXR504...

- Excellent surface roughness with a variable index geometry for more than 3Ø
- Increased tool life with a reduced chatter vibration and resonance by irregular exciting force
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating



(SHORT LENGTH + REGULAR LENGTH + LONG SHANK)

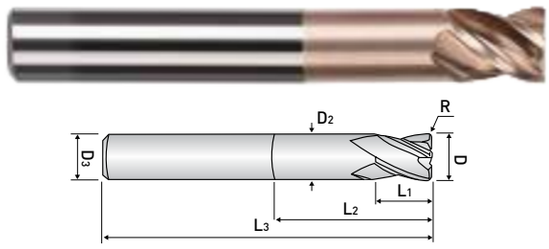
EDP No.	Diameter	Corner R	Cutting Length	Overall Length	Shank Diameter
	D	R	L1	L2	D2
WXR504 110 05	11.0	0.50	25	110	12
WXR504 110 10		1.00			
WXR504 110 20		2.00			
WXR504 120 03 080	12.0	0.30	30	80	12
WXR504 120 05 080		0.50			
WXR504 120 10 080		1.00			
WXR504 120 01		0.10		110	
WXR504 120 02		0.20			
WXR504 120 03		0.30			
WXR504 120 05		0.50			
WXR504 120 10		1.00			
WXR504 120 15		1.50			
WXR504 120 20		2.00			
WXR504 120 25		2.50			
WXR504 120 30		3.00			
WXR504 120 40		4.00			
WXR504 120 50		5.00			
WXR504 120 05 130		0.50		130	
WXR504 120 10 130		1.00			
WXR504 120 05 150		0.50		150	
WXR504 120 10 150		1.00			
WXR504 140 05	14.0	0.50	35	150	16
WXR504 140 10		1.00			
WXR504 140 20		2.00			
WXR504 160 05	16.0	0.50	32	150	16
WXR504 160 10		1.00			
WXR504 160 15		1.50			
WXR504 160 20		2.00			
WXR504 200 05	20.0	0.50	38	150	20
WXR504 200 10		1.00			
WXR504 200 15		1.50			
WXR504 200 20		2.00			

Tolerance

Mill Dia(mm)	Shank
0~-0.003	h6

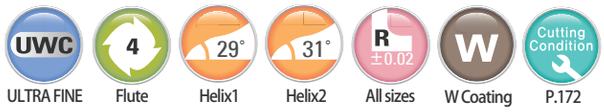
※ Items can be changed for quality improvement without notice

4F VARIABLE INDEX CORNER RADIUS* LONG NECK



WXR514...

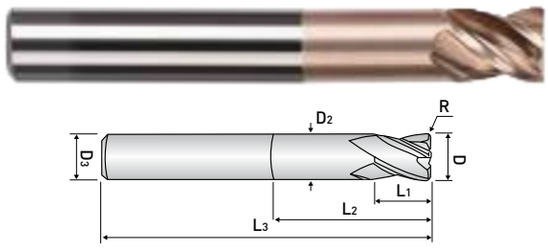
- Increasing the hardness of neck by applying Taper neck
- Excellent surface roughness with a variable index geometry for more than 3Ø
- Increased tool life with a reduced chatter vibration and resonance by irregular exciting force
- Excellent effect in preventing breakage with a shape on neck without notch
- Enhanced cutting effect and better wear resistance made from the finest raw material



EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_2
WXR514 010 005 03	1.0	0.05	1.5	3	50.0	4.0
WXR514 010 005 04				4		
WXR514 010 005 06				6		
WXR514 010 005 08				8		
WXR514 010 005 10				10		
WXR514 010 005 12				12		
WXR514 010 005 14				14		
WXR514 010 005 16				16		
WXR514 010 005 20				20		
WXR514 010 01 03		0.10		3		
WXR514 010 01 04				4		
WXR514 010 01 06				6		
WXR514 010 01 08				8		
WXR514 010 01 10				10		
WXR514 010 01 12				12		
WXR514 010 01 14				14		
WXR514 010 01 16				16		
WXR514 010 01 20				20		
WXR514 010 02 03		0.20		3		
WXR514 010 02 04				4		
WXR514 010 02 06				6		
WXR514 010 02 08				8		
WXR514 010 02 10				10		
WXR514 010 02 12				12		
WXR514 010 02 14				14		
WXR514 010 02 16				16		
WXR514 010 02 20				20		
WXR514 010 03 03		0.30		3		
WXR514 010 03 04				4		
WXR514 010 03 06				6		
WXR514 010 03 08				8		
WXR514 010 03 10				10		
WXR514 010 03 12				12		
WXR514 010 03 14				14		
WXR514 010 03 16				16		
WXR514 010 03 20				20		
WXR514 012 005 03	1.2	0.05	1.8	3	50.0	4.0
WXR514 012 005 04				4		

Continued on following page

4F VARIABLE INDEX CORNER RADIUS* LONG NECK



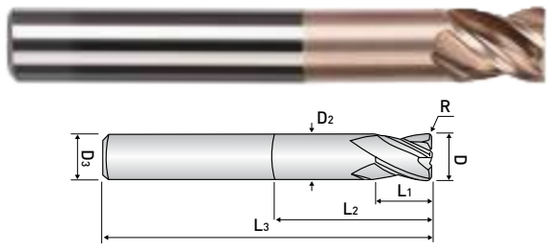
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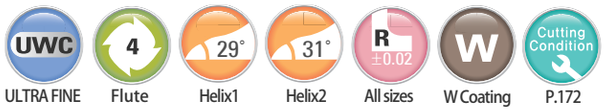
EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_2
WXR514 012 005 06	1.2	0.05	1.8	6	50.0	4.0
WXR514 012 005 08				8		
WXR514 012 005 10				10		
WXR514 012 005 12				12		
WXR514 012 005 16				16		
WXR514 012 005 20				20		
WXR514 012 01 03		0.10		3		
WXR514 012 01 04				4		
WXR514 012 01 06				6		
WXR514 012 01 08				8		
WXR514 012 01 10				10		
WXR514 012 01 12				12		
WXR514 012 01 16				16		
WXR514 012 01 20				20		
WXR514 012 02 03		0.20		3		
WXR514 012 02 04				4		
WXR514 012 02 06				6		
WXR514 012 02 08				8		
WXR514 012 02 10				10		
WXR514 012 02 12				12		
WXR514 012 02 16				16		
WXR514 012 02 20				20		
WXR514 012 03 03		0.30		3		
WXR514 012 03 04				4		
WXR514 012 03 06				6		
WXR514 012 03 08				8		
WXR514 012 03 10				10		
WXR514 012 03 12				12		
WXR514 012 03 16				16		
WXR514 012 03 20				20		
WXR514 015 005 04	1.5	0.05	2.3	4	50.0	4.0
WXR514 015 005 06				6		
WXR514 015 005 08				8		
WXR514 015 005 10				10		
WXR514 015 005 12				12		
WXR514 015 005 14				14		
WXR514 015 005 16				16		
WXR514 015 005 20				20		

4F VARIABLE INDEX CORNER RADIUS* LONG NECK



WXR514...

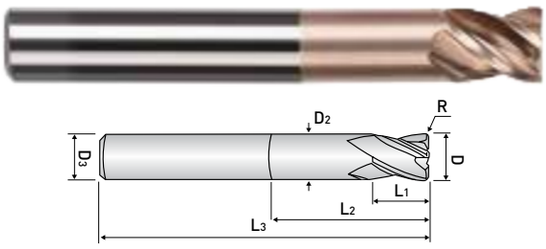
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ULTRA FINE | Flute | Helix1 | Helix2 | All sizes | W Coating | P.172

EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_2
WXR514 015 005 22	1.5	0.05	2.3	22	60	4.0
WXR514 015 005 26				26		
WXR514 015 01 04		0.10		4	50	
WXR514 015 01 06				6		
WXR514 015 01 08				8		
WXR514 015 01 10				10		
WXR514 015 01 12				12		
WXR514 015 01 14				14		
WXR514 015 01 16				16		
WXR514 015 01 20				20		
WXR514 015 01 22				22	60	
WXR514 015 01 26				26		
WXR514 015 02 04		0.20		4	50	
WXR514 015 02 06				6		
WXR514 015 02 08				8		
WXR514 015 02 10				10		
WXR514 015 02 12				12		
WXR514 015 02 14				14		
WXR514 015 02 16				16		
WXR514 015 02 20				20		
WXR514 015 02 22				22	60	
WXR514 015 02 26				26		
WXR514 015 03 04		0.30		4	50	
WXR514 015 03 06				6		
WXR514 015 03 08				8		
WXR514 015 03 10				10		
WXR514 015 03 12				12		
WXR514 015 03 14				14		
WXR514 015 03 16				16		
WXR514 015 03 20				20		
WXR514 015 03 22				22	60	
WXR514 015 03 26				26		
WXR514 015 05 04		0.50		4	50	
WXR514 015 05 06				6		

4F VARIABLE INDEX CORNER RADIUS* LONG NECK



WXR514...

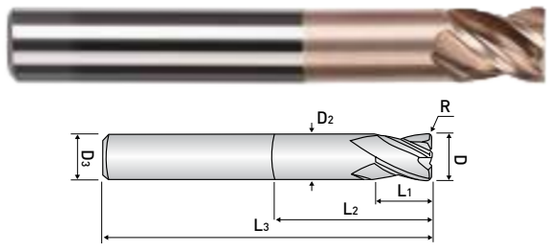
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EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_2
WXR514 015 05 08	1.5	0.50	2.3	8	50	4.0
WXR514 015 05 10				10		
WXR514 015 05 12				12		
WXR514 015 05 14				14		
WXR514 015 05 16				16		
WXR514 015 05 20				20		
WXR514 015 05 22				22	60	
WXR514 015 05 26				26		
WXR514 020 01 06	2.0	0.10	3.0	6	50	4.0
WXR514 020 01 08				8		
WXR514 020 01 10				10		
WXR514 020 01 12				12		
WXR514 020 01 14				14		
WXR514 020 01 16				16		
WXR514 020 01 20				20		
WXR514 020 01 22				22	60	
WXR514 020 01 26				26		
WXR514 020 01 30				30	70	
WXR514 020 02 06		0.20		6	50	
WXR514 020 02 08				8		
WXR514 020 02 10				10		
WXR514 020 02 12				12		
WXR514 020 02 14				14		
WXR514 020 02 16				16		
WXR514 020 02 20				20		
WXR514 020 02 22				22	60	
WXR514 020 02 26				26		
WXR514 020 02 30				30	70	
WXR514 020 03 06		0.30		6		
WXR514 020 03 08				8		
WXR514 020 03 10				10		
WXR514 020 03 12				12	50	
WXR514 020 03 14				14		
WXR514 020 03 16				16		
WXR514 020 03 20				20		
WXR514 020 03 22				22	60	
WXR514 020 03 26				26		
WXR514 020 03 30				30	70	

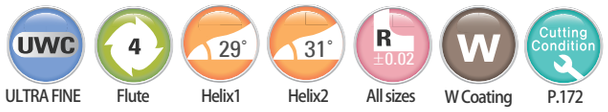
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4F VARIABLE INDEX CORNER RADIUS* LONG NECK



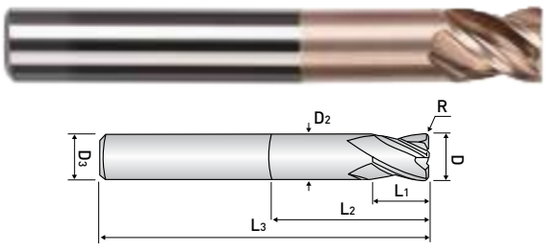
WXR514...

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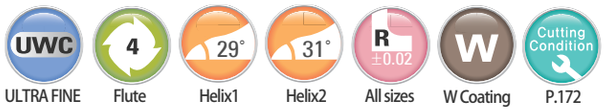
EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_2
WXR514 020 05 06	2.0	0.50	3.0	6	50	4.0
WXR514 020 05 08				8		
WXR514 020 05 10				10		
WXR514 020 05 12				12		
WXR514 020 05 14				14		
WXR514 020 05 16				16		
WXR514 020 05 20				20		
WXR514 020 05 22				22	60	
WXR514 020 05 26				26		
WXR514 020 05 30				30	70	
WXR514 025 01 08	2.5	0.10	4.0	8	50	4.0
WXR514 025 01 10				10		
WXR514 025 01 12				12		
WXR514 025 01 14				14		
WXR514 025 01 16				16		
WXR514 025 01 20				20		
WXR514 025 01 26				26	60	
WXR514 025 01 30				30	70	
WXR514 025 02 08		0.20		8	50	
WXR514 025 02 10				10		
WXR514 025 02 12				12		
WXR514 025 02 14				14		
WXR514 025 02 16				16		
WXR514 025 02 20				20		
WXR514 025 02 26				26	60	
WXR514 025 02 30				30	70	
WXR514 025 03 08		0.30		8	50	
WXR514 025 03 10				10		
WXR514 025 03 12				12		
WXR514 025 03 14				14		
WXR514 025 03 16				16		
WXR514 025 03 20				20		
WXR514 025 03 26				26	60	
WXR514 025 03 30				30	70	
WXR514 025 05 08		0.50		8	50	
WXR514 025 05 10				10		
WXR514 025 05 12				12		
WXR514 025 05 14				14		

4F VARIABLE INDEX CORNER RADIUS* LONG NECK



WXR514...

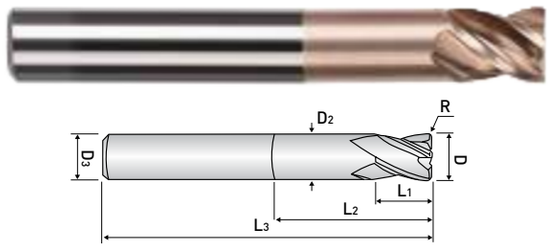
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ULTRA FINE | Flute | Helix1 | Helix2 | All sizes | W Coating | P.172

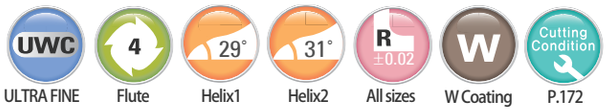
EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_2
WXR514 025 05 16	2.5	0.50	4.0	16	50	4.0
WXR514 025 05 20				20		
WXR514 025 05 26				26	60	
WXR514 025 05 30				30	70	
WXR514 030 01 08	3.0	0.10	4.5	8	50	6.0
WXR514 030 01 10				10		
WXR514 030 01 12				12		
WXR514 030 01 14				14	60	
WXR514 030 01 16				16		
WXR514 030 01 20				20		
WXR514 030 01 26				26	65	
WXR514 030 01 30				30	70	
WXR514 030 01 35				35		
WXR514 030 01 40				40	80	
WXR514 030 02 08		0.20		8	50	
WXR514 030 02 10				10		
WXR514 030 02 12				12		
WXR514 030 02 14				14	60	
WXR514 030 02 16				16		
WXR514 030 02 20				20		
WXR514 030 02 26				26	65	
WXR514 030 02 30				30	70	
WXR514 030 02 35				35		
WXR514 030 02 40				40	80	
WXR514 030 03 08		0.30		8	50	
WXR514 030 03 10				10		
WXR514 030 03 12				12		
WXR514 030 03 14				14	60	
WXR514 030 03 16				16		
WXR514 030 03 20				20		
WXR514 030 03 26				26	65	
WXR514 030 03 30				30	70	
WXR514 030 03 35				35		
WXR514 030 03 40				40	80	

4F VARIABLE INDEX CORNER RADIUS* LONG NECK



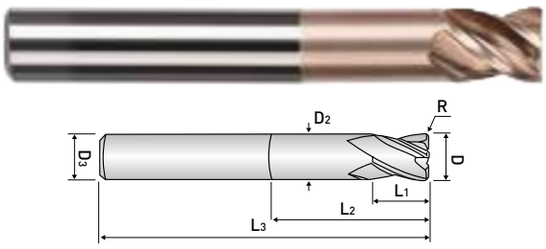
WXR514...

- Increasing the hardness of neck by applying Taper neck
- Excellent surface roughness with a variable index geometry for more than 3Ø
- Increased tool life with a reduced chatter vibration and resonance by irregular exciting force
- Excellent effect in preventing breakage with a shape on neck without notch
- Enhanced cutting effect and better wear resistance made from the finest raw material



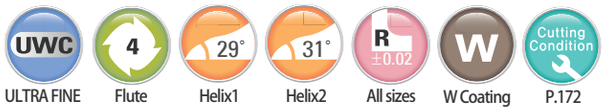
EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_2
WXR514 030 05 08	3.0	0.50	4.5	8	50	6.0
WXR514 030 05 10				10		
WXR514 030 05 12				12		
WXR514 030 05 14				14	60	
WXR514 030 05 16				16		
WXR514 030 05 20				20		
WXR514 030 05 26				26	65	
WXR514 030 05 30				30	70	
WXR514 030 05 35				35		
WXR514 030 05 40				40	80	
WXR514 030 10 08		1.00		8	50	
WXR514 030 10 10				10		
WXR514 030 10 12				12		
WXR514 030 10 14				14	60	
WXR514 030 10 16				16		
WXR514 030 10 20				20		
WXR514 030 10 26				26	65	
WXR514 030 10 30				30	70	
WXR514 030 10 35				35		
WXR514 030 10 40				40	80	
WXR514 040 01 10	4.0	0.10	6.0	10	50	6.0
WXR514 040 01 12				12		
WXR514 040 01 14				14	60	
WXR514 040 01 16				16		
WXR514 040 01 20				20		
WXR514 040 01 26				26	65	
WXR514 040 01 30				30	70	
WXR514 040 01 35				35		
WXR514 040 01 40				40	80	
WXR514 040 01 45				45	90	
WXR514 040 01 50				50	100	
WXR514 040 02 10		0.20		10	50	
WXR514 040 02 12				12		
WXR514 040 02 14				14	60	
WXR514 040 02 16				16		
WXR514 040 02 20				20		
WXR514 040 02 26				26	65	
WXR514 040 02 30				30	70	

4F VARIABLE INDEX CORNER RADIUS* LONG NECK



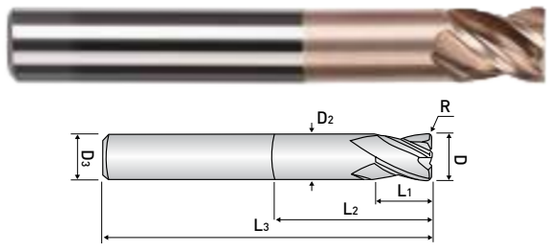
WXR514...

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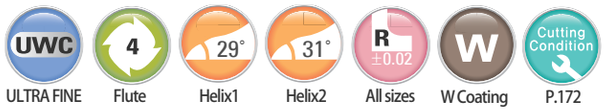
EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_2
WXR514 040 02 35	4.0	0.20	6.0	35	70	6.0
WXR514 040 02 40				40	80	
WXR514 040 02 45				45	90	
WXR514 040 02 50				50	100	
WXR514 040 03 10		0.30		10	50	
WXR514 040 03 12				12		
WXR514 040 03 14				14	60	
WXR514 040 03 16				16		
WXR514 040 03 20				20		
WXR514 040 03 26				26	65	
WXR514 040 03 30				30	70	
WXR514 040 03 35				35		
WXR514 040 03 40				40	80	
WXR514 040 03 45				45	90	
WXR514 040 03 50				50	100	
WXR514 040 05 10		0.50		10	50	
WXR514 040 05 12				12		
WXR514 040 05 14				14	60	
WXR514 040 05 16				16		
WXR514 040 05 20				20		
WXR514 040 05 26				26	65	
WXR514 040 05 30				30	70	
WXR514 040 05 35				35		
WXR514 040 05 40				40	80	
WXR514 040 05 45				45	90	
WXR514 040 05 50				50	100	
WXR514 040 10 10		1.00		10	50	
WXR514 040 10 12				12		
WXR514 040 10 14				14	60	
WXR514 040 10 16				16		
WXR514 040 10 20				20		
WXR514 040 10 26				26	65	
WXR514 040 10 30				30	70	
WXR514 040 10 35				35		
WXR514 040 10 40				40	80	
WXR514 040 10 45				45	90	
WXR514 040 10 50				50	100	

4F BROKEN INDEX CORNER RADIUS* LONG NECK



WXR514...

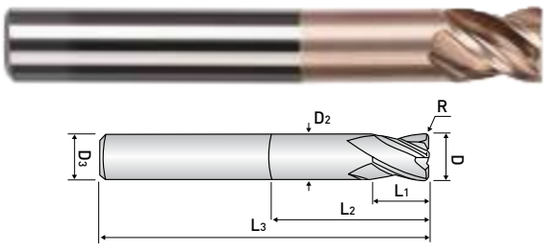
- Increasing the hardness of neck by applying Taper neck
- Excellent surface roughness with a variable index geometry for more than 3Ø
- Increased tool life with a reduced chatter vibration and resonance by irregular exciting force
- Excellent effect in preventing breakage with a shape on neck without notch
- Enhanced cutting effect and better wear resistance made from the finest raw material



ULTRA FINE | Flute | Helix1 | Helix2 | All sizes | W Coating | P.172

EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L1	L2	L3	D2
WXR514 050 01	5.0	0.10	8.0	15.0	60.0	6.0
WXR514 050 02		0.20				
WXR514 050 03		0.30				
WXR514 050 05		0.50				
WXR514 050 10		1.00				
WXR514 050 15		1.50				
WXR514 050 20		2.00				
WXR514 060 01	6.0	0.10	9	20	60	6
WXR514 060 02		0.20				
WXR514 060 03		0.30				
WXR514 060 05		0.50				
WXR514 060 10		1.00				
WXR514 060 15		1.50				
WXR514 060 20		2.00				
WXR514 060 03 090		0.30	15	30	90	
WXR514 060 05 090		0.50				
WXR514 060 10 090		1.00				
WXR514 080 01	8.0	0.10	12	25	70	8
WXR514 080 02		0.20				
WXR514 080 03		0.30				
WXR514 080 05		0.50				
WXR514 080 10		1.00				
WXR514 080 15		1.50				
WXR514 080 20		2.00				
WXR514 080 03 100		0.30	20	35	100	
WXR514 080 05 100		0.50				
WXR514 080 10 100		1.00				
WXR514 100 01	10.0	0.10	15	30	75	10
WXR514 100 02		0.20				
WXR514 100 03		0.30				
WXR514 100 05		0.50				
WXR514 100 10		1.00				
WXR514 100 15		1.50				
WXR514 100 20		2.00				
WXR514 100 03 100		0.30	25	40	100	
WXR514 100 05 100		0.50				
WXR514 100 10 100		1.00				

4F BROKEN INDEX CORNER RADIUS* LONG NECK



WXR514...

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- Increased tool life with a reduced chatter vibration and resonance by irregular exciting force
- Excellent effect in preventing breakage with a shape on neck without notch
- Enhanced cutting effect and better wear resistance made from the finest raw material



EDP No.	Diameter	Corner R	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_2
WXR514 120 02	12.0	0.20	18	32	80	12
WXR514 120 03		0.30				
WXR514 120 05		0.50				
WXR514 120 10		1.00				
WXR514 120 15		1.50				
WXR514 120 20		2.00				
WXR514 120 03 110		0.30	30	45	110	
WXR514 120 05 110		0.50				
WXR514 120 10 110		1.00				
WXR514 160 05	16.0	0.50	20	35	100	16
WXR514 160 10		1.00				
WXR514 160 05 150		0.50	35	50	150	20
WXR514 160 10 150		1.00				
WXR514 200 05	20.0	0.50	25	40	100	20
WXR514 200 10		1.00				
WXR514 200 05 150		0.50	40	55	150	
WXR514 200 10 150		1.00				

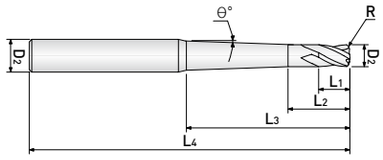
Tolerance

Mill Dia(mm)	Shank
0~-0.003	h6

※ Items can be changed for quality improvement without notice

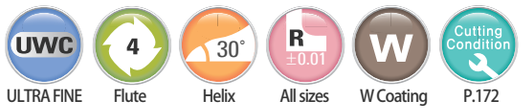
4 FLUTE TAPER NECK CORNER RADIUS





WR544...

- Increasing the hardness of neck by applying Taper neck
- Strengthen the hardness of flute by applying the minute corner R to prevent chipping
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



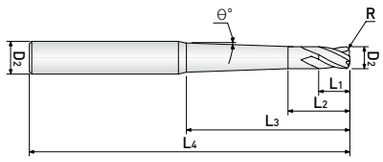
ULTRA FINE | Flute | Helix | All sizes | W Coating | P.172

EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Effective Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WR544 010 01 01 06	1.0	0.10	1°	1.5	2.5	6.0	50	4
WR544 010 01 01 08						8.0		
WR544 010 01 01 10						10.0		
WR544 010 01 01 12						12.0		
WR544 010 01 01 16						16.0		
WR544 010 01 01 20						20.0		
WR544 010 01 01 25						25.0	60	
WR544 010 01 01 30						30.0	70	
WR544 010 01 01 40						40.0	80	
WR544 010 01 01 50						50.0	90	
WR544 010 01 02 06			2°			6.0	50	
WR544 010 01 02 08						8.0		
WR544 010 01 02 10						10.0		
WR544 010 01 02 12						12.0		
WR544 010 01 02 16						16.0		
WR544 010 01 02 20						20.0		
WR544 010 01 02 25						25.0	60	
WR544 010 01 02 30						30.0	70	
WR544 010 01 02 40						40.0	80	
WR544 010 01 02 50						50.0	90	6
WR544 010 02 01 06		0.20	1°			6.0	50	4
WR544 010 02 01 08						8.0		
WR544 010 02 01 10						10.0		
WR544 010 02 01 12						12.0		
WR544 010 02 01 16						16.0		
WR544 010 02 01 20						20.0		
WR544 010 02 01 25						25.0	60	
WR544 010 02 01 30						30.0	70	
WR544 010 02 01 40						40.0	80	
WR544 010 02 01 50						50.0	90	
WR544 010 02 02 06			2°			6.0	50	
WR544 010 02 02 08						8.0		
WR544 010 02 02 10						10.0		
WR544 010 02 02 12						12.0		
WR544 010 02 02 16						16.0		
WR544 010 02 02 20						20.0		
WR544 010 02 02 25						25.0	60	
WR544 010 02 02 30						30.0	70	

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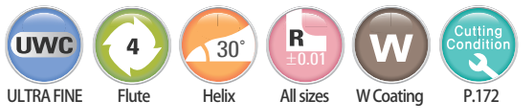
4 FLUTE TAPER NECK CORNER RADIUS





WR544...

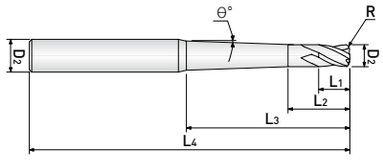
- Increasing the hardness of neck by applying Taper neck
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- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Effective Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WR544 010 02 02 40	1.0	0.20	2°	1.5	2.5	40.0	80	4
WR544 010 02 02 50						50.0	90	6
WR544 012 01 01 08	1.2	0.10	1°	1.8	3.0	8.0	50	4
WR544 012 01 01 12						12.0		
WR544 012 01 01 16						16.0		
WR544 012 01 01 20						20.0		
WR544 012 01 01 25						25.0	60	
WR544 012 01 01 30						30.0	70	
WR544 012 01 02 08			2°			8.0	50	
WR544 012 01 02 12						12.0		
WR544 012 01 02 16						16.0		
WR544 012 01 02 20						20.0		
WR544 012 01 02 25						25.0	60	
WR544 012 01 02 30						30.0	70	
WR544 012 02 01 08		0.20	1°			8.0	50	
WR544 012 02 01 12						12.0		
WR544 012 02 01 16						16.0		
WR544 012 02 01 20						20.0		
WR544 012 02 01 25						25.0	60	
WR544 012 02 01 30						30.0	70	
WR544 012 02 02 08			2°			8.0	50	
WR544 012 02 02 12						12.0		
WR544 012 02 02 16						16.0		
WR544 012 02 02 20						20.0		
WR544 012 02 02 25						25.0	60	
WR544 012 02 02 30						30.0	70	
WR544 015 01 01 08	1.5	0.10	1°	2.3	3.0	8.0	50	4
WR544 015 01 01 10						10.0		
WR544 015 01 01 12						12.0		
WR544 015 01 01 16						16.0		
WR544 015 01 01 20						20.0		
WR544 015 01 01 25						25.0	60	
WR544 015 01 01 30						30.0	70	
WR544 015 01 01 40						40.0	80	
WR544 015 01 01 50						50.0	90	
WR544 015 01 02 08			2°			8.0	50	
WR544 015 01 02 10						10.0		
WR544 015 01 02 12						12.0		

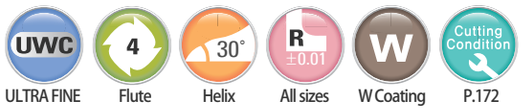
4 FLUTE TAPER NECK CORNER RADIUS





WR544...

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- Strengthen the hardness of flute by applying the minute corner R to prevent chipping
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
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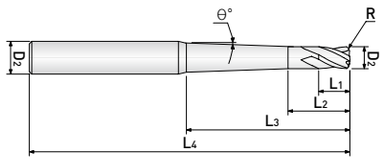
ULTRA FINE | Flute | Helix | All sizes | W Coating | P.172

EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Effective Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WR544 015 01 02 16	1.5	0.10	2°	2.3	3.0	16.0	50	4
WR544 015 01 02 20						20.0		
WR544 015 01 02 25						25.0	60	
WR544 015 01 02 30						30.0	70	
WR544 015 01 02 40						40.0	80	6
WR544 015 01 02 50						50.0	90	
WR544 015 02 01 08		0.20	1°			8.0	50	4
WR544 015 02 01 10						10.0		
WR544 015 02 01 12						12.0		
WR544 015 02 01 16						16.0		
WR544 015 02 01 20						20.0		
WR544 015 02 01 25						25.0	60	
WR544 015 02 01 30						30.0	70	
WR544 015 02 01 40						40.0	80	
WR544 015 02 01 50						50.0	90	
WR544 015 02 02 08			2°			8.0	50	
WR544 015 02 02 10						10.0		
WR544 015 02 02 12						12.0		
WR544 015 02 02 16						16.0		
WR544 015 02 02 20						20.0		
WR544 015 02 02 25						25.0	60	
WR544 015 02 02 30						30.0	70	
WR544 015 02 02 40						40.0	80	6
WR544 015 02 02 50						50.0	90	
WR544 015 03 01 08		0.30	1°			8.0	50	4
WR544 015 03 01 10						10.0		
WR544 015 03 01 12						12.0		
WR544 015 03 01 16						16.0		
WR544 015 03 01 20						20.0		
WR544 015 03 01 25						25.0	60	
WR544 015 03 01 30						30.0	70	
WR544 015 03 01 40						40.0	80	
WR544 015 03 01 50						50.0	90	
WR544 015 03 02 08			2°			8.0	50	
WR544 015 03 02 10						10.0		
WR544 015 03 02 12						12.0		
WR544 015 03 02 16						16.0		
WR544 015 03 02 20						20.0		

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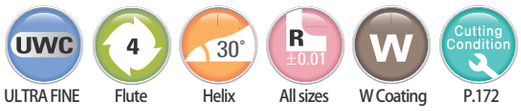
4 FLUTE TAPER NECK CORNER RADIUS





WR544...

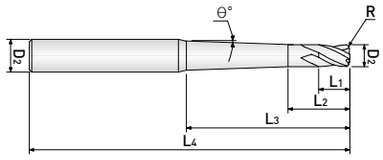
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- Enhanced cutting effect and better wear resistance with the finest raw material
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- Suitable for Mold & die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Effective Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WR544 015 03 02 25	1.5	0.30	2°	2.3	3.0	25.0	60	4
WR544 015 03 02 30						30.0	70	
WR544 015 03 02 40						40.0	80	6
WR544 015 03 02 50						50.0	90	
WR544 020 01 01 10	2.0	0.10	1°	2.0	5.0	10.0	50	4
WR544 020 01 01 12						12.0		
WR544 020 01 01 16						16.0		
WR544 020 01 01 20						20.0		
WR544 020 01 01 25						25.0	60	
WR544 020 01 01 30						30.0	70	
WR544 020 01 01 40						40.0	80	6
WR544 020 01 01 50						50.0	100	
WR544 020 01 01 60						60.0		
WR544 020 01 01 80						80.0	140	
WR544 020 01 02 10			2°			10.0	50	4
WR544 020 01 02 12						12.0		
WR544 020 01 02 16						16.0		
WR544 020 01 02 20						20.0		
WR544 020 01 02 25						25.0	60	
WR544 020 01 02 30						30.0	70	
WR544 020 01 02 40						40.0	80	6
WR544 020 01 02 50						50.0	100	
WR544 020 01 02 60						60.0		
WR544 020 01 02 80						80.0	140	8
WR544 020 02 01 10		0.20	1°			10.0	50	4
WR544 020 02 01 12						12.0		
WR544 020 02 01 16						16.0		
WR544 020 02 01 20						20.0		
WR544 020 02 01 25						25.0	60	
WR544 020 02 01 30						30.0	70	
WR544 020 02 01 40						40.0	80	6
WR544 020 02 01 50						50.0	100	
WR544 020 02 01 60						60.0		
WR544 020 02 01 80						80.0	140	8
WR544 020 02 02 10			2°			10.0	50	4
WR544 020 02 02 12						12.0		
WR544 020 02 02 16						16.0		
WR544 020 02 02 20						20.0		
WR544 020 02 02 25						25.0	60	

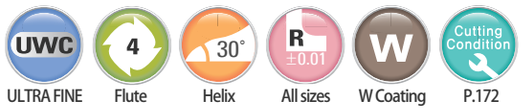
4 FLUTE TAPER NECK CORNER RADIUS





WR544...

- Increasing the hardness of neck by applying Taper neck
- Strengthen the hardness of flute by applying the minute corner R to prevent chipping
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



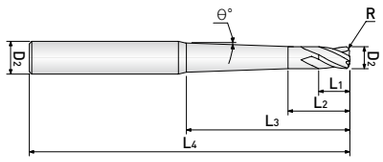
ULTRA FINE | Flute | Helix | All sizes | W Coating | P.172

EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Effective Length	Taper Length	Overall Length	Shank Diameter
EDP No.	D	R	θ	L1	L2	L3	L4	D2
WR544 020 02 02 30	2.0	0.20	2°	2.0	5.0	30.0	70	4
WR544 020 02 02 40						40.0	80	6
WR544 020 02 02 50						50.0	100	
WR544 020 02 02 60						60.0		
WR544 020 02 02 80						80.0	140	8
WR544 020 03 01 10		0.30	1°			10.0	50	4
WR544 020 03 01 12						12.0		
WR544 020 03 01 16						16.0		
WR544 020 03 01 20						20.0		
WR544 020 03 01 25						25.0	60	
WR544 020 03 01 30						30.0	70	
WR544 020 03 01 40						40.0	80	6
WR544 020 03 01 50						50.0	100	
WR544 020 03 01 60						60.0		
WR544 020 03 01 80						80.0	140	
WR544 020 03 02 10			2°			10.0	50	4
WR544 020 03 02 12						12.0		
WR544 020 03 02 16						16.0		
WR544 020 03 02 20						20.0		
WR544 020 03 02 25						25.0	60	
WR544 020 03 02 30						30.0	70	
WR544 020 03 02 40						40.0	80	6
WR544 020 03 02 50						50.0	100	
WR544 020 03 02 60						60.0		
WR544 020 03 02 80						80.0	140	8
WR544 020 05 01 10		0.50	1°			10.0	50	4
WR544 020 05 01 12						12.0		
WR544 020 05 01 16						16.0		
WR544 020 05 01 20						20.0		
WR544 020 05 01 25						25.0	60	
WR544 020 05 01 30						30.0	70	
WR544 020 05 01 40						40.0	80	6
WR544 020 05 01 50						50.0	100	
WR544 020 05 01 60						60.0		
WR544 020 05 01 80						80.0	140	
WR544 020 05 02 10			2°			10.0	50	4
WR544 020 05 02 12						12.0		
WR544 020 05 02 16						16.0		

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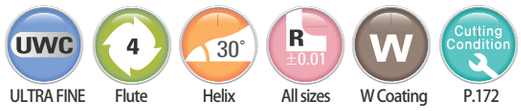
4 FLUTE TAPER NECK CORNER RADIUS





WR544...

- Increasing the hardness of neck by applying Taper neck
- Strengthen the hardness of flute by applying the minute corner R to prevent chipping
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



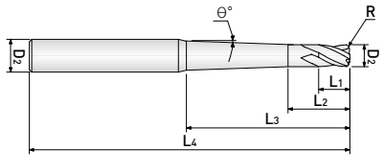
ULTRA FINE | Flute | Helix | All sizes | W Coating | P.172

EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Effective Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WR544 020 05 02 20	2.0	0.50	2°	2.0	5.0	20.0	50	4
WR544 020 05 02 25						25.0	60	
WR544 020 05 02 30						30.0	70	
WR544 020 05 02 40						40.0	80	
WR544 020 05 02 50						50.0	100	
WR544 020 05 02 60						60.0		
WR544 020 05 02 80						80.0	140	
WR544 030 02 01 16	3.0	0.20	1°	4.5	6.0	16.0	60	6 s
WR544 030 02 01 20						20.0	65	
WR544 030 02 01 30						30.0	70	
WR544 030 02 01 40						40.0	80	
WR544 030 02 01 50						50.0	90	
WR544 030 02 01 60						60.0	100	
WR544 030 02 02 16			2°			16.0	60	
WR544 030 02 02 20						20.0	65	
WR544 030 02 02 30						30.0	70	
WR544 030 02 02 40						40.0	80	
WR544 030 02 02 50						50.0	90	8
WR544 030 02 02 60						60.0	100	
WR544 030 02 02 70						70.0	120	
WR544 030 03 01 16		0.30	1°			16.0	60	6
WR544 030 03 01 20						20.0	65	
WR544 030 03 01 30						30.0	70	
WR544 030 03 01 40						40.0	80	
WR544 030 03 01 50						50.0	90	
WR544 030 03 01 60						60.0	100	
WR544 030 03 02 16			2°			16.0	60	6
WR544 030 03 02 20						20.0	65	
WR544 030 03 02 30						30.0	70	
WR544 030 03 02 40						40.0	80	
WR544 030 03 02 50						50.0	90	8
WR544 030 03 02 60						60.0	100	
WR544 030 03 02 70						70.0	120	
WR544 030 05 01 16		0.50	1°			16.0	60	6
WR544 030 05 01 20						20.0	65	
WR544 030 05 01 30						30.0	70	
WR544 030 05 01 40						40.0	80	
WR544 030 05 01 50						50.0	90	

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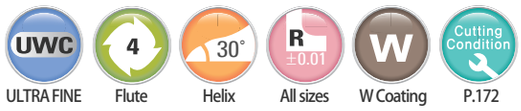
4 FLUTE TAPER NECK CORNER RADIUS





WR544...

- Increasing the hardness of neck by applying Taper neck
- Strengthen the hardness of flute by applying the minute corner R to prevent chipping
- Enhanced cutting effect and better wear resistance with the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Corner R	Taper Angle	Cutting Length	Effective Length	Taper Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	L3	L4	D2
WR544 030 05 01 60	3.0	0.50	1°	4.5	6.0	60.0	100	6
WR544 030 05 02 16			2°			16.0	60	
WR544 030 05 02 20						20.0	65	
WR544 030 05 02 30						30.0	70	
WR544 030 05 02 40						40.0	80	
WR544 030 05 02 50						50.0	90	8
WR544 030 05 02 60						60.0	100	
WR544 030 05 02 70						70.0	120	
WR544 040 02 01 40	4.0	0.20	1°	6.0	8.0	40.0	90	6
WR544 040 02 01 50						50.0	100	
WR544 040 02 01 60						60.0	110	
WR544 040 02 01 70						70.0	120	8
WR544 040 02 02 40			2°			40.0	90	
WR544 040 02 02 50						50.0	100	
WR544 040 02 02 60						60.0	110	
WR544 040 02 02 70						70.0	120	10
WR544 040 03 01 40		0.30	1°			40.0	90	6
WR544 040 03 01 50						50.0	100	
WR544 040 03 01 60						60.0	110	
WR544 040 03 01 70						70.0	120	8
WR544 040 03 02 40			2°			40.0	90	
WR544 040 03 02 50						50.0	100	
WR544 040 03 02 60						60.0	110	
WR544 040 03 02 70						70.0	120	10
WR544 040 05 01 40		0.50	1°			40.0	90	6
WR544 040 05 01 50						50.0	100	
WR544 040 05 01 60						60.0	110	
WR544 040 05 01 70						70.0	120	8
WR544 040 05 02 40			2°			40.0	90	
WR544 040 05 02 50						50.0	100	
WR544 040 05 02 60						60.0	110	
WR544 040 05 02 70						70.0	120	10

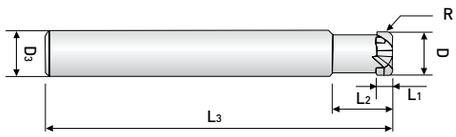
Tolerance

Mill Dia(mm)	Shank
0~-0.012	h6

※ Items can be changed for quality improvement without notice

4 FLUTE HIGH FEED RATE CORNER RADIUS





WSPM4...

- High speed and feed rate lead to enhanced cutting with Low Helix
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

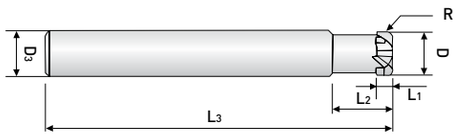


EDP No.	Diameter	Radius	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_2
WSPM4010-01	1.0	0.10	1.0	2.5	50.0	6.0
WSPM4010-02		0.20				
WSPM4010-03		0.30				
WSPM4015-02	1.5	0.20	1.5	4.0	50.0	6.0
WSPM4015-03		0.30				
WSPM4015-05		0.50				
WSPM4020-02	2.0	0.20	2.0	6.0	50.0	6.0
WSPM4020-03		0.30				
WSPM4020-05		0.50				
WSPM4030-02	3.0	0.20	3.0	8.0	50.0	6.0
WSPM4030-03		0.30				
WSPM4030-05		0.50				
WSPM4040-02	4.0	0.20	4	10.0	50	6.0
WSPM4040-03		0.30				
WSPM4040-05		0.50				
WSPM4040-10		1.00				
WSPM4060-02	6.0	0.20	6.0	15.0	60.0	6.0
WSPM4060-03		0.30				
WSPM4060-05		0.50				
WSPM4060-10		1.00				
WSPM4060-20		2.00				
WSPM4060-02L		0.20			90.0	
WSPM4060-03L		0.30				
WSPM4060-05L		0.50				
WSPM4060-10L		1.00				
WSPM4060-20L		2.00				
WSPM4080-02	8.0	0.20	8.0	20.0	70.0	8.0
WSPM4080-03		0.30				
WSPM4080-05		0.50				
WSPM4080-10		1.00				
WSPM4080-20		2.00				
WSPM4080-02L		0.20			100.0	
WSPM4080-03L		0.30				
WSPM4080-05L		0.50				
WSPM4080-10L		1.00				
WSPM4080-20L		2.00				
WSPM4100-02	10.0	0.20	10.0	25.0	75	10.0
WSPM4100-03		0.30				
WSPM4100-05		0.50				

Continued on following page

4 FLUTE HIGH FEED RATE CORNER RADIUS





WSPM4...

- High speed and feed rate lead to enhanced cutting with Low Helix
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



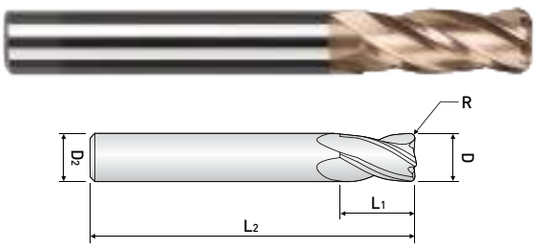
EDP No.	Diameter	Radius	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L1	L2	L3	D2
WSPM4100-10	10.0	1.00	10.0	25.0	75	10.0
WSPM4100-15		1.50				
WSPM4100-20		2.00				
WSPM4100-02L		0.20			100	
WSPM4100-03L		0.30				
WSPM4100-05L		0.50				
WSPM4100-10L		1.00				
WSPM4100-15L		1.50				
WSPM4100-20L		2.00				
WSPM4120-03	12.0	0.30	12.0	12.0	80	12.0
WSPM4120-05		0.50				
WSPM4120-10		1.00				
WSPM4120-15		1.50				
WSPM4120-20		2.00				
WSPM4120-30		3.00				
WSPM4120-03L		0.30			110	
WSPM4120-05L		0.50				
WSPM4120-10L		1.00				
WSPM4120-15L		1.50				
WSPM4120-20L		2.00				
WSPM4120-30L		3.00				
WSPM4160-05	16.0	0.50	16.0	35.0	100	16.0
WSPM4160-10		1.00				
WSPM4160-20		2.00				
WSPM4160-05L		0.50			150	
WSPM4160-10L		1.00				
WSPM4160-20L		2.00				
WSPM4200-05	20.0	0.50	20.0	40.0	100	20.0
WSPM4200-10		1.00				
WSPM4200-20		2.00				
WSPM4200-05L		0.50			150	
WSPM4200-10L		1.00				
WSPM4200-20L		2.00				

Tolerance

Mill Dia(mm)	Shank
0~-0.03	h6

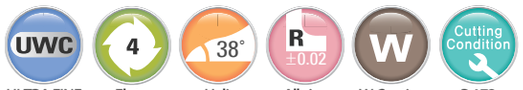
※ Items can be changed for quality improvement without notice

4 FLUTE MULTI PURPOSE CORNER RADIUS



WR504...

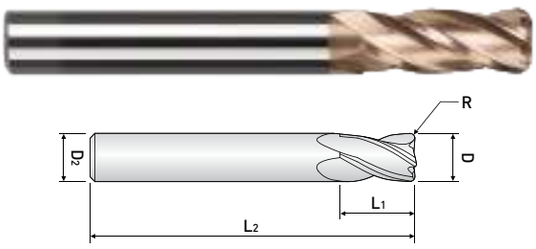
- Excellent surface roughness with a variable index geometry
- Increased tool life with a reduced chatter vibration and resonance by irregular exciting force
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating



EDP No.	Diameter	Radius	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WR504 030 02	3.0	0.20	8.0	60.0	6.0
WR504 030 03		0.30			
WR504 030 05		0.50			
WR504 040 02	4.0	0.20	10.0	70.0	6.0
WR504 040 03		0.30			
WR504 040 05		0.50			
WR504 040 10		1.00			
WR504 050 03 060	5.0	0.30	13.0	60.0	6.0
WR504 050 05 060		0.50			
WR504 050 03		0.30		90.0	
WR504 050 05		0.50			
WR504 060 03 060	6.0	0.30	15	60	6
WR504 060 05 060		0.50			
WR504 060 10 060		1.00			
WR504 060 03		0.30		90	
WR504 060 05		0.50			
WR504 060 10		1.00			
WR504 080 03 070	8.0	0.30	20	70	8
WR504 080 05 070		0.50			
WR504 080 10 070		1.00			
WR504 080 03		0.30		100	
WR504 080 05		0.50			
WR504 080 10		1.00			
WR504 100 03 075	10.0	0.30	25	75	10
WR504 100 05 075		0.50			
WR504 100 10 075		1.00			
WR504 100 03		0.30		100	
WR504 100 05		0.50			
WR504 100 10		1.00			
WR504 120 03 080	12.0	0.30	30	80	12
WR504 120 05 080		0.50			
WR504 120 10 080		1.00			
WR504 120 03		0.30		110	
WR504 120 05		0.50			
WR504 120 10		1.00			

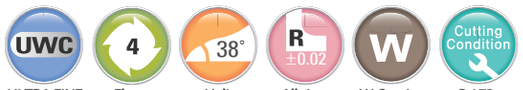
Continued on following page

4 FLUTE MULTI PURPOSE CORNER RADIUS



WR504...

- Excellent surface roughness with a variable index geometry
- Increased tool life with a reduced chatter vibration and resonance by irregular exciting force
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating



EDP No.	Diameter	Radius	Cutting Length	Overall Length	Shank Diameter
	D	R	L1	L2	D2
WR504 160 05 100	16.0	0.50	32.0	100	16.0
WR504 160 10 100		1.00			
WR504 160 15 100		1.50			
WR504 160 20 100		2.00			
WR504 160 05		0.50		150	
WR504 160 10		1.00			
WR504 160 15		1.50			
WR504 160 20		2.00			
WR504 200 05 100	20.0	0.50	38.0	100	20.0
WR504 200 10 100		1.00			
WR504 200 15 100		1.50			
WR504 200 20 100		2.00			
WR504 200 05		0.50		150	
WR504 200 10		1.00			
WR504 200 15		1.50			
WR504 200 20		2.00			

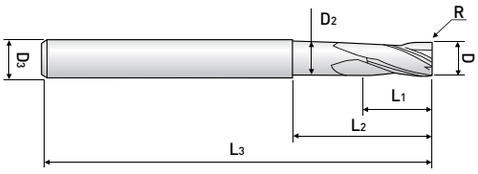
Tolerance

Mill Dia(mm)	Shank
0~-0.03	h6

※ Items can be changed for quality improvement without notice

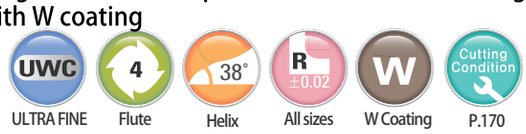
4 FLUTE MULTI PURPOSE LONG NECK CORNER RADIUS





WR514...

- Excellent surface roughness with a variable index geometry
- Increased tool life with a reduced chatter vibration and resonance by irregular exciting force
- Excellent effect in preventing breakage with a shape of neck without notch
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating



EDP No.	Diameter	Radius	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	L_3	D_2
WR514 060 05	6.0	0.50	10.0	30.0	90.0	6.0
WR514 060 10		1.00				
WR514 080 05	8.0	0.50	12.0	35.0	100.0	8.0
WR514 080 10		1.00				
WR514 100 05	10.0	0.50	15.0	40.0	100.0	10.0
WR514 100 10		1.00				
WR514 120 05	12.0	0.50	20.0	45.0	110.0	12.0
WR514 120 10		1.00				

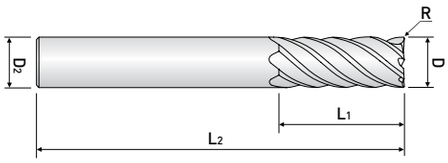
Tolerance

Mill Dia(mm)	Shank
0~-0.03	h6

※ Items can be changed for quality improvement without notice

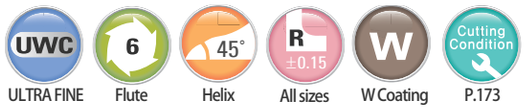
6 FLUTE 45° CORNER RADIUS





WR506...

- Dramatically reduce cutting load by 6 flute with high helix
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



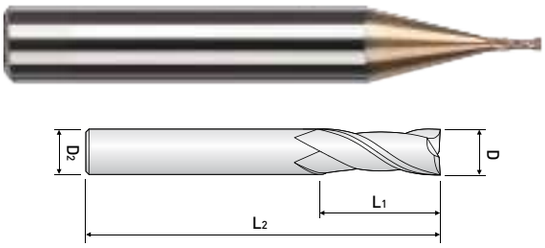
EDP No.	Diameter	Corner R	Cutting Length	Overall Length	Shank Diameter
	D	R	L_1	L_2	D_2
WR506 060 03	6.0	0.30	15.0	90.0	6.0
WR506 060 05		0.50			
WR506 060 10		1.00			
WR506 080 03	8.0	0.30	20.0	100.0	8.0
WR506 080 05		0.50			
WR506 080 10		1.00			
WR506 100 03	10.0	0.30	25.0	100.0	10.0
WR506 100 05		0.50			
WR506 100 10		1.00			
WR506 120 03	12.0	0.30	30.0	110.0	12.0
WR506 120 05		0.50			
WR506 120 10		1.00			
WR506 160 05	16.0	0.50	32.0	150.0	16.0
WR506 160 10		1.00			
WR506 160 15		1.50			
WR506 160 20		2.00			
WR506 200 05	20.0	0.50	38.0	150.0	20.0
WR506 200 10		1.00			
WR506 200 15		1.50			
WR506 200 20		2.00			

Tolerance

Mill Dia(mm)	Shank
0~-0.03	h6

※ Items can be changed for quality improvement without notice

2 FLUTE MINIATURE & SQUARE



WME502...

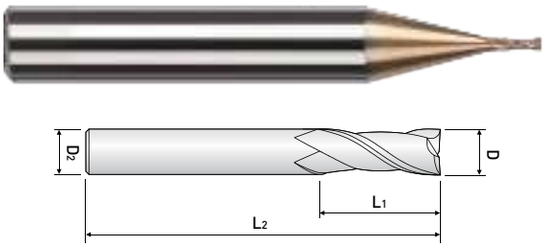
- From 0.03 mm size made by a state-of-the-art machine
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WME502 0003	0.03	0.04	40	4
WME502 0004	0.04	0.06	40	4
WME502 0005	0.05	0.07	40	4
WME502 0006	0.06	0.09	40	4
WME502 0007	0.07	0.10	40	4
WME502 0008	0.08	0.12	40	4
WME502 0009	0.09	0.13	40	4
WME502 001	0.10	0.20	40	4
WME502 0015	0.15	0.30	40	4
WME502 002	0.20	0.40	40	4
WME502 0025	0.25	0.50	40	4
WME502 003	0.30	0.60	40	4
WME502 0035	0.35	0.70	40	4
WME502 004	0.40	0.80	40	4
WME502 0045	0.45	0.90	40	4
WME502 005	0.50	1.00	40	4
WME502 0055	0.55	1.10	40	4
WME502 006	0.60	1.20	40	4
WME502 0065	0.65	1.30	40	4
WME502 007	0.70	1.40	40	4
WME502 0075	0.75	1.50	40	4
WME502 008	0.80	1.60	40	4
WME502 0085	0.85	1.70	40	4
WME502 009	0.90	1.80	40	4
WME502 0095	0.95	2.00	40	4
WME502 010	1.00	2.50	50	6
WME502 012	1.20	3.00	50	6
WME502 015	1.50	4.00	50	6
WME502 020	2.00	6.00	50	6
WME502 025	2.50	7.00	50	6
WME502 030	3.00	8.00	50	6
WME502 035	3.50	10.00	50	6
WME502 040	4.00	10.00	50	6
WME502 045	4.50	14.00	50	6
WME502 050	5.00	15.00	60	6
WME502 055	5.50	15.00	60	6
WME502 060	6.00	15.00	60	6

Continued on following page

2 FLUTE MINIATURE & SQUARE



WME502...

- From 0.03 mm size made by a state-of-the-art machine
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



ULTRA FINE | Flute | Helix | W Coating | P.174

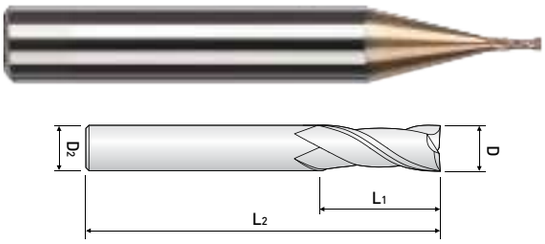
EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WME502 065	6.50	18.00	60	8
WME502 070	7.00	20.00	60	8
WME502 075	7.50	20.00	60	8
WME502 080	8.00	20.00	70	8
WME502 085	8.50	22.00	70	10
WME502 090	9.00	22.00	70	10
WME502 095	9.50	24.00	70	10
WME502 100	10.00	25.00	75	10
WME502 105	10.50	26.00	75	12
WME502 110	11.00	30.00	75	12
WME502 115	11.50	30.00	80	12
WME502 120	12.00	30.00	80	12
WME502 130	13.00	35.00	100	12
WME502 140 S12	14.00	35.00	100	12
WME502 140				14
WME502 140 S16				16
WME502 150	15.00	38.00	100	16
WME502 160	16.00	40.00	100	16
WME502 170	17.00	42.00	100	16
WME502 180 S16	18.00	45.00	100	16
WME502 180				18
WME502 190	19.00	45.00	100	20
WME502 200	20.00	45.00	100	20
WME502 210	21.00	45.00	100	20
WME502 220	22.00	45.00	100	20
WME502 230	23.00	50.00	120	25
WME502 240	24.00	50.00	120	25
WME502 250	25.00	50.00	120	25

Tolerance

Mill Dia(mm)		Shank
Diameter	Tolerance	
Upto 6	0~-0.012	h6
Over 6	0~-0.015	

※ Items can be changed for quality improvement without notice

2 FLUTE WITH SHANK 4 BY 0.1 mm



WE502...S4

- A variety of diameter sizes by every 0.1 mm with Shank 4
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



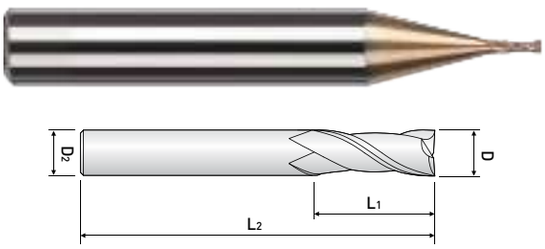
EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WE502 010 S4	1.0	2.5	50	4
WE502 011 S4	1.1	3.0	50	4
WE502 012 S4	1.2	3.0	50	4
WE502 013 S4	1.3	3.0	50	4
WE502 014 S4	1.4	4.0	50	4
WE502 015 S4	1.5	4.0	50	4
WE502 016 S4	1.6	4.0	50	4
WE502 017 S4	1.7	4.0	50	4
WE502 018 S4	1.8	5.0	50	4
WE502 019 S4	1.9	5.0	50	4
WE502 020 S4	2.0	6.0	50	4
WE502 021 S4	2.1	6.0	50	4
WE502 022 S4	2.2	6.0	50	4
WE502 023 S4	2.3	6.0	50	4
WE502 024 S4	2.4	6.0	50	4
WE502 025 S4	2.5	8.0	50	4
WE502 026 S4	2.6	8.0	50	4
WE502 027 S4	2.7	8.0	50	4
WE502 028 S4	2.8	8.0	50	4
WE502 029 S4	2.9	8.0	50	4
WE502 030 S4	3.0	8.0	50	4
WE502 035 S4	3.5	10.0	50	4
WE502 040 S4	4.0	10.0	50	4
WE502 040 080 S4			80	

Tolerance

Mill Dia(mm)	Shank
0~-0.012	h6

※ Items can be changed for quality improvement without notice

2 FLUTE ENDMILL WITH SHANK 3



WE502...S3

- Excellent effect in preventing breakage with a shape of neck without notch
- A variety of diameter sizes with Shank 3
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating

UWC ULTRA FINE | 2 Flute | 30° Helix | W W Coating | Cutting Condition P.174

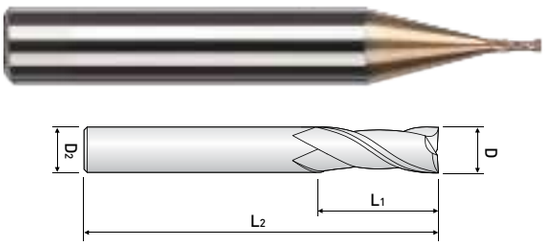
EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WE502 001 S3	0.1	0.2	40	3
WE502 002 S3	0.2	0.4	40	3
WE502 003 S3	0.3	0.6	40	3
WE502 004 S3	0.4	0.8	40	3
WE502 005 S3	0.5	1.0	40	3
WE502 006 S3	0.6	1.2	40	3
WE502 007 S3	0.7	1.4	40	3
WE502 008 S3	0.8	1.6	40	3
WE502 009 S3	0.9	1.8	40	3
WE502 010 S3	1.0	2.5	50	3
WE502 012 S3	1.2	3.0	50	3
WE502 015 S3	1.5	4.0	50	3
WE502 020 S3	2.0	6.0	50	3
WE502 025 S3	2.5	7.0	50	3
WE502 030 S3	3.0	8.0	50	3

Tolerance

Mill Dia(mm)	Shank
0~-0.012	h6

※ Items can be changed for quality improvement without notice

2 FLUTE FOR POWERFUL CUTTING



WE502...

- Designed Gash touch shape to prevent flute chipping
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

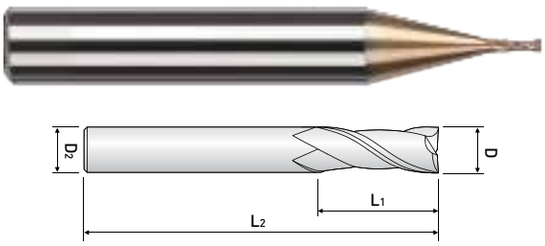
UWC ULTRA FINE | 2 Flute | 30° Helix | W W Coating | Cutting Condition P.174

(SHORT LENGTH + REGULAR LENGTH + LONG SHANK)

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WE502 001 001	0.1	0.1	40	4
WE502 001		0.2		
WE502 001 003		0.3		
WE502 002 002	0.2	0.2	40	4
WE502 002		0.4		
WE502 002 006		0.6		
WE502 003 003	0.3	0.3	40	4
WE502 003		0.6		
WE502 003 009		0.9		
WE502 004 004	0.4	0.4	40	4
WE502 004		0.8		
WE502 004 012		1.2		
WE502 005 005	0.5	0.5	40	4
WE502 005		1.0		
WE502 005 015		1.5		
WE502 006 006	0.6	0.6	40	4
WE502 006		1.2		
WE502 006 018		1.8		
WE502 007 007	0.7	0.7	40	4
WE502 007		1.4		
WE502 007 021		2.1		
WE502 008 008	0.8	0.8	40	4
WE502 008		1.6		
WE502 008 024		2.4		
WE502 009 009	0.9	0.9	40	4
WE502 009		1.8		
WE502 009 027		2.7		
WE502 010 01	1.0	1.0	40	6
WE502 010 02		2.0		
WE502 010		2.5	50	
WE502 010 03		3.0		
WE502 010 04		4.0		
WE502 010 06		6.0		
WE502 012 02	1.2	2.0	40	6
WE502 012		3.0	50	
WE502 012 04		4.0		
WE502 012 06		6.0		

Continued on following page

2 FLUTE FOR POWERFUL CUTTING



WE502...

- Designed Gash touch shape to prevent flute chipping
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- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

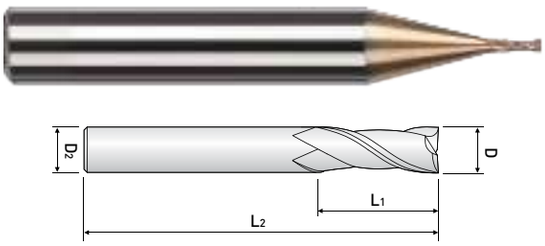


ULTRA FINE | Flute | Helix | W Coating | P.174

(SHORT LENGTH + REGULAR LENGTH + LONG SHANK)

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WE502 015 015	1.5	1.5	40	6
WE502 015 03		3.0		
WE502 015		4.0	50	
WE502 015 06		6.0		
WE502 015 08		8.0		
WE502 015 10		10.0		
WE502 020 02	2.0	2.0	40	6
WE502 020 04		4.0		
WE502 020		6.0	50	
WE502 020 08		8.0		
WE502 020 10		10.0		
WE502 020 12		12.0		
WE502 025 025	2.5	2.5	40	6
WE502 025 05		5.0		
WE502 025		7.0	50	
WE502 025 10		10.0		
WE502 025 12		12.0		
WE502 030 03	3.0	3.0	40	6
WE502 030 06		6.0		
WE502 030		8.0	50	
WE502 030 10		10.0		
WE502 030 12		12.0		
WE502 030 14		14.0		
WE502 040 04	4.0	4.0	40	6
WE502 040 08		8.0		
WE502 040		10.0	50	
WE502 040 12		12.0		
WE502 040 14		14.0		
WE502 040 16		16.0		
WE502 050 05	5.0	5.0	50	6
WE502 050 10		10.0		
WE502 050		15.0	60	
WE502 050 20		20.0		
WE502 050 25		25.0		

2 FLUTE FOR POWERFUL CUTTING



WE502...

- Designed Gash touch shape to prevent flute chipping
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



ULTRA FINE | Flute | Helix | W Coating | P.174

(SHORT LENGTH + REGULAR LENGTH + LONG SHANK)

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WE502 060 06	6.0	6.0	50	6
WE502 060 12		12.0		
WE502 060		15.0	60	
WE502 060 20		20.0		
WE502 060 25		25.0		
WE502 080 16	8.0	16.0	60	8
WE502 080		20.0	70	
WE502 080 25		25.0		
WE502 080 30		30.0		
WE502 100 22	10.0	22.0	65	10
WE502 100		25.0	75	
WE502 100 30		30.0		
WE502 100 35		35.0		
WE502 120 26	12.0	26.0	70	12
WE502 120		30.0	80	
WE502 120 35		35.0		
WE502 120 40		40.0		
WE502 140	14.0	35.0	100	16
WE502 160	16.0	32.0	100	16
WE502 160 40		40.0		
WE502 180	18.0	45.0	100	20
WE502 200	20.0	45.0	100	20

Tolerance

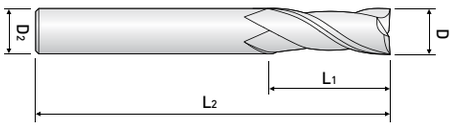
Mill Dia(mm)		Shank
Diameter	Tolerance	
Upto 6	0~-0.012	h6
Over 6	0~-0.015	

※ Items can be changed for quality improvement without notice

Continued from previous page

2 FLUTE LONG





WE522...

- 2 Flute long type with a variety of flute length sizes
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



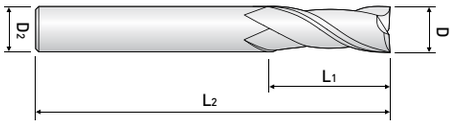
ULTRA FINE | Flute | Helix | W Coating | P.174

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WE522 010 03	1.0	3.0	60	6
WE522 010 04		4.0		
WE522 010 05		5.0		
WE522 010 06		6.0		
WE522 010 07		7.0		
WE522 010 08		8.0		
WE522 010 10		10.0		
WE522 010 12		12.0		
WE522 012 04	1.2	4.0	60	6
WE522 012 06		6.0		
WE522 012 08		8.0		
WE522 012 10		10.0		
WE522 012 12		12.0		
WE522 015 06	1.5	6.0	60	6
WE522 015 08		8.0		
WE522 015 10		10.0		
WE522 015 12		12.0		
WE522 015 14		14.0		
WE522 015 16		16.0		
WE522 020 08	2.0	8.0	60	6
WE522 020 10		10.0		
WE522 020 12		12.0		
WE522 020 14		14.0		
WE522 020 16		16.0		
WE522 025 10	2.5	10.0	60	6
WE522 025 12		12.0		
WE522 025 16		16.0		
WE522 025 20		20.0		
WE522 025 26		26.0		
WE522 030 16 S3	3.0	16.0	100	3
WE522 030 10		10.0	70	6
WE522 030 12		12.0		
WE522 030 14		14.0		
WE522 030 16		16.0		
WE522 030 20		20.0		
WE522 030 26		26.0		
WE522 030 30		30.0		

Continued on following page

2 FLUTE LONG





WE522...

- 2 Flute long type with a variety of flute length sizes
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

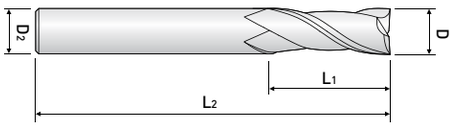


ULTRA FINE | Flute | Helix | W Coating | P.174

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WE522 040 20 S4	4.0	20.0	100	4
WE522 040 12		12.0	70	6
WE522 040 16		16.0		
WE522 040 20		20.0		
WE522 040 26		26.0		
WE522 040 30		30.0		
WE522 050 20	5.0	20.0	70	6
WE522 050 25		25.0	70	
WE522 050 25 100			100	
WE522 050 30		30.0	80	
WE522 050 35		35.0	90	
WE522 050 40		40.0	100	
WE522 060 15	6.0	15.0	60	6
WE522 060 15 080			80	
WE522 060 20		20.0	70	
WE522 060 20 090			90	
WE522 060 25		25.0	75	
WE522 060 30		30.0	80	
WE522 060 30 100			100	
WE522 060 30 150			150	
WE522 060 35		35.0	90	
WE522 060 40		40.0	90	
WE522 060 40 120			120	
WE522 060 45		45.0	150	
WE522 080 25	8.0	25.0	80	8
WE522 080 30		30.0	80	
WE522 080 30 100			100	
WE522 080 35		35.0	90	
WE522 080 40		40.0	90	
WE522 080 40 120			120	
WE522 080 40 150			150	
WE522 080 45		45.0	100	
WE522 080 50		50.0	100	
WE522 080 50 150			150	
WE522 100 30	10.0	30.0	80	10
WE522 100 30 100			100	
WE522 100 35		35.0	90	

2 FLUTE LONG





WE522...

- 2 Flute long type with a variety of flute length sizes
- Enhanced cutting effect and better wear resistance made from the finest raw material
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- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



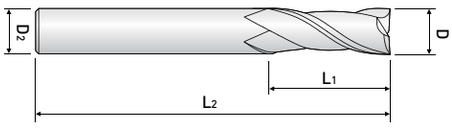
ULTRA FINE | Flute | Helix | W Coating | P.174

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WE522 100 40	10.0	40.0	90	10
WE522 100 40 120			120	
WE522 100 45		45.0	100	
WE522 100 50		50.0	100	
WE522 100 50 150			150	
WE522 100 50 200			200	
WE522 100 55		55.0	150	
WE522 100 60		60.0	110	
WE522 100 60 200			200	
WE522 120 35	12.0	35.0	90	12
WE522 120 40		40.0	100	
WE522 120 40 120			120	
WE522 120 45		45.0	130	
WE522 120 50		50.0	100	
WE522 120 50 150			150	
WE522 120 55		55.0	110	
WE522 120 60		60.0	110	
WE522 120 60 150			150	
WE522 120 60 200			200	
WE522 120 65		65.0	150	
WE522 120 70		70.0	120	
WE522 120 70 200			200	
WE522 140 50	14.0	50.0	110	16
WE522 140 60		60.0	150	
WE522 160 40	16.0	40.0	150	16
WE522 160 50		50.0	110	
WE522 160 50 150			150	
WE522 160 60		60.0	120	
WE522 160 70		70.0	130	
WE522 160 70 150			150	
WE522 160 70 200			200	
WE522 160 80		80.0	150	
WE522 160 90		90.0	150	
WE522 160 110		110.0	200	
WE522 160 120		120.0	250	

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2 FLUTE LONG





WE522...

- 2 Flute long type with a variety of flute length sizes
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



ULTRA FINE | Flute | Helix | W Coating | P.174

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L1	L2	D2
WE522 180 50	18.0	50.0	120	20
WE522 180 70		70.0	130	
WE522 180 100		100.0	200	
WE522 200 50	20.0	50.0	110	20
WE522 200 50 150			150	
WE522 200 60		60.0	130	
WE522 200 70		70.0	130	
WE522 200 80		80.0	150	
WE522 200 90		90.0	150	
WE522 200 90 200			200	
WE522 200 110		110.0	200	
WE522 200 120		120.0	250	
WE522 220 75	22.0	75.0	150	20
WE522 220 110		110.0	200	
WE522 250 70	25.0	70.0	150	25
WE522 250 90		90.0	150	
WE522 250 110		110.0	200	
WE522 250 120		120.0	250	

Tolerance

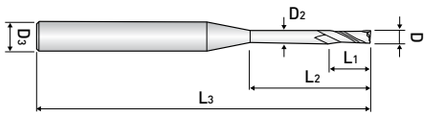
Mill Dia(mm)		Shank
Diameter	Tolerance	
Upto 6	0~-0.012	h6
Over 6	0~-0.015	

※ Items can be changed for quality improvement without notice

Continued from previous page

2 FLUTE LONG NECK





WE512...

- Double neck below 1Ø lead to strengthened hardness and machining RIB with a various effective length
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

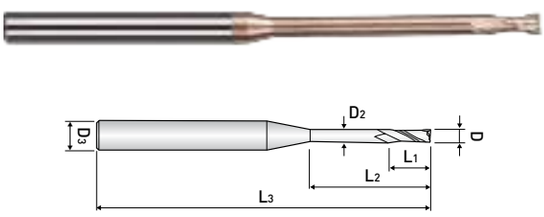


ULTRA FINE | Flute | Helix | W Coating | P.175

EDP No.	Diameter	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	L_1	L_2	L_3	D_2
WE512 001 003	0.1	0.15	0.3	40	4
WE512 001 005			0.5		
WE512 001 01			1.0		
WE512 002 005	0.2	0.3	0.5	40	4
WE512 002 01			1.0		
WE512 002 015			1.5		
WE512 002 02			2.0		
WE512 003 01	0.3	0.5	1.0	40	4
WE512 003 015			1.5		
WE512 003 02			2.0		
WE512 003 025			2.5		
WE512 003 03			3.0		
WE512 003 04			4.0		
WE512 003 05			5.0		
WE512 004 01	0.4	0.6	1.0	40	4
WE512 004 015			1.5		
WE512 004 02			2.0		
WE512 004 025			2.5		
WE512 004 03			3.0		
WE512 004 04			4.0		
WE512 004 05			5.0		
WE512 004 06			6.0		
WE512 004 08			8.0		
WE512 004 10			10.0		
WE512 005 01	0.5	0.7	1.0	45	4
WE512 005 015			1.5		
WE512 005 02			2.0		
WE512 005 025			2.5		
WE512 005 03			3.0		
WE512 005 04			4.0		
WE512 005 05			5.0		
WE512 005 06			6.0		
WE512 005 08			8.0		
WE512 005 10			10.0		

Continued on following page

2 FLUTE LONG NECK



WE512...

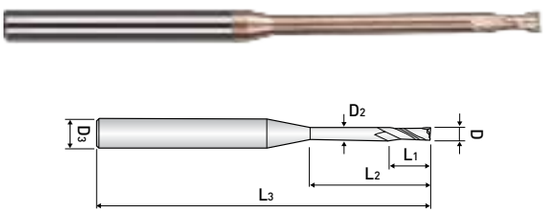
- Double neck below 1Ø lead to strengthened hardness and machining RIB with a various effective length
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



ULTRA FINE | Flute | Helix | W Coating | P.175

EDP No.	Diameter	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	L_1	L_2	L_3	D_2
WE512 005 12	0.5	0.7	12.0	45	4
WE512 005 14			14.0		
WE512 005 16			16.0		
WE512 006 02	0.6	0.9	2.0	45	4
WE512 006 03			3.0		
WE512 006 04			4.0		
WE512 006 05			5.0		
WE512 006 06			6.0		
WE512 006 08			8.0		
WE512 006 10			10.0		
WE512 006 12			12.0		
WE512 006 14			14.0		
WE512 006 16			16.0		
WE512 007 02	0.7	1.2	2.0	45	4
WE512 007 04			4.0		
WE512 007 06			6.0		
WE512 007 08			8.0		
WE512 007 10			10.0		
WE512 007 12			12.0		
WE512 008 02	0.8	1.2	2.0	45	4
WE512 008 03			3.0		
WE512 008 04			4.0		
WE512 008 05			5.0		
WE512 008 06			6.0		
WE512 008 08			8.0		
WE512 008 10			10.0		
WE512 008 12			12.0		
WE512 008 14			14.0		
WE512 008 16			16.0		
WE512 008 20			20.0		
WE512 009 06	0.9	1.3	6.0	45	4
WE512 009 08			8.0		
WE512 009 10			10.0		

2 FLUTE LONG NECK



WE512...

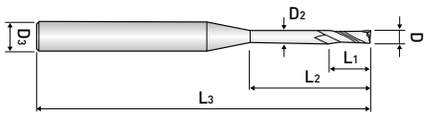
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- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

UWC ULTRA FINE | 2 Flute | 30° Helix | W W Coating | Cutting Condition P.175

EDP No.	Diameter	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	L_1	L_2	L_3	D_2
WE512 010 02	1.0	1.5	2.0	50	4
WE512 010 03			3.0		
WE512 010 04			4.0		
WE512 010 05			5.0		
WE512 010 06			6.0		
WE512 010 07			7.0		
WE512 010 08			8.0		
WE512 010 10			10.0		
WE512 010 12	1.0	1.5	12.0	50	4
WE512 010 14			14.0		
WE512 010 16			16.0		
WE512 010 18			18.0		
WE512 010 20			20.0		
WE512 010 22			22.0	60	
WE512 010 26			26.0		
WE512 010 30			30.0	40	
WE512 010 40			40.0	80	
WE512 010 50			50.0	100	
WE512 012 04	1.2	1.8	4.0	50	4
WE512 012 06			6.0		
WE512 012 08			8.0		
WE512 012 10			10.0		
WE512 012 12			12.0		
WE512 012 14			14.0		
WE512 012 16			16.0		
WE512 012 20			20.0		
WE512 012 26			26.0	60	
WE512 012 30			30.0	70	
WE512 014 06	1.4	2.1	6.0	50	4
WE512 014 08			8.0		
WE512 014 10			10.0		
WE512 014 14			14.0		
WE512 014 16			16.0		
WE512 014 20			20.0		

2 FLUTE LONG NECK





WE512...

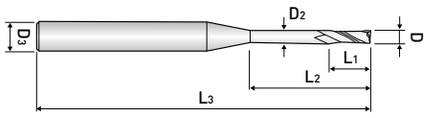
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- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	L_1	L_2	L_3	D_2
WE512 015 04	1.5	2.3	4.0	50	4
WE512 015 05			5.0		
WE512 015 06			6.0		
WE512 015 07			7.0		
WE512 015 08			8.0		
WE512 015 10			10.0		
WE512 015 12			12.0		
WE512 015 14			14.0		
WE512 015 16			16.0		
WE512 015 18			18.0		
WE512 015 20			20.0		
WE512 015 22			22.0	60	
WE512 015 26			26.0		
WE512 015 30			30.0	70	
WE512 016 08	1.6	2.3	8.0	50	4
WE512 016 10			10.0		
WE512 016 12			12.0		
WE512 016 16			16.0		
WE512 016 20			20.0		
WE512 018 08	1.8	2.7	8.0	50	4
WE512 018 10			10.0		
WE512 018 12			12.0		
WE512 018 16			16.0		
WE512 018 20			20.0		
WE512 020 06	2.0	3.0	6.0	50	4
WE512 020 08			8.0		
WE512 020 10			10.0		
WE512 020 12			12.0		
WE512 020 14			14.0		
WE512 020 16			16.0		
WE512 020 18			18.0		
WE512 020 20			20.0		

2 FLUTE LONG NECK





WE512...

- Double neck below 1Ø lead to strengthened hardness and machining RIB with a various effective length
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

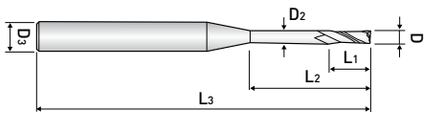


ULTRA FINE | Flute | Helix | W Coating | P.175

EDP No.	Diameter	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	L_1	L_2	L_3	D_2
WE512 020 22	2.0	3.0	22.0	60	4
WE512 020 26			26.0		
WE512 020 30			30.0	70	
WE512 020 35			35.0		
WE512 020 40			40.0	80	
WE512 020 45			45.0	90	
WE512 020 50			50.0	100	
WE512 020 60			60.0	110	
WE512 025 08	2.5	4.0	8.0	50	4
WE512 025 10			10.0		
WE512 025 12			12.0		
WE512 025 14			14.0		
WE512 025 16			16.0		
WE512 025 18			18.0		
WE512 025 20			20.0		
WE512 025 22			22.0	60	
WE512 025 26			26.0		
WE512 025 30			30.0	70	
WE512 025 35			35.0		
WE512 025 40			40.0	80	
WE512 025 45			45.0	90	
WE512 025 50			50.0	100	
WE512 030 06	3.0	4.5	6.0	50	6
WE512 030 08			8.0		
WE512 030 10			10.0		
WE512 030 12			12.0		
WE512 030 14			14.0	60	
WE512 030 16			16.0		
WE512 030 18			18.0		
WE512 030 20			20.0		

2 FLUTE LONG NECK





WE512...

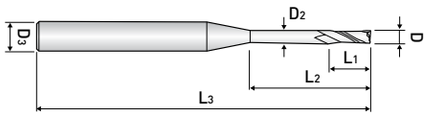
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- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	L_1	L_2	L_3	D_2
WE512 030 22	3.0	4.5	22.0	65	6
WE512 030 26			26.0		
WE512 030 30			30.0	70	
WE512 030 35			35.0		
WE512 030 40			40.0	80	
WE512 030 45			45.0	90	
WE512 030 50			50.0	100	
WE512 030 60			60.0		
WE512 040 08	4.0	6.0	8.0	50	6
WE512 040 10			10.0		
WE512 040 12			12.0		
WE512 040 14			14.0	60	
WE512 040 16			16.0		
WE512 040 18			18.0		
WE512 040 20			20.0		
WE512 040 22			22.0	65	
WE512 040 26			26.0		
WE512 040 30			30.0	70	
WE512 040 35			35.0		
WE512 040 40			40.0	80	
WE512 040 45			45.0	90	
WE512 040 50			50.0	100	
WE512 040 60			60.0		
WE512 050 16	5.0	8.0	16.0	60	6
WE512 050 20			20.0		
WE512 050 26			26.0	65	
WE512 050 30			30.0	70	
WE512 050 35			35.0	75	
WE512 050 40			40.0	80	
WE512 050 50			50.0	90	
WE512 050 60			60.0	100	

2 FLUTE LONG NECK





WE512...

- Double neck below 1Ø lead to strengthened hardness and machining RIB with a various effective length
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



ULTRA FINE | Flute | Helix | W Coating | P.175

EDP No.	Diameter	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	L_1	L_2	L_3	D_2
WE512 060 15	6.0	9.0	15.0	60	6
WE512 060 20			20.0		
WE512 060 30			30.0	70	
WE512 060 32			32.0	90	
WE512 080 25	8.0	12.0	25.0	70	8
WE512 080 30			30.0	80	
WE512 080 42			42.0	100	
WE512 100 30	10.0	15.0	30.0	75	10
WE512 100 35			35.0	80	
WE512 100 45			45.0	100	
WE512 120 35	12.0	20.0	35.0	80	12
WE512 120 40			40.0	90	
WE512 120 50			50.0	110	

Tolerance

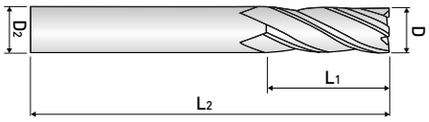
Mill Dia(mm)		Shank
Diameter	Tolerance	
Upto 6	0~-0.012	h6
Over 6	0~-0.015	

※ Items can be changed for quality improvement without notice

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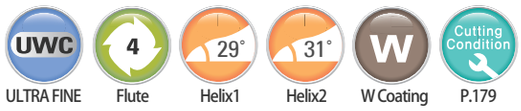
VARIABLE INDEX 4 FLUTE SQUARE





WME504...

- Excellent surface roughness with a variable index geometry for more than 3Ø
- Increased tool life with a reduced chatter vibration and resonance by irregular exciting force
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating



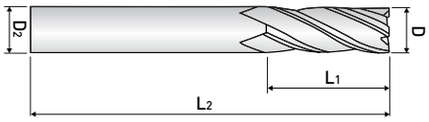
ULTRA FINE | Flute | Helix1 | Helix2 | W Coating | P.179

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WME504 008	0.8	1.6	40	4
WME504 009	0.9	1.8	40	4
WME504 010	1.0	2.5	50	6
WME504 012	1.2	3.0	50	6
WME504 015	1.5	4.0	50	6
WME504 020	2.0	6.0	50	6
WME504 025	2.5	7.0	50	6
WME504 030	3.0	8.0	50	6
WME504 035	3.5	10.0	50	6
WME504 040	4.0	10.0	50	6
WME504 045	4.5	14.0	50	6
WME504 050	5.0	15.0	60	6
WME504 055	5.5	15.0	60	6
WME504 060	6.0	15.0	60	6
WME504 065	6.5	18.0	60	8
WME504 070	7.0	20.0	60	8
WME504 075	7.5	20.0	60	8
WME504 080	8.0	20.0	70	8
WME504 085	8.5	22.0	70	10
WME504 090	9.0	22.0	70	10
WME504 095	9.5	24.0	70	10
WME504 100	10.0	25.0	75	10
WME504 105	10.5	26.0	75	12
WME504 110	11.0	30.0	75	12
WME504 115	11.5	30.0	80	12
WME504 120	12.0	30.0	80	12
WME504 130	13.0	35.0	100	12
WME504 140 S12	14.0	35.0	100	12
WME504 140 S14				14
WME504 140				16
WME504 150	15.0	38.0	100	16
WME504 160	16.0	40.0	100	16
WME504 170	17.0	42.0	100	16
WME504 180 S16	18.0	45.0	100	16
WME504 180				18
WME504 190	19.0	45.0	100	20
WME504 200	20.0	45.0	100	20
WME504 210	21.0	45.0	100	20

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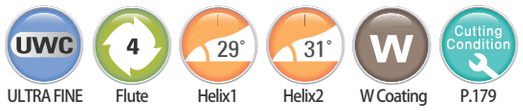
VARIABLE INDEX 4 FLUTE SQUARE





WME504...

- Excellent surface roughness with a variable index geometry for more than 3Ø
- Increased tool life with a reduced chatter vibration and resonance by irregular exciting force
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating



ULTRA FINE | Flute | Helix1 | Helix2 | W Coating | P.179

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WME504 220	22.0	45.0	100	20
WME504 230	23.0	50.0	120	25
WME504 240	24.0	50.0	120	25
WME504 250	25.0	50.0	120	25

Tolerance

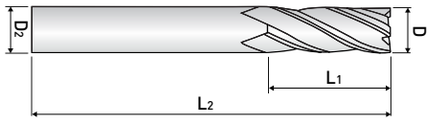
Mill Dia(mm)	Shank
0~-0.03	h6

※ Items can be changed for quality improvement without notice

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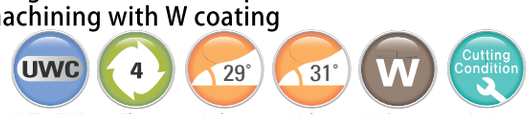
VARIABLE INDEX 4 FLUTE FOR POWERFUL CUTTING





WXE504...

- Excellent surface roughness with a variable index geometry for more than 3Ø
- Increased tool life with a reduced chatter vibration and resonance by irregular exciting force
- Gash touch shape applied to prevent flute chipping
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating



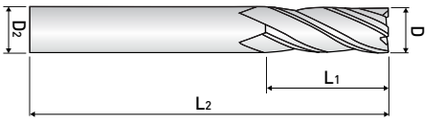
ULTRA FINE | Flute | Helix1 | Helix2 | W Coating | P.179

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L1	L2	D2
WXE504 010 01	1.0	1.0	40	6
WXE504 010 02		2.0		
WXE504 010		2.5	50	
WXE504 010 03		3.0		
WXE504 010 04		4.0		
WXE504 010 06		6.0		
WXE504 012 02	1.2	2.0	40	6
WXE504 012		3.0	50	
WXE504 012 04		4.0		
WXE504 012 06		6.0		
WXE504 015 015	1.5	1.5	40	6
WXE504 015 03		3.0		
WXE504 015		4.0	50	
WXE504 015 06		6.0		
WXE504 015 08		8.0		
WXE504 015 10		10.0		
WXE504 020 02	2.0	2.0	40	6
WXE504 020 04		4.0		
WXE504 020		6.0	50	
WXE504 020 08		8.0		
WXE504 020 10		10.0		
WXE504 020 12		12.0		
WXE504 025 025	2.5	2.5	40	6
WXE504 025 05		5.0		
WXE504 025		7.0	50	
WXE504 025 10		10.0		
WXE504 025 12		12.0		
WXE504 030 03	3.0	3.0	40	6
WXE504 030 06		6.0		
WXE504 030		8.0	50	
WXE504 030 10		10.0		
WXE504 030 12		12.0		
WXE504 030 14		14.0		
WXE504 040 04	4.0	4.0	40	6
WXE504 040 08		8.0		
WXE504 040		10.0	50	
WXE504 040 12		12.0		

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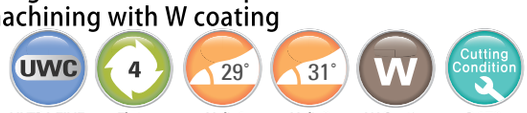
VARIABLE INDEX 4 FLUTE FOR POWERFUL CUTTING





WXE504...

- Excellent surface roughness with a variable index geometry for more than 3Ø
- Increased tool life with a reduced chatter vibration and resonance by irregular exciting force
- Gash touch shape applied to prevent flute chipping
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating



ULTRA FINE | Flute | Helix1 | Helix2 | W Coating | P.179

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WXE504 040 14	4.0	14.0	50	6
WXE504 040 16		16.0		
WXE504 050 05	5.0	5.0	50	6
WXE504 050 10		10.0		
WXE504 050		15.0	60	
WXE504 050 20		20.0		
WXE504 050 25		25.0		
WXE504 060 06	6.0	6.0	50	6
WXE504 060 12		12.0		
WXE504 060		15.0	60	
WXE504 060 20		20.0		
WXE504 060 25		25.0		
WXE504 080 16	8.0	16.0	60	8
WXE504 080		20.0	70	
WXE504 080 25		25.0		
WXE504 080 30		30.0		
WXE504 100 22	10.0	22.0	65	10
WXE504 100		25.0	75	
WXE504 100 30		30.0		
WXE504 100 35		35.0		
WXE504 120 26	12.0	26.0	70	12
WXE504 120		30.0	80	
WXE504 120 35		35.0		
WXE504 120 40		40.0		
WXE504 140	14.0	35.0	100	16
WXE504 160 32	16.0	32.0	100	16
WXE504 160		40.0		
WXE504 180	18.0	45.0	100	20
WXE504 200	20.0	45.0	100	20

Tolerance

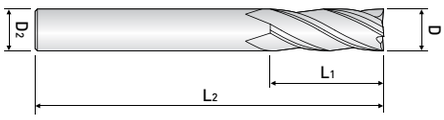
Mill Dia(mm)	Shank
0~-0.03	h6

※ Items can be changed for quality improvement without notice

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4 FLUTE LONG





WE524...

- A wide range of choices due to a variety of sizes of cutting length and overall length
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



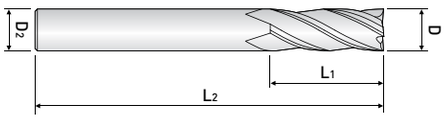
ULTRA FINE | Flute | Helix | W Coating | P.179

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WE524 010 03	1.0	3.0	60	6
WE524 010 04		4.0		
WE524 010 05		5.0		
WE524 010 06		6.0		
WE524 010 07		7.0		
WE524 010 08		8.0		
WE524 010 10		10.0		
WE524 010 12		12.0		
WE524 012 04	1.2	4.0	60	6
WE524 012 06		6.0		
WE524 012 08		8.0		
WE524 012 10		10.0		
WE524 012 12		12.0		
WE524 015 06	1.5	6.0	60	6
WE524 015 08		8.0		
WE524 015 10		10.0		
WE524 015 12		12.0		
WE524 015 14		14.0		
WE524 015 16		16.0		
WE524 020 08	2.0	8.0	60	6
WE524 020 10		10.0		
WE524 020 12		12.0		
WE524 020 14		14.0		
WE524 020 16		16.0		
WE524 025 10	2.5	10.0	60	6
WE524 025 12		12.0		
WE524 025 16		16.0		
WE524 015 20		20.0		
WE524 015 26		26.0		
WE524 030 16 S3	3.0	16.0	100	3
WE524 030 10		10.0	70	6
WE524 030 12		12.0		
WE524 030 14		14.0		
WE524 030 16		16.0		
WE524 030 20		20.0		
WE524 030 26		26.0		
WE524 030 30		30.0		

Continued on following page

4 FLUTE LONG





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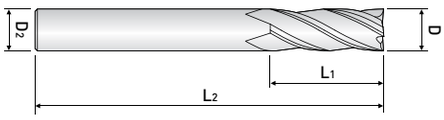
ULTRA FINE | Flute | Helix | W Coating | P.179

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WE524 040 20 S4	4.0	20.0	100	4
WE524 040 12		12.0	70	6
WE524 040 16		16.0		
WE524 040 20		20.0		
WE524 040 26		26.0		
WE524 040 30		30.0		
WE524 050 20	5.0	20.0	70	6
WE524 050 25		25.0	70	
WE524 050 25 100			100	
WE524 050 30		30.0	80	
WE524 050 35		35.0	90	
WE524 050 40		40.0	100	
WE524 060 15	6.0	15.0	60	6
WE524 060 15 080			80	
WE524 060 20		20.0	70	
WE524 060 20 090			90	
WE524 060 25		25.0	75	
WE524 060 30		30.0	80	
WE524 060 30 100			100	
WE524 060 30 150			150	
WE524 030 35		35.0	90	
WE524 060 40		40.0	90	
WE524 060 40 120			120	
WE524 060 45		45.0	150	
WE524 080 25	8.0	25.0	80	8
WE524 080 30		30.0	80	
WE524 080 30 100			100	
WE524 080 35		35.0	90	
WE524 080 40		40.0	90	
WE524 080 40 120			120	
WE524 080 40 150			150	
WE524 080 45		45.0	100	
WE524 080 50		50.0	100	
WE524 080 50 150			150	

Continued from previous page Continued on following page

4 FLUTE LONG





WE524...

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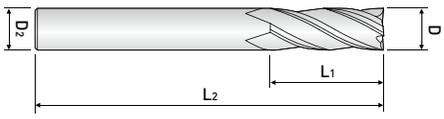


ULTRA FINE | Flute | Heilx | W Coating | P.179

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WE524 100 30	10.0	30.0	80	10
WE524 100 100			100	
WE524 100 35		35.0	90	
WE524 100 40		40.0	90	
WE524 100 40 120			120	
WE524 100 45		45.0	100	
WE524 100 50		50.0	100	
WE524 100 50 150			150	
WE524 100 50 200			200	
WE524 100 55		55.0	150	
WE524 100 60		60.0	110	
WE524 100 60 200			200	
WE524 120 35	12.0	35.0	90	12
WE524 120 40		40.0	100	
WE524 120 40 120			120	
WE524 120 45		45.0	130	
WE524 120 50		50.0	100	
WE524 120 50 150			150	
WE524 120 55		55.0	110	
WE524 120 60		60.0	110	
WE524 120 60 150			150	
WE524 120 60 200			200	
WE524 120 65		65.0	150	
WE524 120 70		70.0	120	
WE524 120 70 200			200	
WE524 140 50	14.0	50.0	110	16
WE524 140 60		60.0	150	
WE524 160 40	16.0	40.0	150	16
WE524 160 50		50.0	110	
WE524 160 50 150			150	
WE524 160 60		60.0	120	
WE524 160 70		70.0	130	
WE524 160 70 150			150	
WE524 160 70 200			200	
WE524 160 80		80.0	150	
WE524 160 90		90.0	150	
WE524 160 110		110.0	200	
WE524 160 120		120.0	250	

4 FLUTE LONG





WE524...

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- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



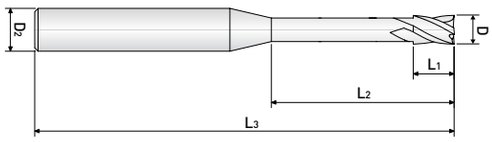
ULTRA FINE | Flute | Helix | W Coating | P.179

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WE524 180 50	18.0	50.0	120	20
WE524 180 70		70.0	130	
WE524 180 100		100.0	200	
WE524 200 50	20.0	50.0	110	20
WE524 200 50 150			150	
WE524 200 60		60.0	130	
WE524 200 70		70.0	130	
WE524 200 80		80.0	150	
WE524 200 90		90.0	150	
WE524 200 90 200			200	
WE524 200 110		110.0	200	
WE524 200 120		120.0	250	
WE524 220 75	22.0	75.0	150	20
WE524 220 110		110.0	200	
WE524 250 70	25.0	70.0	150	25
WE524 250 90		90.0	150	
WE524 250 110		110.0	200	
WE524 250 120		120.0	250	

Continued from previous page

4 FLUTE LONG NECK





WE514...

- Excellent effect in preventing breakage with a shape of neck without notch
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre- hardened Steel, Alloy Steel, Carbon Steel



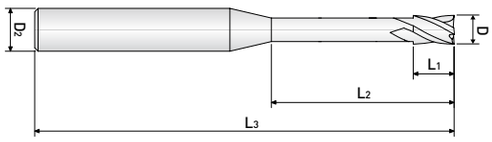
ULTRA FINE | Flute | Helix | W Coating | P.180

EDP No.	Diameter	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	L_1	L_2	L_3	D_2
WE514 010 02	1.0	1.5	2.0	50	4
WE514 010 03			3.0		
WE514 010 04			4.0		
WE514 010 05			5.0		
WE514 010 06			6.0		
WE514 010 07			7.0		
WE514 010 08			8.0		
WE514 010 10			10.0		
WE514 010 12			12.0		
WE514 010 14			14.0		
WE514 010 16			16.0		
WE514 010 18			18.0		
WE514 010 20			20.0		
WE514 010 22			22.0	60	
WE514 010 26			26.0		
WE514 010 30			30.0	70	
WE514 010 40			40.0	80	
WE514 010 50			50.0	100	
WE514 012 04	1.2	1.8	4.0	50	4
WE514 012 06			6.0		
WE514 012 08			8.0		
WE514 012 10			10.0		
WE514 012 12			12.0		
WE514 012 14			14.0		
WE514 012 16			16.0		
WE514 012 20			20.0		
WE514 012 26			26.0	60	
WE514 012 30			30.0	70	
WE514 015 04	1.5	2.3	4.0	50	4
WE514 015 05			5.0		
WE514 015 06			6.0		
WE514 015 07			7.0		
WE514 015 08			8.0		
WE514 015 10			10.0		
WE514 015 12			12.0		
WE514 015 14			14.0		
WE514 015 16			16.0		

Continued on following page

4 FLUTE LONG NECK





WE514...

- Excellent effect in preventing breakage with a shape of neck without notch
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- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre- hardened Steel, Alloy Steel, Carbon Steel



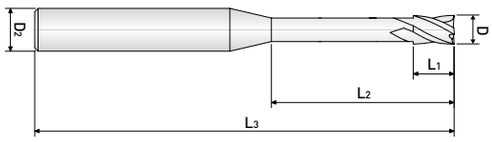
ULTRA FINE | Flute | Helix | W Coating | P.180

EDP No.	Diameter	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	L_1	L_2	L_3	D_2
WE514 015 18	1.5	2.3	18.0	50	4
WE514 015 20			20.0		
WE514 015 22			22.0	60	
WE514 015 26			26.0		
WE514 015 30			30.0	70	
WE514 020 06	2.0	3.0	6.0	50	4
WE514 020 08			8.0		
WE514 020 10			10.0		
WE514 020 12			12.0		
WE514 020 14			14.0		
WE514 020 16			16.0		
WE514 020 18			18.0		
WE514 020 20			20.0		
WE514 020 22			22.0	60	
WE514 020 26			26.0		
WE514 020 30			30.0	70	
WE514 020 35			35.0		
WE514 020 40			40.0	80	
WE514 020 45			45.0	90	
WE514 020 50			50.0	100	
WE514 020 60			60.0	110	
WE514 025 08	2.5	4.0	8.0	50	4
WE514 025 10			10.0		
WE514 025 12			12.0		
WE514 025 14			14.0		
WE514 025 16			16.0		
WE514 025 18			18.0		
WE514 025 20			20.0		
WE514 025 22			22.0	60	
WE514 025 26			26.0		
WE514 025 30			30.0	70	
WE514 025 35			35.0		
WE514 025 40			40.0	80	
WE514 025 45			45.0	90	
WE514 025 50			50.0	100	

Continued from previous page Continued on following page

4 FLUTE LONG NECK





WE514...

- Excellent effect in preventing breakage with a shape of neck without notch
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre- hardened Steel, Alloy Steel, Carbon Steel

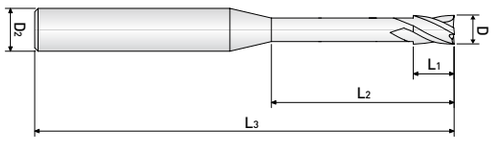


ULTRA FINE | Flute | Helix | W Coating | P.180

EDP No.	Diameter	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	L_1	L_2	L_3	D_2
WE514 030 06	3.0	4.5	6.0	50	6
WE514 030 08			8.0		
WE514 030 10			10.0		
WE514 030 12			12.0		
WE514 030 14			14.0	60	
WE514 030 16			16.0		
WE514 030 18			18.0		
WE514 030 20			20.0		
WE514 030 22			22.0	65	
WE514 030 26			26.0		
WE514 030 30			30.0	70	
WE514 030 35			35.0		
WE514 030 40			40.0	80	
WE514 030 45			45.0	90	
WE514 030 50			50.0	100	
WE514 030 60			60.0	100	
WE514 040 08	4.0	4.5	8.0	50	6
WE514 040 10			10.0		
WE514 040 12			12.0		
WE514 040 14			14.0	60	
WE514 040 16			16.0		
WE514 040 18			18.0		
WE514 040 20			20.0		
WE514 040 22			22.0	65	
WE514 040 26			26.0		
WE514 040 30			30.0	70	
WE514 040 35			35.0		
WE514 040 40			40.0	80	
WE514 040 45			45.0	90	
WE514 040 50			50.0	100	
WE514 040 60			60.0		
WE514 050 16	5.0	8.0	16.0	60	6
WE514 050 20			20.0		
WE514 050 26			26.0	65	
WE514 050 30			30.0	70	
WE514 050 35			35.0	75	
WE514 050 40			40.0	80	

4 FLUTE LONG NECK





WE514...

- Excellent effect in preventing breakage with a shape of neck without notch
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre- hardened Steel, Alloy Steel, Carbon Steel



ULTRA FINE | Flute | Helix | W Coating | P.180

EDP No.	Diameter	Cutting Length	Neck Length	Overall Length	Shank Diameter
	D	L_1	L_2	L_3	D_2
WE514 050 50	5.0	8.0	50.0	90	6
WE514 050 60			60.0	100	
WE514 060 15	6.0	9.0	15.0	60	6
WE514 060 20			20.0		
WE514 060 30			30.0	70	
WE514 060 32			32.0	90	
WE514 080 25	8.0	12.0	25.0	70	8
WE514 080 30			30.0	80	
WE514 080 42			42.0	100	
WE514 100 30	10.0	15.0	30.0	75	10
WE514 100 35			35.0	80	
WE514 100 45			45.0	100	
WE514 120 35	12.0	20.0	35.0	80	12
WE514 120 40			40.0	90	
WE514 120 50			50.0	110	

Tolerance

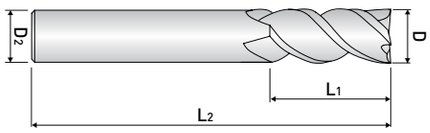
Mill Dia(mm)	Shank
0~-0.03	h6

※ Items can be changed for quality improvement without notice

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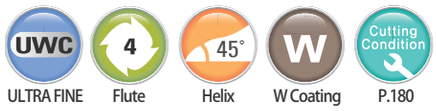
4 FLUTE HIGH HELIX (45°)





WE504...H

- Reduce cutting load with 45° High Helix
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

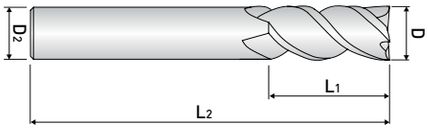


EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WE504H 010	1.0	2.5	50	6
WE504H 010 04		4.0	60	
WE504H 010 06		6.0		
WE504H 015	1.5	4.0	50	6
WE504H 015 06		6.0	60	
WE504H 015 08		8.0		
WE504H 020	2.0	6.0	50	6
WE504H 020 08		8.0	60	
WE504H 020 10		10.0		
WE504H 030	3.0	8.0	50	6
WE504H 030 10		10.0	70	
WE504H 030 12		12.0		
WE504H 030 16		16.0		
WE504H 040	4.0	10.0	50	6
WE504H 040 12		12.0	70	
WE504H 040 16		16.0		
WE504H 040 20		20.0		
WE504H 050	5.0	15.0	50	6
WE504H 050 30		30.0	80	
WE504H 060	6.0	15.0	60	6
WE504H 060 20		20.0	70	
WE504H 060 30		30.0	80	
WE504H 080	8.0	20.0	70	8
WE504H 080 30		30.0	80	
WE504H 080 35		35.0	90	
WE504H 080 40		40.0	90	
WE504H 100	10.0	25.0	75	10
WE504H 100 30		30.0	80	
WE504H 100 40		40.0	90	
WE504H 100 50		50.0	100	
WE504H 120	12.0	30.0	80	12
WE504H 120 40		40.0	90	
WE504H 120 50		50.0	100	
WE504H 120 60		60.0	110	

Continued on following page

4 FLUTE HIGH HELIX (45°)





WE504...H

- Reduce cutting load with 45° High Helix
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L_1	L_2	D_2
WE504H 160	16.0	40.0	100	16
WE504H 160 50		50.0	110	
WE504H 160 60		60.0	120	
WE504H 160 110		110.0	200	
WE504H 200	20.0	45.0	100	20
WE504H 200 60	20.0	60.0	120	
WE504H 200 70		70.0	130	
WE504H 200 110		110.0	200	

Tolerance

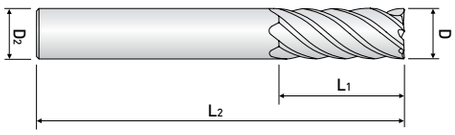
Mill Dia(mm)	Shank
0~-0.03	h6

※ Items can be changed for quality improvement without notice

Continued from previous page

6 FLUTE HIGH HELIX (45°)





WE506...

- Dramatically reduced cutting load using 6 flute with high helix
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



ULTRA FINE | Flute | Helix | W Coating | P.181

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter
	D	L1	L2	D2
WE506 060	6.0	15.0	60	6
WE506 060 20		20.0	70	
WE506 060 30		30.0	80	
WE506 060 30 110			110	
WE506 080	8.0	20.0	70	8
WE506 080 30		30.0	80	
WE506 080 35		35.0	90	
WE506 080 40		40.0	90	
WE506 080 40 130			130	
WE506 100	10.0	25.0	75	10
WE506 100 30		30.0	80	
WE506 100 40		40.0	90	
WE506 100 50		50.0	100	
WE506 100 50 150			150	
WE506 120	12.0	30.0	80	12
WE506 120 40		40.0	90	
WE506 120 50		50.0	100	
WE506 120 60		60.0	110	
WE506 120 60 150			150	
WE506 160	16.0	40.0	100	16
WE506 160 50		50.0	110	
WE506 160 60		60.0	120	
WE506 160 90		90.0	150	
WE506 160 110		110.0	200	
WE506 160 110 250			250	
WE506 200	20.0	45.0	100	20
WE506 200 60		60.0	120	
WE506 200 70		70.0	130	
WE506 200 110		110.0	200	
WE506 200 110 250			250	
WE506 200 110 300			300	

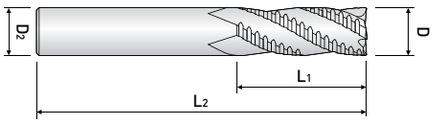
Tolerance

Mill Dia(mm)	Shank
0~-0.03	h6

※ Items can be changed for quality improvement without notice

3, 4, 5 FLUTE 20° ROUGHING





WF61...

- Strengthen the hardness with Low Helix
- Effective cutting by reduction of chipping due to the shape of chamfer at the end of teeth
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



ULTRA FINE | Flute | Helix | W Coating | P.182

EDP No.	Diameter	Cutting Length	Overall Length	Shank Diameter	Number of Flute
	D	L1	L2	D2	FLUTE
WF613 030	3.0	8.0	50	6	3
WF613 040	4.0	10.0	50	6	
WF613 050	5.0	13.0	50	6	
WF613 060	6.0	15.0	60	6	
WF613 060 20		20.0			
WF613 070	7.0	18.0	70	8	
WF613 080	8.0	20.0	70	8	
WF613 080 25		25.0			
WF614 090	9.0	22.0	75	10	4
WF614 100	10.0	25.0	75	10	
WF614 100 30		30.0			
WF614 110	11.0	27.0	80	12	
WF614 120	12.0	30.0	80	12	
WF614 120 35		35.0			
WF614 130	13.0	35.0	100	12	
WF614 140	14.0	35.0	100	16	
WF614 160	16.0	40.0	100	16	
WF614 180	18.0	40.0	100	18	
WF614 200	20.0	50.0	100	20	
WF615 250	25.0	50.0	100	25	5

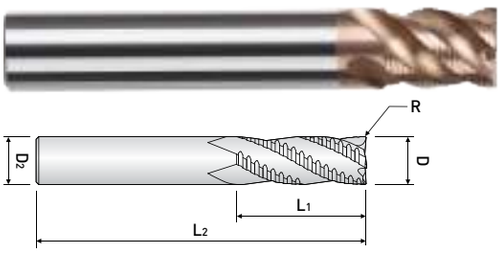
Tolerance

㎛=1/1000㎜

Tolerance \ Diameter	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
Mill Dia(mm)	0 −40	0 −48	0 −58	0 −70	0 −84
Shank	0 −6	0 −8	0 −9	0 −11	0 −13

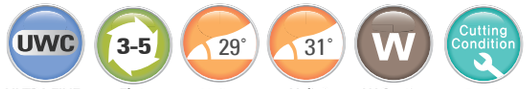
※ Items can be changed for quality improvement without notice

VARIABLE INDEX 3, 4, 5 FLUTE ROUGHING



WF60...

- Powerful cutting with variable index + Corner R
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



ULTRA FINE | Flute | Helix1 | Helix2 | W Coating | P.182

EDP No.	Diameter	Radius	Cutting Length	Overall Length	Shank Diameter	Number of Flute
	D	R	L_1	L_2	D_2	FLUTE
WF603 030	3.0	0.2	8.0	50	6	3
WF603 040	4.0	0.2	10.0	50	6	
WF604 050	5.0	0.2	13.0	50	6	4
WF604 060	6.0	0.2	10.0	50	6	
WF604 060 15			15.0	60		
WF604 070	7.0	0.2	18.0	70	8	
WF604 080	8.0	0.2	12.0	60	8	
WF604 080 20			20.0	70		
WF604 090	9.0	0.3	22.0	75	10	
WF604 100	10.0	0.3	15.0	65	10	
WF604 100 25			25.0	75		
WF604 110	11.0	0.3	27.0	80	12	
WF604 120	12.0	0.3	20.0	70	12	
WF604 120 30			30.0	80		
WF605 130	13.0	0.5	35.0	100	12	5
WF605 140	14.0	0.5	35.0	100	14	
WF605 140 S16					16	
WF605 160	16.0	1.0	25.0	80	16	
WF605 160 40			40.0	100		
WF605 180	18.0	1.0	40.0	100	18	
WF605 180 S20					20	
WF605 200	20.0	1.0	25.0	80	20	
WF605 200 45			45.0	100		
WF605 250	25.0	1.0	45.0	100	25	

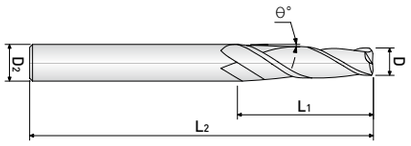
Tolerance

Mill Dia(mm)	Shank
0~-0.05	h6

※ Items can be changed for quality improvement without notice

2 FLUTE TAPER





WTE502...

- A wide range of choices due to a variety of taper angles
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



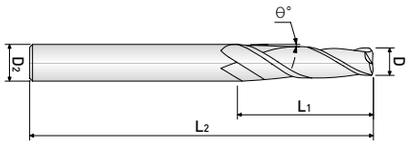
ULTRA FINE | Flute | Helix | W Coating | P.183

EDP No.	Diameter	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	θ	L1	L2	D2
WTE502 003 005	0.3	30`	1.2	40	4
WTE502 003 01		1°	1.2		
WTE502 003 015		1°30`	1.2		
WTE502 003 02		2°	1.2		
WTE502 003 03		3°	1.5		
WTE502 003 05		5°	1.5		
WTE502 003 07		7°	1.5		
WTE502 003 10		10°	1.5		
WTE502 004 005	0.4	30`	1.6	40	4
WTE502 004 01		1°	1.6		
WTE502 004 015		1°30`	1.6		
WTE502 004 02		2°	1.6		
WTE502 004 03		3°	1.6		
WTE502 004 05		5°	2.0		
WTE502 004 07		7°	2.0		
WTE502 004 10		10°	2.0		
WTE502 005 005	0.5	30`	2.0	45	4
WTE502 005 01		1°	2.0		
WTE502 005 015		1°30`	2.0		
WTE502 005 02		2°	2.0		
WTE502 005 03		3°	2.0		
WTE502 005 05		5°	2.5		
WTE502 005 07		7°	2.5		
WTE502 005 10		10°	2.5		
WTE502 006 005	0.6	30`	2.4	45	4
WTE502 006 01		1°	2.4		
WTE502 006 015		1°30`	2.4		
WTE502 006 02		2°	2.4		
WTE502 006 03		3°	2.4		
WTE502 006 05		5°	3.0		
WTE502 006 07		7°	3.0		
WTE502 006 10		10°	3.0		
WTE502 007 005	0.7	30`	2.8	45	4
WTE502 007 01		1°	2.8		
WTE502 007 015		1°30`	2.8		
WTE502 007 02		2°	2.8		
WTE502 007 03		3°	2.8		
WTE502 007 05		5°	3.5		

Continued on following page

2 FLUTE TAPER





WTE502...

- A wide range of choices due to a variety of taper angles
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

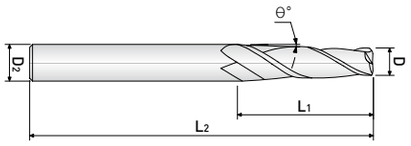


ULTRA FINE | Flute | Helix | W Coating | P.183

EDP No.	Diameter	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	θ	L1	L2	D2
WTE502 007 07	0.7	7°	3.5	45	4
WTE502 007 10		10°	3.5		
WTE502 008 005	0.8	30`	3.2	45	4
WTE502 008 01		1°	3.2		
WTE502 008 015		1°30`	3.2		
WTE502 008 02		2°	3.2		
WTE502 008 03		3°	3.2		
WTE502 008 05		5°	4.0		
WTE502 008 07		7°	4.0		
WTE502 008 10		10°	4.0		
WTE502 010 005	1.0	30`	4.0	50	4
WTE502 010 01		1°	4.0		
WTE502 010 015		1°30`	4.0		
WTE502 010 02		2°	6.0		
WTE502 010 03		3°	6.0		
WTE502 010 05		5°	8.0		
WTE502 010 07		7°	8.0		
WTE502 010 10		10°	8.0		
WTE502 015 005	1.5	30`	6.0	50	4
WTE502 015 01		1°	6.0		
WTE502 015 015		1°30`	6.0		
WTE502 015 02		2°	8.0		
WTE502 015 03		3°	8.0		
WTE502 015 05		5°	10.0		
WTE502 015 07		7°	10.0		
WTE502 015 10		10°	10.0		6
WTE502 020 005	2.0	30`	8.0	50	4
WTE502 020 01		1°	8.0		
WTE502 020 015		1°30`	8.0		
WTE502 020 02		2°	10.0		
WTE502 020 03		3°	10.0		
WTE502 020 05		5°	12.0		6
WTE502 020 07		7°	12.0		
WTE502 020 10		10°	12.0		8

2 FLUTE TAPER





WTE502...

- A wide range of choices due to a variety of taper angles
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

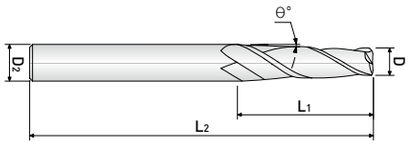


ULTRA FINE | Flute | Helix | W Coating | P.183

EDP No.	Diameter	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	θ	L1	L2	D2
WTE502 025 005	2.5	30`	10.0	50	6
WTE502 025 01		1°	10.0		
WTE502 025 015		1°30`	10.0		
WTE502 025 02		2°	12.0		
WTE502 025 03		3°	12.0		
WTE502 025 05		5°	14.0		
WTE502 025 07		7°	14.0		
WTE502 025 10		10°	14.0		8
WTE502 030 005	3.0	30`	12.0	50	6
WTE502 030 01		1°	12.0		
WTE502 030 015		1°30`	12.0		
WTE502 030 02		2°	14.0		
WTE502 030 03		3°	14.0		
WTE502 030 05		5°	16.0		
WTE502 030 07		7°	16.0		8
WTE502 030 10		10°	16.0		10
WTE502 040 005	4.0	30`	16.0	60	6
WTE502 040 01		1°	16.0		
WTE502 040 015		1°30`	16.0		
WTE502 040 02		2°	16.0		
WTE502 040 03		3°	19.0		
WTE502 040 05		5°	22.0	65	8
WTE502 040 07		7°	16.0		
WTE502 040 10		10°	17.0		10
WTE502 060 005	6.0	30`	20.0	65	8
WTE502 060 01		1°	20.0		
WTE502 060 015		1°30`	20.0		
WTE502 060 02		2°	20.0		
WTE502 060 03		3°	19.0		
WTE502 060 05		5°	22.0	75	10
WTE502 060 07		7°	24.0		12
WTE502 060 10		10°	17.0		

2 FLUTE TAPER





WTE502...

- A wide range of choices due to a variety of taper angles
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

UWC ULTRA FINE | 2 Flute | 30° Helix | W W Coating | Cutting Condition P.183

EDP No.	Diameter	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	θ	L1	L2	D2
WTE502 070 005	7.0	30`	28.0	70	8
WTE502 070 01		1°	28.0		
WTE502 070 015		1°30`	28.0	80	10
WTE502 070 02		2°	28.0		
WTE502 070 03		3°	28.0		
WTE502 070 05		5°	28.0		
WTE502 080 005	8.0	30`	35.0	90	10
WTE502 080 01		1°	35.0		
WTE502 080 015		1°30`	35.0		
WTE502 080 02		2°	28.0		
WTE502 080 03		3°	38.0		12
WTE502 080 05		5°	45.0	100	16
WTE502 080 07		7°	32.0	90	16
WTE502 080 10		10°	34.0	100	20
WTE502 080 10 S25		10°	48.0	150	25
WTE502 100 005	10.0	30`	40.0	90	12
WTE502 100 01		1°	40.0		
WTE502 100 015		1°30`	38.0		
WTE502 100 02		2°	40.0	75	16
WTE502 100 03		3°	40.0	100	
WTE502 100 05		5°	34.0		
WTE502 100 07		7°	40.0	90	20
WTE502 100 10		10°	42.0	100	25

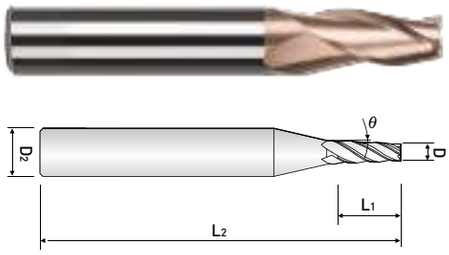
Tolerance

Mill Dia(mm)	Shank
0~-0.03	h6

※ Items can be changed for quality improvement without notice

Continued from previous page

4 FLUTE TAPER



WTE504...

- A wide range of choices due to a variety of taper angles
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

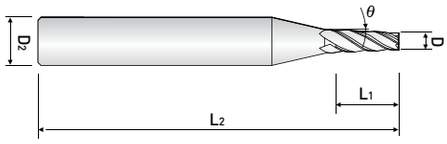


EDP No.	Diameter	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	θ	L1	L2	D2
WTE504 030 005	3.0	30`	12.0	50	6
WTE504 030 01		1°	12.0		
WTE504 030 015		1°30`	12.0		
WTE504 030 02		2°	14.0		
WTE504 030 03		3°	14.0		
WTE504 030 05		5°	16.0		
WTE504 030 07		7°	16.0		8
WTE504 030 10		10°	16.0		10
WTE504 040 005	4.0	30`	16.0	60	6
WTE504 040 01		1°	16.0		
WTE504 040 015		1°30`	16.0		
WTE504 040 02		2°	16.0		
WTE504 040 03		3°	19.0		
WTE504 040 05		5°	22.0	65	8
WTE504 040 07		7°	16.0		
WTE504 040 10		10°	17.0		10
WTE504 060 005	6.0	30`	20.0	65	8
WTE504 060 01		1°	20.0		
WTE504 060 015		1°30`	20.0		
WTE504 060 02		2°	20.0		
WTE504 060 03		3°	19.0		
WTE504 060 05		5°	22.0	75	10
WTE504 060 07		7°	24.0		12
WTE504 060 10		10°	17.0		
WTE504 070 005	7.0	30`	28.0	70	8
WTE504 070 01		1°	28.0		
WTE504 070 015		1°30`	28.0		10
WTE504 070 02		2°	28.0	80	
WTE504 070 03		3°	28.0		
WTE504 070 05		5°	28.0		12
WTE504 080 005	8.0	30`	35.0	90	10
WTE504 080 01		1°	35.0		
WTE504 080 015		1°30`	35.0		
WTE504 080 02		2°	28.0		
WTE504 080 03		3°	38.0		12
WTE504 080 05		5°	45.0	100	16
WTE504 080 07		7°	32.0	90	
WTE504 080 10		10°	34.0	100	20

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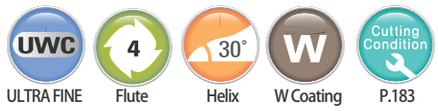
4 FLUTE TAPER





WTE504...

- A wide range of choices due to a variety of taper angles
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



ULTRA FINE | Flute | Helix | W Coating | P.183

EDP No.	Diameter	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	θ	L1	L2	D2
WTE504 100 005	10.0	30`	40.0	90	12
WTE504 100 01		1°	40.0		
WTE504 100 015		1°30`	38.0		
WTE504 100 02		2°	40.0		16
WTE504 100 03		3°	40.0	100	
WTE504 100 05		5°	34.0		
WTE504 100 07		7°	40.0	90	20
WTE504 100 10		10°	42.0	100	25

Tolerance

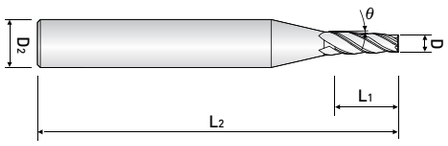
Mill Dia(mm)	Shank
0~-0.03	h6

※ Items can be changed for quality improvement without notice

Continued from previous page

4 FLUTE TAPER LONG RIB





WTE514...

- A wide range of choices due to a variety of taper angles & flute length
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

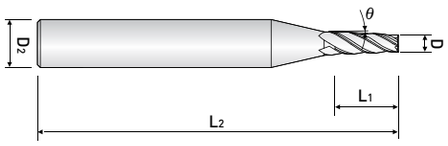


EDP No.	Diameter	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	θ	L1	L2	D2
WTE514 008 005 04	0.8	30`	4.0	45	4
WTE514 008 005 06			6.0		
WTE514 008 005 08			8.0		
WTE514 008 005 10			10.0		
WTE514 008 005 12			12.0		
WTE514 008 010 04		1°	4.0		
WTE514 008 010 06			6.0		
WTE514 008 010 08			8.0		
WTE514 008 010 10			10.0		
WTE514 008 010 12			12.0		
WTE514 008 015 04		1°30`	4.0		
WTE514 008 015 06			6.0		
WTE514 008 015 08			8.0		
WTE514 008 015 10			10.0		
WTE514 008 015 12			12.0		
WTE514 008 020 04		2°	4.0		
WTE514 008 020 06			6.0		
WTE514 008 020 08			8.0		
WTE514 008 020 10			10.0		
WTE514 008 020 12			12.0		
WTE514 010 005 04	1.0	30`	4.0	50	4
WTE514 010 005 06			6.0		
WTE514 010 005 08			8.0		
WTE514 010 005 10			10.0		
WTE514 010 005 12			12.0		
WTE514 010 005 16			16.0		
WTE514 010 010 04		1°	4.0		
WTE514 010 010 06			6.0		
WTE514 010 010 08			8.0		
WTE514 010 010 10			10.0		
WTE514 010 010 12			12.0		
WTE514 010 010 16			16.0		
WTE514 010 015 04		1°30`	4.0		
WTE514 010 015 06			6.0		
WTE514 010 015 08			8.0		
WTE514 010 015 10			10.0		
WTE514 010 015 12			12.0		
WTE514 010 015 16			16.0		

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4 FLUTE TAPER LONG RIB





WTE514...

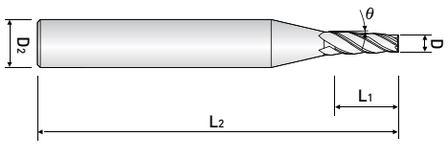
- A wide range of choices due to a variety of taper angles & flute length
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	θ	L1	L2	D2
WTE514 010 020 04	1.0	2°	4.0	50	4
WTE514 010 020 06			6.0		
WTE514 010 020 08			8.0		
WTE514 010 020 10			10.0		
WTE514 010 020 12			12.0		
WTE514 010 020 16			16.0		
WTE514 010 030 04		3°	4.0		
WTE514 010 030 06			6.0		
WTE514 010 030 08			8.0		
WTE514 010 030 10			10.0		
WTE514 010 030 12			12.0		
WTE514 010 030 16			16.0		
WTE514 012 005 06	1.2	30`	6.0	50	4
WTE514 012 005 08			8.0		
WTE514 012 005 10			10.0		
WTE514 012 005 12			12.0		
WTE514 012 005 16			16.0		
WTE514 012 010 06		1°	6.0		
WTE514 012 010 08			8.0		
WTE514 012 010 10			10.0		
WTE514 012 010 12			12.0		
WTE514 012 010 16			16.0		
WTE514 012 015 06		1°30`	6.0		
WTE514 012 015 08			8.0		
WTE514 012 015 10			10.0		
WTE514 012 015 12			12.0		
WTE514 012 015 16			16.0		
WTE514 012 020 06		2°	6.0		
WTE514 012 020 08			8.0		
WTE514 012 020 10			10.0		
WTE514 012 020 12			12.0		
WTE514 012 020 16			16.0		
WTE514 012 030 06		3°	6.0		
WTE514 012 030 08			8.0		
WTE514 012 030 10			10.0		
WTE514 012 030 12			12.0		
WTE514 012 030 16			16.0		

4 FLUTE TAPER LONG RIB





WTE514...

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- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

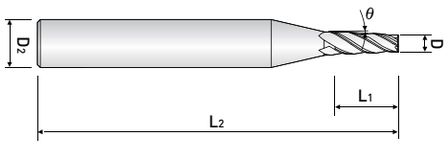


ULTRA FINE | Flute | Helix | W Coating | P.183

EDP No.	Diameter	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	θ	L1	L2	D2
WTE514 015 005 06	1.5	30`	6.0	50	4
WTE514 015 005 08			8.0		
WTE514 015 005 10			10.0		
WTE514 015 005 12			12.0		
WTE514 015 005 16			16.0		
WTE514 015 005 20			20.0	60	
WTE514 015 010 06		1°	6.0	50	
WTE514 015 010 08			8.0		
WTE514 015 010 10			10.0		
WTE514 015 010 12			12.0		
WTE514 015 010 16			16.0		
WTE514 015 010 20			20.0	60	
WTE514 015 015 06		1°30`	6.0	50	
WTE514 015 015 08			8.0		
WTE514 015 015 10			10.0		
WTE514 015 015 12			12.0		
WTE514 015 015 16			16.0		
WTE514 015 015 20			20.0	60	
WTE514 015 020 06		2°	6.0	50	
WTE514 015 020 08			8.0		
WTE514 015 020 10			10.0		
WTE514 015 020 12			12.0		
WTE514 015 020 16			16.0		
WTE514 015 020 20			20.0	60	
WTE514 015 030 06		3°	6.0	50	
WTE514 015 030 08			8.0		
WTE514 015 030 10			10.0		
WTE514 015 030 12			12.0		
WTE514 015 030 16			16.0		
WTE514 015 030 20			20.0	60	

4 FLUTE TAPER LONG RIB





WTE514...

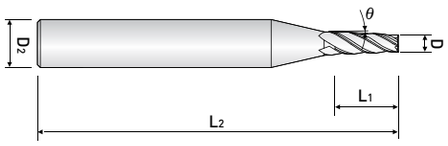
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- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



EDP No.	Diameter	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	θ	L1	L2	D2
WTE514 020 005 08	2.0	30`	8.0	50	4
WTE514 020 005 10			10.0		
WTE514 020 005 12			12.0		
WTE514 020 005 16			16.0		
WTE514 020 005 20			20.0	60	
WTE514 020 005 25			25.0		
WTE514 020 010 08		1°	8.0	50	
WTE514 020 010 10			10.0		
WTE514 020 010 12			12.0		
WTE514 020 010 16			16.0		
WTE514 020 010 20			20.0	60	
WTE514 020 010 25			25.0		
WTE514 020 015 08		1°30`	8.0	50	
WTE514 020 015 10			10.0		
WTE514 020 015 12			12.0		
WTE514 020 015 16			16.0		
WTE514 020 015 20			20.0	60	
WTE514 020 015 25			25.0		
WTE514 020 020 08		2°	8.0	50	
WTE514 020 020 10			10.0		
WTE514 020 020 12			12.0		
WTE514 020 020 16			16.0		
WTE514 020 020 20			20.0	60	
WTE514 020 020 25			25.0		
WTE514 020 030 08		3°	8.0	50	
WTE514 020 030 10			10.0		
WTE514 020 030 12			12.0		
WTE514 020 030 16			16.0		
WTE514 020 030 20			20.0	60	6
WTE514 020 030 25			25.0		

4 FLUTE TAPER LONG RIB





WTE514...

- A wide range of choices due to a variety of taper angles & flute length
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel



ULTRA FINE | Flute | Helix | W Coating | P.183

EDP No.	Diameter	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	θ	L1	L2	D2
WTE514 025 005 10	2.5	30`	10.0	50	4
WTE514 025 005 12			12.0		
WTE514 025 005 16			16.0		
WTE514 025 005 20			20.0	60	
WTE514 025 005 25			25.0		
WTE514 025 005 30			30.0		
WTE514 025 010 10		1°	10.0	50	
WTE514 025 010 12			12.0		
WTE514 025 010 16			16.0		
WTE514 025 010 20			20.0	60	
WTE514 025 010 25			25.0		
WTE514 025 010 30			30.0		
WTE514 025 015 10		1°30`	10.0	50	
WTE514 025 015 12			12.0		
WTE514 025 015 16			16.0		
WTE514 025 015 20			20.0	60	
WTE514 025 015 25			25.0		
WTE514 025 015 30			30.0		6
WTE514 025 020 10		2°	10.0	50	4
WTE514 025 020 12			12.0		
WTE514 025 020 16			16.0		
WTE514 025 020 20			20.0	60	
WTE514 025 020 25			25.0		6
WTE514 025 020 30			30.0		
WTE514 025 030 10		3°	10.0	50	4
WTE514 025 030 12			12.0		
WTE514 025 030 16			16.0		6
WTE514 025 030 20			20.0	60	
WTE514 025 030 25			25.0		
WTE514 025 030 30			30.0		

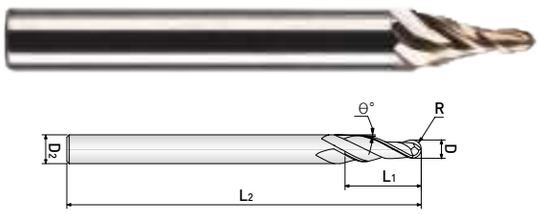
Tolerance

Mill Dia(mm)	Shank
0~-0.03	h6

※ Items can be changed for quality improvement without notice

Continued from previous page

2 FLUTE TAPER BALL



WTB502...

- A wide range of choices due to a variety of taper angles
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

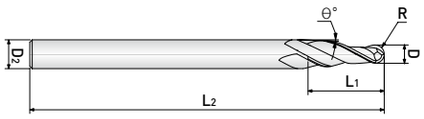


EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	D2
WTB502 003 005	0.3	0.15	30`	1.2	40	4
WTB502 003 01			1°			
WTB502 003 015			1°30`			
WTB502 003 02			2°			
WTB502 003 03			3°			
WTB502 003 05			5°			
WTB502 003 07			7°	1.5		
WTB502 003 10			10°			
WTB502 004 005	0.4	0.2	30`	1.6	40	4
WTB502 004 01			1°			
WTB502 004 015			1°30`			
WTB502 004 02			2°			
WTB502 004 03			3°			
WTB502 004 05			5°			
WTB502 004 07			7°	2		
WTB502 004 10			10°			
WTB502 005 005	0.5	0.25	30`	2	45	4
WTB502 005 01			1°			
WTB502 005 015			1°30`			
WTB502 005 02			2°			
WTB502 005 03			3°			
WTB502 005 05			5°			
WTB502 005 07			7°	2.5		
WTB502 005 10			10°			
WTB502 006 005	0.6	0.3	30`	2	45	4
WTB502 006 01			1°			
WTB502 006 015			1°30`			
WTB502 006 02			2°			
WTB502 006 03			3°			
WTB502 006 05			5°			
WTB502 006 07			7°	2.5		
WTB502 006 10			10°			
WTB502 007 005	0.7	0.35	30`	2.5	45	4
WTB502 007 01			1°			
WTB502 007 015			1°30`			
WTB502 007 02			2°			
WTB502 007 03			3°			
WTB502 007 05			5°			

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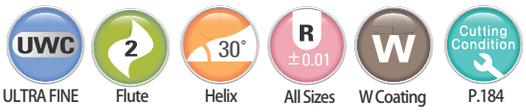
2 FLUTE TAPER BALL





WTB502...

- A wide range of choices due to a variety of taper angles
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EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	D2
WTB502 007 07	0.7	0.35	7°	3	45	4
WTB502 007 10			10°			
WTB502 008 005	0.8	0.4	30`	3.2	45	4
WTB502 008 01			1°			
WTB502 008 015			1°30`			
WTB502 008 02			2°			
WTB502 008 03			3°			
WTB502 008 05			5°			
WTB502 008 07			7°			
WTB502 008 10			10°			
WTB502 010 005	1.0	0.5	30`	4.0	50	4
WTB502 010 01			1°			
WTB502 010 015			1°30`			
WTB502 010 02			2°			
WTB502 010 03			3°			
WTB502 010 05			5°			
WTB502 010 07			7°			
WTB502 010 10			10°			
WTB502 015 005	1.5	0.75	30`	6.0	50	4
WTB502 015 01			1°			
WTB502 015 015			1°30`			
WTB502 015 02			2°	7.0		
WTB502 015 03			3°	8.0		
WTB502 015 05			5°	10.0		
WTB502 015 07			7°			
WTB502 015 10			10°			6
WTB502 020 005	2.0	1	30`	6.0	50	4
WTB502 020 01			1°			
WTB502 020 015			1°30`			
WTB502 020 02			2°	10.0		
WTB502 020 03			3°			
WTB502 020 05			5°			
WTB502 020 07			7°			6
WTB502 020 10			10°	11.0		

Tolerance

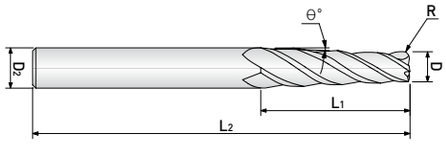
Mill Dia(mm)	Shank
0~-0.03	h6

※ Items can be changed for quality improvement without notice

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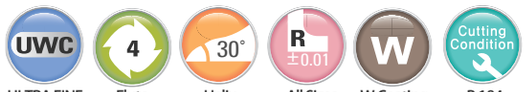
4 FLUTE TAPER CORNER RADIUS





WTR504...

- Strengthened hardness of flute by applying the minute corner R to prevent chipping
- Enhanced cutting effect and better wear resistance made from the finest raw material
- Longer tool life and improvement on stable machining with W coating
- Suitable for Mold & Die machining below HRc 55 Pre-hardened Steel, Alloy Steel, Carbon Steel

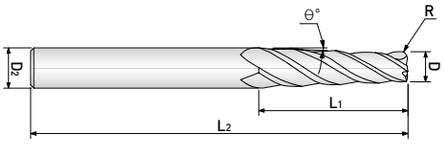


EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	D2
WTR504 008 01 01 04	0.8	0.1	1°	4.0	45	4
WTR504 008 01 01 06				6.0		
WTR504 008 01 01 08				8.0		
WTR504 008 01 015 04			1°30`	4.0		
WTR504 008 01 015 06				6.0		
WTR504 008 01 015 08				8.0		
WTR504 008 02 01 04		0.2	1°	4.0		
WTR504 008 02 01 06				6.0		
WTR504 008 02 01 08				8.0		
WTR504 008 02 015 04			1°30`	4.0		
WTR504 008 02 015 06				6.0		
WTR504 008 02 015 08				8.0		
WTR504 010 01 01 04	1.0	0.1	1°	4.0	50	4
WTR504 010 01 01 06				6.0		
WTR504 010 01 01 08				8.0		
WTR504 010 01 01 10				10.0		
WTR504 010 01 01 12				12.0		
WTR504 010 01 015 04			1°30`	4.0		
WTR504 010 01 015 06				6.0		
WTR504 010 01 015 08				8.0		
WTR504 010 01 015 10				10.0		
WTR504 010 01 015 12				12.0		
WTR504 010 01 02 04			2°	4.0		
WTR504 010 01 02 06				6.0		
WTR504 010 01 02 08				8.0		
WTR504 010 01 02 10				10.0		
WTR504 010 01 02 12				12.0		
WTR504 010 01 03 04			3°	4.0		
WTR504 010 01 03 06				6.0		
WTR504 010 01 03 08				8.0		
WTR504 010 01 03 10				10.0		
WTR504 010 01 03 12				12.0		
WTR504 010 02 01 04		0.2	1°	4.0		
WTR504 010 02 01 06				6.0		
WTR504 010 02 01 08				8.0		
WTR504 010 02 01 10				10.0		
WTR504 010 02 01 12				12.0		
WTR504 010 02 015 04			1°30`	4.0		

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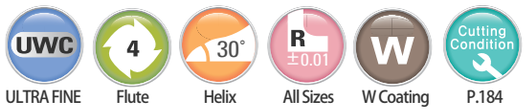
4 FLUTE TAPER CORNER RADIUS





WTR504...

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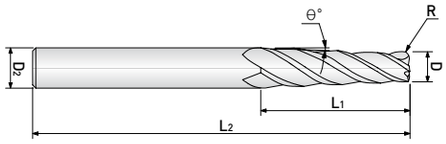


EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	D2
WTR504 010 02 015 06	1.0	0.2	1°30`	6.0	50	4
WTR504 010 02 015 08				8.0		
WTR504 010 02 015 10				10.0		
WTR504 010 02 015 12				12.0		
WTR504 010 02 02 04			2°	4.0		
WTR504 010 02 02 06				6.0		
WTR504 010 02 02 08				8.0		
WTR504 010 02 02 10				10.0		
WTR504 010 02 02 12				12.0		
WTR504 010 02 03 04			3°	4.0		
WTR504 010 02 03 06				6.0		
WTR504 010 02 03 08				8.0		
WTR504 010 02 03 10				10.0		
WTR504 010 02 03 12				12.0		
WTR504 010 03 01 04		0.3	1°	4.0		
WTR504 010 03 01 06				6.0		
WTR504 010 03 01 08				8.0		
WTR504 010 03 01 10				10.0		
WTR504 010 03 01 12				12.0		
WTR504 010 03 015 04			1°30`	4.0		
WTR504 010 03 015 06				6.0		
WTR504 010 03 015 08				8.0		
WTR504 010 03 015 10				10.0		
WTR504 010 03 015 12				12.0		
WTR504 010 03 02 04			2°	4.0		
WTR504 010 03 02 06				6.0		
WTR504 010 03 02 08				8.0		
WTR504 010 03 02 10				10.0		
WTR504 010 03 02 12				12.0		
WTR504 010 03 03 04			3°	4.0		
WTR504 010 03 03 06				6.0		
WTR504 010 03 03 08				8.0		
WTR504 010 03 03 10				10.0		
WTR504 010 03 03 12				12.0		
WTR504 012 01 01 06	1.2	0.1	1°	6.0	50	4
WTR504 012 01 01 08				8.0		
WTR504 012 01 01 10				10.0		
WTR504 012 01 01 12				12.0		

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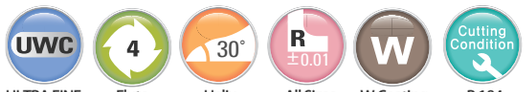
4 FLUTE TAPER CORNER RADIUS





WTR504...

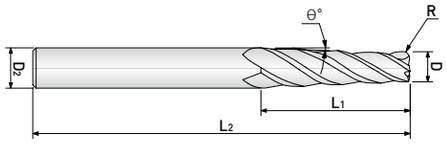
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EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	D2
WTR504 012 01 02 06	1.2	0.1	2°	6.0	50	4
WTR504 012 01 02 08				8.0		
WTR504 012 01 02 10				10.0		
WTR504 012 01 02 12				12.0		
WTR504 012 01 03 06			3°	6.0		
WTR504 012 01 03 08				8.0		
WTR504 012 01 03 10				10.0		
WTR504 012 01 03 12				12.0		
WTR504 012 02 01 06		0.2	1°	6.0		
WTR504 012 02 01 08				8.0		
WTR504 012 02 01 10				10.0		
WTR504 012 02 01 12				12.0		
WTR504 012 02 02 06			2°	6.0		
WTR504 012 02 02 08				8.0		
WTR504 012 02 02 10				10.0		
WTR504 012 02 02 12				12.0		
WTR504 012 02 03 06			3°	6.0		
WTR504 012 02 03 08				8.0		
WTR504 012 02 03 10				10.0		
WTR504 012 02 03 12				12.0		
WTR504 012 03 01 06		0.3	1°	6.0		
WTR504 012 03 01 08				8.0		
WTR504 012 03 01 10				10.0		
WTR504 012 03 01 12				12.0		
WTR504 012 03 02 06			2°	6.0		
WTR504 012 03 02 08				8.0		
WTR504 012 03 02 10				10.0		
WTR504 012 03 02 12				12.0		
WTR504 012 03 03 06			3°	6.0		
WTR504 012 03 03 08				8.0		
WTR504 012 03 03 10				10.0		
WTR504 012 03 03 12				12.0		

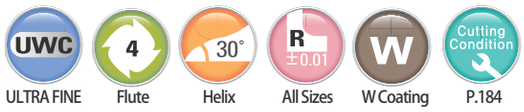
4 FLUTE TAPER CORNER RADIUS





WTR504...

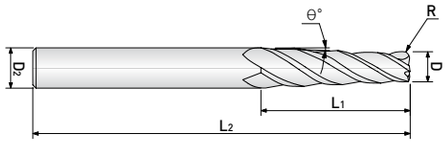
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EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	D2
WTR504 015 01 01 06	1.5	0.1	1°	6.0	50	4
WTR504 015 01 01 08				8.0		
WTR504 015 01 01 10				10.0		
WTR504 015 01 01 12				12.0		
WTR504 015 01 01 16				16.0		
WTR504 015 01 01 20				20.0	60	
WTR504 015 01 02 06			2°	6.0	50	
WTR504 015 01 02 08				8.0		
WTR504 015 01 02 10				10.0		
WTR504 015 01 02 12				12.0		
WTR504 015 01 02 16				16.0		
WTR504 015 01 02 20				20.0	60	
WTR504 015 01 03 06			3°	6.0	50	
WTR504 015 01 03 08				8.0		
WTR504 015 01 03 10				10.0		
WTR504 015 01 03 12				12.0		
WTR504 015 01 03 16				16.0		
WTR504 015 01 03 20				20.0	60	
WTR504 015 02 01 06	1.5	0.2	1°	6.0	50	4
WTR504 015 02 01 08				8.0		
WTR504 015 02 01 10				10.0		
WTR504 015 02 01 12				12.0		
WTR504 015 02 01 16				16.0		
WTR504 015 02 01 20				20.0	60	
WTR504 015 02 02 06			2°	6.0	50	
WTR504 015 02 02 08				8.0		
WTR504 015 02 02 10				10.0		
WTR504 015 02 02 12				12.0		
WTR504 015 02 02 16				16.0		
WTR504 015 02 02 20				20.0	60	

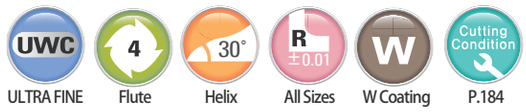
4 FLUTE TAPER CORNER RADIUS





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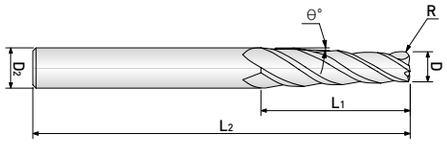


EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	D2
WTR504 015 02 03 06	1.5	0.2	3°	6.0	50	4
WTR504 015 02 03 08				8.0		
WTR504 015 02 03 10				10.0		
WTR504 015 03 02 12				12.0		
WTR504 015 03 02 16				16.0		
WTR504 015 03 02 20				20.0	60	
WTR504 015 03 03 06				6.0	50	
WTR504 015 03 03 08				8.0		
WTR504 015 03 03 10				10.0		
WTR504 015 03 03 12				12.0		
WTR504 015 03 03 16				16.0		
WTR504 015 03 03 20				20.0	60	
WTR504 020 01 01 08	2.0	0.1	1°	8.0	50	4
WTR504 020 01 01 10				10.0		
WTR504 020 01 01 12				12.0		
WTR504 020 01 01 16				16.0		
WTR504 020 01 01 20				20.0	60	
WTR504 020 01 01 25				25.0		
WTR504 020 01 02 08			2°	8.0	50	
WTR504 020 01 02 10				10.0		
WTR504 020 01 02 12				12.0		
WTR504 020 01 02 16				16.0		
WTR504 020 01 02 20				20.0	60	
WTR504 020 01 02 25				25.0		
WTR504 020 01 03 08			3°	8.0	50	4
WTR504 020 01 03 10				10.0		
WTR504 020 01 03 12				12.0		
WTR504 020 01 03 16				16.0		
WTR504 020 01 03 20				20.0	60	6
WTR504 020 01 03 25				25.0		
WTR504 020 02 01 08		0.2	1°	8.0	50	4
WTR504 020 02 01 10				10.0		
WTR504 020 02 01 12				12.0		
WTR504 020 02 01 16				16.0		
WTR504 020 02 01 20				20.0	60	
WTR504 020 02 01 25				25.0		

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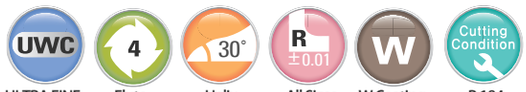
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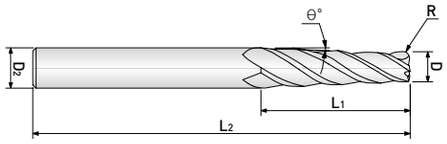


EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	D2
WTR504 020 02 02 08	2.0	0.2	2°	8.0	50	4
WTR504 020 02 02 10				10.0		
WTR504 020 02 02 12				12.0		
WTR504 020 02 02 16				16.0		
WTR504 020 02 02 20				20.0	60	
WTR504 020 02 02 25				25.0		
WTR504 020 02 03 08			3°	8.0	50	
WTR504 020 02 03 10				10.0		
WTR504 020 02 03 12				12.0		
WTR504 020 02 03 16				16.0		
WTR504 020 02 03 20				20.0	60	6
WTR504 020 02 03 25				25.0		
WTR504 020 03 01 08		0.3	1°	8.0	50	4
WTR504 020 03 01 10				10.0		
WTR504 020 03 01 12				12.0		
WTR504 020 03 01 16				16.0		
WTR504 020 03 01 20				20.0	60	
WTR504 020 03 01 25				25.0		
WTR504 020 03 02 08			2°	8.0	50	
WTR504 020 03 02 10				10.0		
WTR504 020 03 02 12				12.0		
WTR504 020 03 02 16				16.0		
WTR504 020 03 02 20				20.0	60	
WTR504 020 03 02 25				25.0		
WTR504 020 03 03 08			3°	8.0	50	
WTR504 020 03 03 10				10.0		
WTR504 020 03 03 12				12.0		
WTR504 020 03 03 16				16.0		
WTR504 020 03 03 20				20.0	60	6
WTR504 020 03 03 25				25.0		

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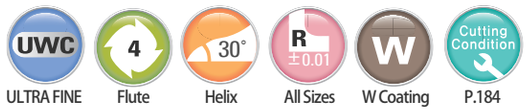
4 FLUTE TAPER CORNER RADIUS





WTR504...

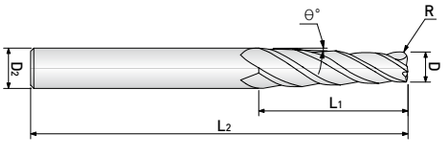
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EDP No.	Diameter	Radius	Taper Angle	Cutting Length	Overall Length	Shank Diameter
	D	R	θ	L1	L2	D2
WTR504 025 01 01 10	2.5	0.1	1°	10.0	50	4
WTR504 025 01 01 12				12.0		
WTR504 025 01 01 16				16.0		
WTR504 025 01 01 20				20.0	60	
WTR504 025 01 01 25				25.0		
WTR504 025 01 01 30				30.0		
WTR504 025 01 02 10			2°	10.0	50	
WTR504 025 01 02 12				12.0		
WTR504 025 01 02 16				16.0		
WTR504 025 01 02 20				20.0	60	
WTR504 025 01 02 25				25.0		6
WTR504 025 01 02 30				30.0		
WTR504 025 01 03 10			3°	10.0	50	4
WTR504 025 01 03 12				12.0		
WTR504 025 01 03 16				16.0		6
WTR504 025 01 03 20				20.0	60	
WTR504 025 01 03 25				25.0		
WTR504 025 01 03 30				30.0		
WTR504 025 02 01 10		0.2	1°	10.0	50	4
WTR504 025 02 01 12				12.0		
WTR504 025 02 01 16				16.0		
WTR504 025 02 01 20				20.0	60	
WTR504 025 02 01 25				25.0		
WTR504 025 02 01 30				30.0		
WTR504 025 02 02 10			2°	10.0	50	
WTR504 025 02 02 12				12.0		
WTR504 025 02 02 16				16.0		
WTR504 025 02 02 20				20.0	60	
WTR504 025 02 02 25				25.0		6
WTR504 025 02 02 30				30.0		

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EDP No.	Diameter D	Radius R	Taper Angle θ	Cutting Length L1	Overall Length L2	Shank Diameter D2
WTR504 025 02 03 10	2.5	0.2	3°	10.0	50	4
WTR504 025 02 03 12				12.0		
WTR504 025 02 03 16				16.0		6
WTR504 025 02 03 20				20.0	60	
WTR504 025 02 03 25				25.0		
WTR504 025 02 03 30				30.0		
WTR504 025 03 01 10		0.3	1°	10.0	50	4
WTR504 025 03 01 12				12.0		
WTR504 025 03 01 16				16.0		
WTR504 025 03 01 20				20.0	60	
WTR504 025 03 01 25				25.0		
WTR504 025 03 01 30				30.0		
WTR504 025 03 02 10			2°	10.0	50	
WTR504 025 03 02 12				12.0		
WTR504 025 03 02 16				16.0		
WTR504 025 03 02 20				20.0	60	
WTR504 025 03 02 25				25.0		6
WTR504 025 03 02 30				30.0		
WTR504 025 03 03 10			3°	10.0	50	4
WTR504 025 03 03 12				12.0		
WTR504 025 03 03 16				16.0		6
WTR504 025 03 03 20				20.0	60	
WTR504 025 03 03 25				25.0		
WTR504 025 03 03 30				30.0		

Tolerance

Mill Dia(mm)	Shank
0~-0.03	h6

※ Items can be changed for quality improvement without notice

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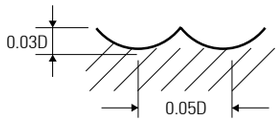
Technical Data

WIDIN®

Technical Data

WB502 series

Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/mm²		1100~1500N/mm²		1500~2000N/mm²	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
0.1	40000	550	40000	500	33000	400
0.2	30000	720	30000	630	27000	575
0.3	30000	900	30000	810	27000	720
0.4	30000	1140	30000	1020	27000	900
0.5	30000	1440	30000	1260	27000	1140
0.6	30000	1740	30000	1500	27000	1320
0.8	30000	2340	30000	1980	27000	1800
1.0	30000	2880	30000	2520	27000	2280
1.2	30000	3060	28800	2580	25800	2310
1.5	30000	3240	28800	2700	25800	2400
2.0	29820	3420	28680	2880	24000	2400
3.0	19860	3600	19080	3180	15900	2400
4.0	14940	3600	14340	3180	12000	2400
5.0	11160	3480	10680	2940	9000	2250
6.0	8340	2910	8040	2460	6600	1860
8.0	6660	2520	6420	2100	5400	1620
10.0	5580	2220	5340	1860	4500	1440
12.0	4170	1770	4008	1500	3360	1140
16.0	3340	1590	3210	1320	2700	1020
20.0	2670	1410	2580	1170	2160	900
25.0	2130	1150	2060	950	1730	730



RPM=rev./min.
FEED=mm/min.

WB512 series

Workpiece		AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)			PREHARDENED STEELS (NAK, CENA, KP4)			HARDENED STEELS (SKD, SKT, STAVAX)		
Hardness		~HRc35			HRc35~HRc45			HRc45~HRc55		
Strength		~1100N/㎟			1100~1500N/㎟			1500~2000N/㎟		
Diameter	Effective Length	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
0.1	0.2	50000	240	0.009	50000	215	0.007	50000	190	0.005
0.1	0.3	50000	240	0.009	50000	215	0.007	50000	190	0.005
0.1	0.5	50000	240	0.006	50000	215	0.005	50000	190	0.004
0.1	1	45000	195	0.002	45000	175	0.002	45000	155	0.001
0.2	0.5	50000	335	0.018	50000	310	0.014	43200	260	0.010
0.2	1	50000	335	0.013	50000	310	0.010	43200	260	0.007
0.2	1.5	45000	270	0.007	45000	250	0.006	38880	210	0.004
0.2	2	45000	270	0.005	45000	250	0.004	38880	210	0.003
0.2	3	45000	270	0.003	45000	250	0.003	38880	210	0.002
0.3	1	50000	475	0.019	50000	430	0.015	42800	365	0.011
0.3	1.5	50000	475	0.019	50000	430	0.015	42800	365	0.011
0.3	2	45000	385	0.011	45000	350	0.008	38520	295	0.006
0.3	2.5	45000	385	0.007	45000	350	0.005	38520	295	0.004
0.3	3	45000	385	0.007	45000	350	0.005	38520	295	0.004
0.3	4	40000	305	0.004	40000	275	0.003	34240	235	0.002
0.3	5	30000	200	0.003	30000	180	0.002	25680	155	0.002
0.4	1	41000	490	0.036	38800	425	0.028	34200	340	0.020
0.4	1.5	41000	490	0.025	38800	425	0.020	34200	340	0.014
0.4	2	41000	490	0.025	38800	425	0.020	34200	340	0.014
0.4	2.5	36900	395	0.014	34920	345	0.011	30780	275	0.008
0.4	3	36900	395	0.014	34920	345	0.011	30780	275	0.008
0.4	4	36900	395	0.009	34920	345	0.007	30780	275	0.005
0.4	5	32800	315	0.009	31040	270	0.007	27360	220	0.005
0.4	6	32800	315	0.005	31040	270	0.004	27360	220	0.003
0.4	8	24600	205	0.004	23280	180	0.003	20520	145	0.002
0.4	10	12300	90	0.004	11640	75	0.003	10260	60	0.002
0.5	1	34200	685	0.045	32300	580	0.035	28500	515	0.025
0.5	1.5	34200	685	0.045	32300	580	0.035	28500	515	0.025
0.5	2	34200	685	0.032	32300	580	0.025	28500	515	0.018
0.5	2.5	34200	685	0.032	32300	580	0.025	28500	515	0.018
0.5	3	30780	555	0.018	29070	470	0.014	25650	415	0.010
0.5	4	30780	555	0.018	29070	470	0.014	25650	415	0.010
0.5	5	30780	555	0.011	29070	470	0.009	25650	415	0.006
0.5	6	27360	440	0.011	25840	370	0.009	22800	330	0.006
0.5	8	20520	290	0.007	19380	245	0.005	17100	215	0.004
0.5	10	20520	290	0.005	19380	245	0.004	17100	215	0.003
0.5	12	10260	125	0.005	9690	105	0.004	8550	95	0.003
0.5	14	10260	125	0.005	9690	105	0.004	8550	95	0.003
0.5	16	3420	35	0.005	3230	30	0.004	2850	25	0.003
0.6	1	34200	1025	0.038	32300	840	0.029	28500	685	0.021
0.6	2	34200	1025	0.038	32300	840	0.029	28500	685	0.021
0.6	3	34200	1025	0.038	32300	840	0.029	28500	685	0.021
0.6	4	30780	830	0.022	29070	680	0.017	25650	555	0.012
0.6	5	30780	830	0.014	29070	680	0.011	25650	555	0.008
0.6	6	30780	830	0.014	29070	680	0.011	25650	555	0.008
0.6	8	27360	655	0.008	25840	540	0.006	22800	440	0.005
0.6	10	20520	430	0.005	19380	355	0.004	17100	290	0.003
0.6	12	20520	430	0.005	19380	355	0.004	17100	290	0.003
0.6	14	10260	185	0.005	9690	150	0.004	8550	125	0.003
0.6	16	10260	185	0.005	9690	150	0.004	8550	125	0.003
0.7	2	34200	1130	0.063	32300	930	0.049	28500	765	0.035
0.7	4	30780	915	0.025	29070	755	0.020	25650	620	0.014
0.7	6	30780	915	0.016	29070	755	0.012	25650	620	0.009

RPM=rev./min.
FEED=mm/min.

Continued on following page



Technical Data

WB512 series

Workpiece		AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)			PREHARDENED STEELS (NAK, CENA, KP4)			HARDENED STEELS (SKD, SKT, STAVAX)		
Hardness		~HRc35			HRc35~HRc45			HRc45~HRc55		
Strength		~1100N/㎟			1100~1500N/㎟			1500~2000N/㎟		
Diameter	Effective Length	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
0.7	8	27360	725	0.016	25840	595	0.012	22800	490	0.009
0.7	10	27360	725	0.009	25840	595	0.007	22800	490	0.005
0.7	12	20520	475	0.006	19380	390	0.005	17100	320	0.004
0.8	2	34200	1230	0.072	32300	1035	0.056	28500	855	0.040
0.8	3	34200	1230	0.050	32300	1035	0.039	28500	855	0.028
0.8	4	34200	1230	0.050	32300	1035	0.039	28500	855	0.028
0.8	5	30780	995	0.029	29070	840	0.022	25650	695	0.016
0.8	6	30780	995	0.029	29070	840	0.022	25650	695	0.016
0.8	8	30780	995	0.018	29070	840	0.014	25650	695	0.010
0.8	10	27360	785	0.018	25840	660	0.014	22800	545	0.010
0.8	12	27360	785	0.011	25840	660	0.008	22800	545	0.006
0.8	14	20520	515	0.007	19380	435	0.006	17100	360	0.004
0.8	16	20520	515	0.007	19380	435	0.006	17100	360	0.004
0.8	20	10260	220	0.007	9690	185	0.006	8550	155	0.004
0.9	4	29250	1120	0.032	27630	935	0.025	24390	775	0.018
0.9	6	29250	1120	0.032	27630	935	0.025	24390	775	0.018
0.9	8	29250	1120	0.020	27630	935	0.016	24390	775	0.011
0.9	10	26000	885	0.020	24560	740	0.016	21680	610	0.011
1.0	2	30800	1540	0.090	29100	1310	0.070	25700	1075	0.050
1.0	3	30800	1540	0.090	29100	1310	0.070	25700	1075	0.050
1.0	4	30800	1540	0.063	29100	1310	0.049	25700	1075	0.035
1.0	5	30800	1540	0.063	29100	1310	0.049	25700	1075	0.035
1.0	6	27720	1245	0.036	26190	1060	0.028	23130	870	0.020
1.0	7	27720	1245	0.036	26190	1060	0.028	23130	870	0.020
1.0	8	27720	1245	0.036	26190	1060	0.028	23130	870	0.020
1.0	10	27720	1245	0.023	26190	1060	0.018	23130	870	0.013
1.0	12	24640	985	0.023	23280	840	0.018	20560	690	0.013
1.0	14	24640	985	0.014	23280	840	0.011	20560	690	0.008
1.0	16	18480	645	0.014	17460	550	0.011	15420	450	0.008
1.0	18	18480	645	0.009	17460	550	0.007	15420	450	0.005
1.0	20	18480	645	0.009	17460	550	0.007	15420	450	0.005
1.0	22	9240	275	0.009	8730	235	0.007	7710	195	0.005
1.0	26	9240	275	0.009	8730	235	0.007	7710	195	0.005
1.0	30	9240	275	0.009	8730	235	0.007	7710	195	0.005
1.0	40	3080	75	0.009	2910	65	0.007	2570	55	0.005
1.0	50	3080	75	0.006	2910	65	0.005	2570	55	0.003
1.2	4	26300	1375	0.076	24800	1150	0.059	21900	950	0.042
1.2	6	26300	1375	0.076	24800	1150	0.059	21900	950	0.042
1.2	8	23670	1115	0.043	22320	930	0.034	19710	770	0.024
1.2	10	23670	1115	0.027	22320	930	0.021	19710	770	0.015
1.2	12	23670	1115	0.027	22320	930	0.021	19710	770	0.015
1.2	16	21040	880	0.016	19840	735	0.013	17520	610	0.009
1.2	20	15780	580	0.011	14880	485	0.008	13140	400	0.006
1.2	26	7890	245	0.011	7440	205	0.008	6570	170	0.006
1.4	6	21500	1295	0.088	20300	1100	0.069	18000	935	0.049
1.4	8	19350	1050	0.050	18270	890	0.039	16200	755	0.028
1.4	10	19350	1050	0.050	18270	890	0.039	16200	755	0.028
1.4	16	17200	830	0.032	16240	705	0.025	14400	600	0.018
1.5	4	23900	1580	0.135	22600	1355	0.105	20000	1075	0.075
1.5	5	23900	1580	0.095	22600	1355	0.074	20000	1075	0.053
1.5	6	23900	1580	0.095	22600	1355	0.074	20000	1075	0.053
1.5	7	23900	1580	0.095	22600	1355	0.074	20000	1075	0.053
1.5	8	21510	1280	0.054	20340	1100	0.042	18000	870	0.030

RPM=rev./min.
FEED=mm/min.

WB512 series

Workpiece		AlloY STEELS Carbon Steels (SCM, SNCM, S45C)			PREHARDENED STEELS (NAK, CENA, KP4)			HARDENED STEELS (SKD, SKT, STAVAX)		
Hardness		~HRc35			HRc35~HRc45			HRc45~HRc55		
Strength		~1100N/㎟			1100~1500N/㎟			1500~2000N/㎟		
Diameter	Effective Length	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
1.5	10	21510	1280	0.054	20340	1100	0.042	18000	870	0.030
1.5	12	21510	1280	0.054	20340	1100	0.042	18000	870	0.030
1.5	14	21510	1280	0.034	20340	1100	0.026	18000	870	0.019
1.5	16	19120	1010	0.034	18080	865	0.026	16000	690	0.019
1.5	18	19120	1010	0.034	18080	865	0.026	16000	690	0.019
1.5	20	19120	1010	0.020	18080	865	0.016	16000	690	0.011
1.5	22	19120	1010	0.020	18080	865	0.016	16000	690	0.011
1.5	26	14340	665	0.014	13560	570	0.011	12000	450	0.008
1.5	30	14340	665	0.014	13560	570	0.011	12000	450	0.008
1.5	35	7170	285	0.010	6780	245	0.008	6000	195	0.005
1.5	40	7170	285	0.010	6780	245	0.008	6000	195	0.005
1.6	4	22200	1555	0.101	21000	1300	0.078	18500	1110	0.056
1.6	6	22200	1555	0.101	21000	1300	0.078	18500	1110	0.056
1.6	8	22200	1555	0.101	21000	1300	0.078	18500	1110	0.056
1.6	10	19980	1260	0.058	18900	1055	0.045	16650	900	0.032
1.6	12	19980	1260	0.058	18900	1055	0.045	16650	900	0.032
1.6	16	19980	1260	0.036	18900	1055	0.028	16650	900	0.020
1.6	20	17760	995	0.036	16800	830	0.028	14800	710	0.020
1.8	4	22200	1780	0.113	21000	1470	0.088	18500	1225	0.063
1.8	6	22200	1780	0.113	21000	1470	0.088	18500	1225	0.063
1.8	8	22200	1780	0.113	21000	1470	0.088	18500	1225	0.063
1.8	10	19980	1440	0.065	18900	1190	0.050	16650	990	0.036
1.8	12	19980	1440	0.065	18900	1190	0.050	16650	990	0.036
1.8	16	19980	1440	0.041	18900	1190	0.032	16650	990	0.023
1.8	20	17760	1140	0.041	16800	940	0.032	14800	785	0.023
2.0	6	18000	1795	0.180	17000	1525	0.140	15000	1285	0.100
2.0	8	18000	1795	0.126	17000	1525	0.098	15000	1285	0.070
2.0	10	18000	1795	0.126	17000	1525	0.098	15000	1285	0.070
2.0	12	16200	1455	0.072	15300	1235	0.056	13500	1040	0.040
2.0	14	16200	1455	0.072	15300	1235	0.056	13500	1040	0.040
2.0	16	16200	1455	0.072	15300	1235	0.056	13500	1040	0.040
2.0	18	16200	1455	0.045	15300	1235	0.035	13500	1040	0.025
2.0	20	16200	1455	0.045	15300	1235	0.035	13500	1040	0.025
2.0	22	14400	1150	0.045	13600	975	0.035	12000	820	0.025
2.0	26	14400	1150	0.045	13600	975	0.035	12000	820	0.025
2.0	30	14400	1150	0.027	13600	975	0.021	12000	820	0.015
2.0	35	10800	755	0.018	10200	640	0.014	9000	540	0.010
2.0	40	10800	755	0.018	10200	640	0.014	9000	540	0.010
2.0	45	5400	325	0.018	5100	275	0.014	4500	230	0.010
2.0	50	5400	325	0.018	5100	275	0.014	4500	230	0.010
2.0	60	5400	325	0.018	5100	275	0.014	4500	230	0.010
2.5	8	15800	1925	0.158	14900	1605	0.123	13200	1305	0.088
2.5	10	15800	1925	0.158	14900	1605	0.123	13200	1305	0.088
2.5	12	15800	1925	0.158	14900	1605	0.123	13200	1305	0.088
2.5	16	14220	1560	0.090	13410	1300	0.070	11880	1055	0.050
2.5	20	14220	1560	0.090	13410	1300	0.070	11880	1055	0.050
2.5	22	14220	1560	0.056	13410	1300	0.044	11880	1055	0.031
2.5	26	12640	1230	0.056	11920	1025	0.044	10560	835	0.031
2.5	30	12640	1230	0.056	11920	1025	0.044	10560	835	0.031
2.5	35	12640	1230	0.034	11920	1025	0.026	10560	835	0.019
2.5	40	9480	810	0.034	8940	675	0.026	7920	550	0.019
2.5	45	9480	810	0.023	8940	675	0.018	7920	550	0.013
2.5	50	9480	810	0.023	8940	675	0.018	7920	550	0.013

RPM=rev./min.
FEED=mm/min.

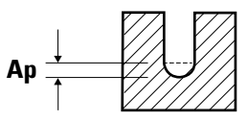
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Technical Data

WB512 series

Workpiece		AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)			PREHARDENED STEELS (NAK, CENA, KP4)			HARDENED STEELS (SKD, SKT, STAVAX)		
Hardness		~HRc35			HRc35~HRc45			HRc45~HRc55		
Strength		~1100N/㎟			1100~1500N/㎟			1500~2000N/㎟		
Diameter	Effective Length	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
3.0	6	13700	2050	0.270	12900	1730	0.210	11400	1435	0.150
3.0	8	13700	2050	0.270	12900	1730	0.210	11400	1435	0.150
3.0	10	13700	2050	0.189	12900	1730	0.147	11400	1435	0.105
3.0	12	13700	2050	0.189	12900	1730	0.147	11400	1435	0.105
3.0	14	13700	2050	0.189	12900	1730	0.147	11400	1435	0.105
3.0	16	12330	1660	0.108	11610	1400	0.084	10260	1160	0.060
3.0	18	12330	1660	0.108	11610	1400	0.084	10260	1160	0.060
3.0	20	12330	1660	0.108	11610	1400	0.084	10260	1160	0.060
3.0	22	12330	1660	0.108	11610	1400	0.084	10260	1160	0.060
3.0	26	12330	1660	0.068	11610	1400	0.053	10260	1160	0.038
3.0	30	12330	1660	0.068	11610	1400	0.053	10260	1160	0.038
3.0	35	10960	1310	0.068	10320	1105	0.053	9120	920	0.038
3.0	40	10960	1310	0.041	10320	1105	0.032	9120	920	0.023
3.0	45	10960	1310	0.041	10320	1105	0.032	9120	920	0.023
3.0	50	8220	860	0.027	7740	725	0.021	6840	605	0.015
3.0	60	8220	860	0.027	7740	725	0.021	6840	605	0.015
4.0	8	9800	1965	0.360	9300	1670	0.280	8200	1395	0.200
4.0	10	9800	1965	0.360	9300	1670	0.280	8200	1395	0.200
4.0	12	9800	1965	0.360	9300	1670	0.280	8200	1395	0.200
4.0	14	9800	1965	0.252	9300	1670	0.196	8200	1395	0.140
4.0	16	9800	1965	0.252	9300	1670	0.196	8200	1395	0.140
4.0	18	9800	1965	0.252	9300	1670	0.196	8200	1395	0.140
4.0	20	9800	1965	0.252	9300	1670	0.196	8200	1395	0.140
4.0	22	8820	1590	0.144	8370	1355	0.112	7380	1130	0.080
4.0	26	8820	1590	0.144	8370	1355	0.112	7380	1130	0.080
4.0	30	8820	1590	0.144	8370	1355	0.112	7380	1130	0.080
4.0	35	8820	1590	0.090	8370	1355	0.070	7380	1130	0.050
4.0	40	8820	1590	0.090	8370	1355	0.070	7380	1130	0.050
4.0	45	7840	1260	0.090	7440	1070	0.070	6560	895	0.050
4.0	50	7840	1260	0.090	7440	1070	0.070	6560	895	0.050
4.0	60	7840	1260	0.054	7440	1070	0.042	6560	895	0.030
5.0	15	7700	1845	0.315	7300	1455	0.245	6400	1285	0.175
5.0	20	7700	1845	0.315	7300	1455	0.245	6400	1285	0.175
5.0	26	6930	1495	0.180	6570	1180	0.140	5760	1040	0.100
5.0	30	6930	1495	0.180	6570	1180	0.140	5760	1040	0.100
5.0	35	6930	1495	0.180	6570	1180	0.140	5760	1040	0.100
5.0	40	6930	1495	0.180	6570	1180	0.140	5760	1040	0.100
5.0	50	6930	1495	0.113	6570	1180	0.088	5760	1040	0.063
5.0	60	6160	1180	0.113	5840	930	0.088	5120	820	0.063
6.0	20	6500	1900	0.378	6200	1600	0.294	5500	1330	0.210
6.0	30	6500	1900	0.378	6200	1600	0.294	5500	1330	0.210
8.0	25	4850	1800	0.504	4600	1500	0.392	4000	1280	0.280
8.0	30	4850	1800	0.504	4600	1500	0.392	4000	1280	0.280
10.0	30	3850	1650	0.900	3680	1400	0.700	3200	1200	0.500
10.0	40	3850	1650	0.630	3680	1400	0.490	3200	1200	0.350
12.0	32	3200	1520	1.080	3050	1300	0.840	2650	1100	0.600
12.0	45	3200	1520	0.756	3050	1300	0.588	2650	1100	0.420



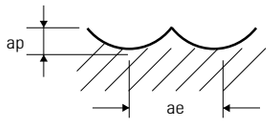
RPM=rev./min.
FEED=mm/min.

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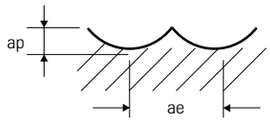
WB542 series

• Normal Speed

Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/㎟		1100~1500N/㎟		1500~2000N/㎟	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
0.1	16500	80	25500	185	25500	160
0.2	16500	90	25500	220	25500	200
0.3	15300	112	24000	260	24000	220
0.4	15300	112	24000	260	24000	220
0.5	13300	128	20800	300	20800	250
0.6	11200	144	17600	330	17600	280
0.8	11200	144	17600	330	17600	280
1.0	10180	160	16000	370	16000	320
1.5	9500	220	13000	500	12800	400
2.0	9250	260	11500	640	11300	590
3.0	8000	370	10200	880	9800	850
4.0	6720	420	8500	880	8200	850
5.0	5840	460	7500	880	7200	850
6.0	5500	660	6900	920	6500	880
8.0	4600	740	5600	840	5300	800
10.0	4070	820	4850	800	4650	770
12.0	3700	890	4350	800	4150	770



ap : D1~D6=0.2mm
D8~D12=0.3mm
ae : 0.2×D



ap : D1~D4=0.05×D
D5~D8=0.25mm
D10~D12=0.3mm
ae : 0.1×D

RPM=rev./min.
FEED=mm/min.

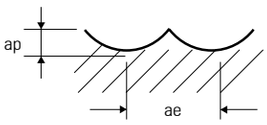
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Technical Data

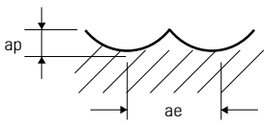
WB542 series

• High Speed

Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/㎟		1100~1500N/㎟		1500~2000N/㎟	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
0.1	32000	520	25600	310	25600	275
0.2	32000	620	25600	370	25600	330
0.3	30000	730	24000	430	24000	385
0.4	30000	730	24000	430	24000	385
0.5	26000	830	20800	500	20800	440
0.6	22000	940	17600	560	17600	500
0.8	22000	940	17600	560	17600	500
1.0	20000	1040	16000	620	16000	550
1.5	18500	1100	13500	720	13000	700
2.0	16800	1200	11500	850	11300	980
3.0	16800	1600	10200	1400	9800	1300
4.0	16800	2350	8500	1350	8200	1300
5.0	16800	2880	7500	1320	7200	1250
6.0	16800	3200	6900	1400	6500	1350
8.0	13400	3200	5600	1250	5300	1150
10.0	11200	3100	4850	1150	4650	1100
12.0	9800	3100	4350	1130	4150	1050



ap : D1~D6=0.2mm
D8~D12=0.3mm
ae : 0.05×D



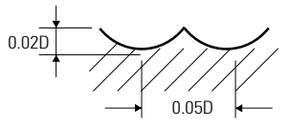
ap : D1~D4=0.05×D
D5~D8=0.25mm
D10~D12=0.3mm
ae : 0.05×D

RPM=rev./min.
FEED=mm/min.

Continued from previous page

WB522 series

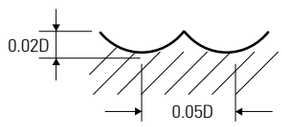
Workpiece	NON-FERROUS METALS (ACRYLIC、PLASTIC、ABS)	
Diameter	RPM	FEED
1.0	42000	280
1.5	28000	280
2.0	21000	280
3.0	14000	280
4.0	10500	280
5.0	8400	330
6.0	7000	330
8.0	5250	370
10.0	4200	370
12.0	3500	430
16.0	2650	320
20.0	2100	250



RPM=rev./min.
FEED=mm/min.

WB532 series

workpiece	AllOY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/mm²		1100~1500N/mm²		1500~2000N/mm²	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
3.0	35000	2800	33000	2600	12000	900
4.0	26000	2300	25000	2200	9000	800
5.0	21000	2100	20000	2000	7000	700
6.0	17000	1900	16000	1800	6000	650
8.0	13000	1700	12000	1600	4500	550
10.0	10500	1450	10000	1400	3500	500
12.0	9000	1400	8000	1300	3000	450

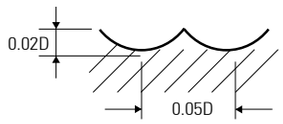


RPM=rev./min.
FEED=mm/min.

Technical Data

WSB502 series

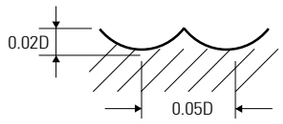
Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/mm²		1100~1500N/mm²		1500~2000N/mm²	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
3.0	13500	1700	13200	1620	12500	860
4.0	10600	1700	10300	1620	9800	860
5.0	9400	1650	9050	1570	8600	860
6.0	8600	1750	8250	1670	7850	865
8.0	7000	1550	6700	1460	6350	890
10.0	6050	1450	5800	1360	5450	870
12.0	5450	1420	5200	1330	4900	785
16.0	4300	1200	4000	1100	3700	650
20.0	3600	1050	3200	900	3000	550



RPM=rev./min.
FEED=mm/min.

WB503 series

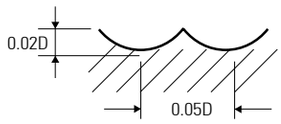
Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/mm²		1100~1500N/mm²		1500~2000N/mm²	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1.0	50000	4150	44000	3000	33000	2100
1.5	40000	5100	35000	3660	36400	2600
2.0	33000	5890	29000	4150	21700	3000
3.0	25000	6930	22000	4880	16500	3490
4.0	21670	6930	18120	4880	13400	3490
5.0	18000	6520	15100	4880	11160	3320
6.0	16200	7710	13680	5590	10980	4050
8.0	12150	6610	10170	4720	8280	3580
10.0	9720	5870	8190	4130	6620	3100
12.0	8150	5490	4130	3830	5520	2870



RPM=rev./min.
FEED=mm/min.

WB504 series

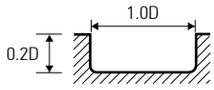
Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/mm²		1100~1500N/mm²		1500~2000N/mm²	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1.0	48000	3300	35000	2350	32000	2200
1.5	38400	4100	28000	2900	25600	2700
2.0	31680	4600	23100	3300	21000	3100
3.0	24000	5430	17500	3880	16000	3650
4.0	20130	5430	14880	3880	14220	3650
5.0	16780	5430	12400	3690	11670	3470
6.0	15200	6220	12200	4500	11100	3830
8.0	11300	5250	9200	3980	8320	3350
10.0	9100	4590	7350	3450	6660	2870
12.0	7590	4260	6130	3190	5530	2400

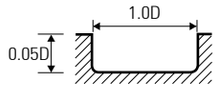


RPM=rev./min.
FEED=mm/min.

WR502 series

Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/mm²		1100~1500N/mm²		1500~2000N/mm²	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
0.2	44000	145	28800	60	17600	40
0.3	41000	170	27000	70	16500	45
0.4	41000	170	27000	70	16500	45
0.5	36000	190	23400	80	14300	50
0.6	30000	210	19800	90	12100	55
0.8	30000	210	19800	90	12100	55
1.0	27600	240	18000	100	11000	60
1.5	22000	250	13500	110	8500	60
2.0	18000	260	11560	120	7200	70
2.5	15000	270	9500	130	6100	70
3.0	13240	280	8560	140	5280	70
4.0	10720	340	6820	170	4300	80
5.0	9160	420	5800	200	3800	100
6.0	7900	500	5040	250	3280	120
8.0	6000	540	3800	250	2520	120
10.0	5040	540	3280	250	2020	120
12.0	4120	420	2780	230	1680	100
16.0	3100	360	2100	170	1280	80
20.0	2520	280	1640	120	1000	60





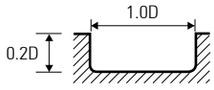
RPM=rev./min.
FEED=mm/min.

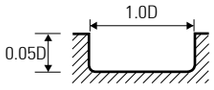


Technical Data

WR514, WR542 series

Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/㎟		1100~1500N/㎟		1500~2000N/㎟	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
0.2	50000	170	34500	75	21150	45
0.3	50000	200	32000	85	20000	50
0.4	50000	200	32000	85	20000	50
0.5	43000	220	28000	95	17100	60
0.6	36400	250	24000	110	14500	65
0.8	36400	250	24000	110	14500	65
1.0	33100	280	21600	120	13200	70
1.5	26400	300	16200	130	10200	70
2.0	21600	310	13800	140	8640	80
2.5	18000	320	11400	150	7320	80
3.0	15900	330	10300	160	6300	80
4.0	12800	400	8200	200	5150	95
5.0	11000	500	7000	240	4560	120
6.0	9500	600	6000	300	3930	140
8.0	7200	640	4550	300	3020	140
10.0	6000	640	4000	300	2420	140
12.0	5000	500	3340	270	2000	120
16.0	3720	450	2520	210	1540	95
20.0	3000	330	1950	140	1200	70

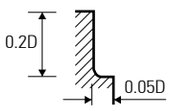


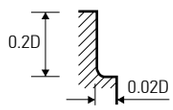


RPM=rev./min.
FEED=mm/min.

WXR504 series

Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/㎟		1100~1500N/㎟		1500~2000N/㎟	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1.0	27600	300	18000	220	11000	120
1.5	22000	310	13500	230	8500	120
2.0	18000	320	11560	240	7200	130
2.5	15000	330	9500	250	6100	130
3.0	13240	340	8560	260	5280	130
4.0	10720	420	6820	300	4300	140
5.0	9160	430	5800	360	3800	170
6.0	7900	430	5040	360	3280	170
8.0	6000	460	3800	360	2520	170
10.0	5040	460	3280	360	2020	170
12.0	4120	360	2780	320	1680	140
16.0	3100	280	2100	230	1280	115
20.0	2520	230	1640	180	1000	90



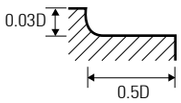


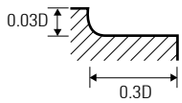
RPM=rev./min.
FEED=mm/min.

WDR503 series

• Normal Speed

Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/㎟		1100~1500N/㎟		1500~2000N/㎟	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
6.0	5100	3500	5500	3750	3850	2700
8.0	3800	3400	4150	3700	2850	2550
10.0	3800	3750	3600	3500	2700	2700
12.0	3200	4200	3250	4250	2250	2300
16.0	2400	3100	2250	2900	1700	1750
20.0	1900	2500	1800	2350	1350	1400

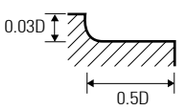


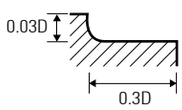


RPM=rev./min.
FEED=mm/min.

• HIGH SPEED

Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/㎟		1100~1500N/㎟		1500~2000N/㎟	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
6.0	8300	5700	7650	5250	6400	4550
8.0	6200	5550	5750	5100	5250	4700
10.0	5750	5650	5000	4900	4200	4250
12.0	4800	6300	4150	5450	3500	3650
16.0	3600	4700	3100	4050	2650	2700
20.0	2900	3750	2500	3250	2100	2150



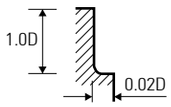


RPM=rev./min.
FEED=mm/min.

Technical Data

WXR514, WR544 series

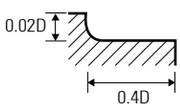
Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/㎟		1100~1500N/㎟		1500~2000N/㎟	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1.0	33100	360	21600	260	13200	140
1.5	26400	370	16200	270	10200	140
2.0	21600	380	13800	280	8640	150
2.5	18000	390	11400	300	7320	150
3.0	15900	400	10300	310	6300	150
4.0	12800	500	8200	360	5150	160
5.0	11000	510	7000	430	4560	200
6.0	9500	510	6000	430	3930	200
8.0	7200	550	4550	430	3020	200
10.0	6000	550	4000	430	2420	200
12.0	5000	430	3340	380	2000	160
16.0	3720	330	2520	280	1540	135
20.0	3000	270	1950	210	1200	100

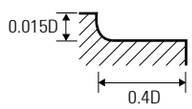


RPM=rev./min.
FEED=mm/min.

WSPM4 series

Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/㎟		1100~1500N/㎟		1500~2000N/㎟	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1.0	49000	7650	40000	6500	35000	5750
1.5	37000	8550	30000	7200	27000	6400
2.0	29700	9000	24300	7560	21600	6750
3.0	19800	9900	16200	8100	14400	7650
4.0	15300	10800	12600	8550	10800	7920
6.0	9900	11700	8100	9900	7200	8640
8.0	7380	11700	6300	9900	5400	8640
10.0	5850	10800	4950	9000	4320	8550
12.0	4950	10800	4140	9000	3690	8100
16.0	3690	9000	3060	7920	2700	7020
20.0	2970	7200	2430	6300	2160	5670

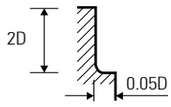


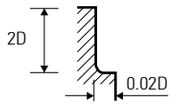


RPM=rev./min.
FEED=mm/min.

WR504, WR512 series

Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/㎟		1100~1500N/㎟		1500~2000N/㎟	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
3.0	4410	115	3570	100	2200	55
4.0	3570	140	2840	115	1790	60
5.0	3050	180	2420	140	1580	70
6.0	2630	215	2100	180	1370	85
8.0	2000	230	1580	180	1050	85
10.0	1680	230	1370	180	840	85
12.0	1370	180	1160	160	700	70
16.0	1160	160	890	125	560	60
20.0	840	115	680	90	420	45

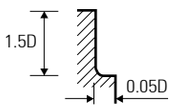


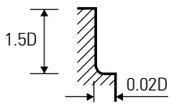


RPM=rev./min.
FEED=mm/min.

WR506 series

Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/㎟		1100~1500N/㎟		1500~2000N/㎟	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
6.0	14880	3210	14100	2940	9600	2940
8.0	12000	3300	11400	3000	7200	2760
10.0	9600	2940	9300	2700	5700	2460
12.0	7800	2700	7500	2460	4800	2280
16.0	6000	2400	5820	2220	3600	2040
20.0	4800	2010	4680	2040	2880	1920



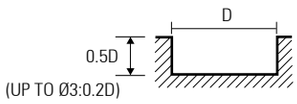


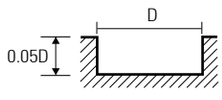
RPM=rev./min.
FEED=mm/min.

Technical Data

WME502, WME504 S4, WE502 S3, WE502 series

Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		STAINLESS STEELS (SUS)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45				HRc45~HRc55	
Strength	~1100N/㎟		1100~1500N/㎟				1500~2000N/㎟	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	11560	190	7560	120	6300	90	5040	35
3.0	8920	210	5560	140	4620	120	3360	40
4.0	7560	300	4620	180	3880	150	2940	40
5.0	6300	320	3780	190	3160	160	2320	50
6.0	5560	350	3360	220	2840	180	2000	55
8.0	4200	380	2520	200	2100	180	1680	75
10.0	3260	330	2000	160	1680	160	1360	60
12.0	2740	280	1680	130	1360	130	1160	55
16.0	2200	220	1360	110	1060	110	900	40
20.0	1680	170	1060	80	840	80	680	30
25.0	1360	130	840	70	680	60	540	20

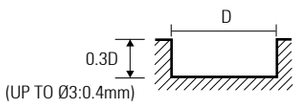


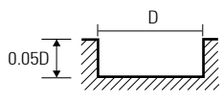


RPM=rev./min.
FEED=mm/min.

WE522 series

Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/㎟		1100~1500N/㎟		1500~2000N/㎟	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
2.0	6300	60	5040	50	3150	25
3.0	4410	70	3570	60	2200	30
4.0	3570	85	2840	70	1790	35
5.0	3050	105	2420	85	1580	40
6.0	2630	125	2100	105	1370	50
8.0	2000	135	1580	105	1050	50
10.0	1680	135	1370	105	840	50
12.0	1370	105	1160	95	700	40
16.0	1160	95	890	75	560	35
20.0	840	70	680	50	420	25





RPM=rev./min.
FEED=mm/min.

WE512 series

Workpiece		AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)			STAINLESS STEELS (SUS)			HARDENED STEELS (SKD, SKT, STAVAX)		
Hardness		~HRc35			HRc35~HRc45			HRc45~HRc55		
Strength		~1100N/㎟			1100~1500N/㎟			1500~2000N/㎟		
Diameter	Effective Length	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
0.1	0.3	50000	315	0.009	46200	230	0.007	40600	170	0.005
0.1	0.5	50000	315	0.006	46200	230	0.005	40600	170	0.004
0.1	1	45000	255	0.002	41580	185	0.002	36540	140	0.001
0.2	0.5	38500	380	0.018	36300	270	0.014	32100	200	0.010
0.2	1	38500	380	0.013	36300	270	0.010	32100	200	0.007
0.2	1.5	34650	310	0.007	32670	220	0.006	28890	160	0.004
0.2	2	34650	310	0.005	32670	220	0.004	28890	160	0.003
0.3	1	34200	390	0.019	32300	270	0.015	28500	230	0.011
0.3	1.5	34200	390	0.019	32300	270	0.015	25800	230	0.011
0.3	2	30780	315	0.011	29070	220	0.008	25650	185	0.006
0.3	2.5	30780	315	0.007	29070	220	0.005	25650	185	0.004
0.3	3	30780	315	0.007	29070	220	0.005	25650	185	0.004
0.3	4	27360	250	0.004	25840	175	0.003	22800	145	0.002
0.3	5	20520	165	0.003	19380	115	0.002	17100	95	0.002
0.4	1	27400	540	0.036	25800	380	0.028	22800	280	0.020
0.4	1.5	27400	540	0.025	25800	380	0.020	22800	280	0.014
0.4	2	27400	540	0.025	25800	380	0.020	22800	280	0.014
0.4	2.5	24660	435	0.014	23220	310	0.011	20520	225	0.008
0.4	3	24660	435	0.014	23220	310	0.011	20520	225	0.008
0.4	4	24660	435	0.009	23220	310	0.007	20520	225	0.005
0.4	5	21920	345	0.009	20640	245	0.007	18240	180	0.005
0.4	6	21920	345	0.005	20640	245	0.004	18240	180	0.003
0.4	8	16440	225	0.004	15480	160	0.003	13680	120	0.002
0.4	10	8220	95	0.004	7740	70	0.003	6840	50	0.002
0.5	1	27400	540	0.045	25800	425	0.035	22800	285	0.025
0.5	1.5	27400	540	0.045	25800	425	0.035	22800	285	0.025
0.5	2	27400	540	0.032	25800	425	0.025	22800	285	0.018
0.5	2.5	27400	540	0.032	25800	425	0.025	22800	285	0.018
0.5	3	24660	435	0.018	23220	345	0.014	20520	230	0.010
0.5	4	24660	435	0.018	23220	345	0.014	20520	230	0.010
0.5	5	24660	435	0.011	23220	345	0.009	20520	230	0.006
0.5	6	21920	345	0.011	20640	270	0.009	18240	180	0.006
0.5	8	16440	225	0.007	15480	180	0.005	13680	120	0.004
0.5	10	16440	225	0.005	15480	180	0.004	13680	120	0.003
0.5	12	8220	95	0.005	7740	75	0.004	6840	50	0.003
0.5	14	8220	95	0.005	7740	75	0.004	6840	50	0.003
0.5	16	2740	25	0.005	2580	20	0.004	2280	15	0.003
0.6	2	27400	775	0.038	25800	545	0.029	22800	405	0.021
0.6	3	27400	775	0.038	25800	545	0.029	22800	405	0.021
0.6	4	24660	630	0.022	23220	440	0.017	20520	330	0.012
0.6	5	24660	630	0.014	23220	440	0.011	20520	330	0.008
0.6	6	24660	630	0.014	23220	440	0.011	20520	330	0.008
0.6	8	21920	495	0.008	20640	350	0.006	18240	260	0.005
0.6	10	16440	325	0.005	15480	230	0.004	13680	170	0.003
0.6	12	16440	325	0.005	15480	230	0.004	13680	170	0.003
0.6	14	8220	140	0.005	7740	100	0.004	6840	75	0.003
0.6	16	8220	140	0.005	7740	100	0.004	6840	75	0.003
0.7	2	27400	775	0.063	25800	545	0.049	22800	405	0.035
0.7	4	24660	630	0.025	23220	440	0.020	20520	330	0.014
0.7	6	24660	630	0.016	23220	440	0.012	20520	330	0.009
0.7	8	21920	495	0.016	20640	350	0.012	18240	260	0.009
0.7	10	21920	495	0.009	20640	350	0.007	18240	260	0.005
0.7	12	16440	325	0.009	15480	230	0.005	13680	170	0.004

RPM=rev./min.
FEED=mm/min.

Continued on following page



Technical Data

WE512 series

Workpiece		AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)			PREHARDENED STEELS (NAK, CENA, KP4)			HARDENED STEELS (SKD, SKT, STAVAX)		
Hardness		~HRc35			HRc35~HRc45			HRc45~HRc55		
Strength		~1100N/㎟			1100~1500N/㎟			1500~2000N/㎟		
Diameter	Effective Length	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
0.8	2	27400	775	0.072	25800	605	0.056	22800	450	0.040
0.8	3	27400	775	0.050	25800	605	0.039	22800	450	0.028
0.8	4	27400	775	0.050	25800	605	0.039	22800	450	0.028
0.8	5	24660	630	0.029	23220	490	0.022	20520	365	0.016
0.8	6	24660	630	0.029	23220	490	0.022	20520	365	0.016
0.8	8	24660	630	0.018	23220	490	0.014	20520	365	0.010
0.8	10	21920	495	0.018	20640	385	0.014	18240	290	0.010
0.8	12	21920	495	0.011	20640	385	0.008	18240	290	0.006
0.8	14	16440	325	0.007	15480	255	0.006	13680	190	0.004
0.8	16	16440	325	0.007	15480	255	0.006	13680	190	0.004
0.8	20	8220	140	0.007	7740	110	0.006	6840	80	0.004
0.9	6	22140	575	0.032	20970	440	0.025	18450	330	0.018
0.9	8	22140	575	0.020	20970	440	0.016	18450	330	0.011
0.9	10	19680	455	0.020	18640	350	0.016	16400	260	0.011
1.0	2	24600	1045	0.090	23300	890	0.070	20500	665	0.050
1.0	3	24600	1045	0.090	23300	890	0.070	20500	665	0.050
1.0	4	24600	1045	0.063	23300	890	0.049	20500	665	0.035
1.0	5	24600	1045	0.063	23300	890	0.049	20500	665	0.035
1.0	6	22140	845	0.036	20970	720	0.028	18450	540	0.020
1.0	7	22140	845	0.036	20970	720	0.028	18450	540	0.020
1.0	8	22140	845	0.036	20970	720	0.028	18450	540	0.020
1.0	10	22140	845	0.023	20970	720	0.018	18450	540	0.013
1.0	12	19680	670	0.023	18640	570	0.018	16400	425	0.013
1.0	14	19680	670	0.014	18640	570	0.011	16400	425	0.008
1.0	16	14760	440	0.014	13980	375	0.011	12300	280	0.008
1.0	18	14760	440	0.009	13980	375	0.007	12300	280	0.005
1.0	20	14760	440	0.009	13980	375	0.007	12300	280	0.005
1.0	22	7380	190	0.009	6990	160	0.007	6150	120	0.005
1.0	26	7380	190	0.009	6990	160	0.007	6150	120	0.005
1.0	30	7380	190	0.009	6990	160	0.007	6150	120	0.005
1.0	40	2460	50	0.009	2330	45	0.007	2050	35	0.005
1.0	50	2460	50	0.006	2330	45	0.005	2050	35	0.003
1.2	4	21900	930	0.076	20700	720	0.059	18200	485	0.042
1.2	6	21900	930	0.076	20700	720	0.059	18200	485	0.042
1.2	8	19710	755	0.043	18630	585	0.034	16380	395	0.024
1.2	10	19710	755	0.027	18630	585	0.021	16380	395	0.015
1.2	12	19710	755	0.027	18630	585	0.021	16380	395	0.015
1.2	14	17520	595	0.027	16560	460	0.021	14560	310	0.015
1.2	16	17520	595	0.016	16560	460	0.013	14560	310	0.009
1.2	20	13140	390	0.011	12420	300	0.008	10920	205	0.006
1.2	26	6570	165	0.011	6210	130	0.008	5460	85	0.006
1.2	30	6570	165	0.011	6210	130	0.008	5460	85	0.006
1.4	6	19200	815	0.088	18100	570	0.069	16000	425	0.049
1.4	8	17280	660	0.050	16290	460	0.039	14400	345	0.028
1.4	10	17280	660	0.050	16290	460	0.039	14400	345	0.028
1.4	14	17280	660	0.032	16290	460	0.025	14400	345	0.018
1.4	16	15360	520	0.032	14480	365	0.025	12800	270	0.018
1.4	20	15360	520	0.019	14480	365	0.015	12800	270	0.011
1.5	4	19200	905	0.135	18100	635	0.105	16000	475	0.075
1.5	5	19200	905	0.095	18100	635	0.074	16000	475	0.053
1.5	6	19200	905	0.095	18100	635	0.074	16000	475	0.053
1.5	7	19200	905	0.095	18100	635	0.074	16000	475	0.053
1.5	8	17280	735	0.054	16290	515	0.042	14400	385	0.030

RPM=rev./min.
FEED=mm/min.

Continued from previoius page Continued on following page

WE512 series

Workpiece		AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)			PREHARDENED STEELS (NAK, CENA, KP4)			HARDENED STEELS (SKD, SKT, STAVAX)		
Hardness		~HRc35			HRc35~HRc45			HRc45~HRc55		
Strength		~1100N/㎟			1100~1500N/㎟			1500~2000N/㎟		
Diameter	Effective Length	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
1.5	10	17280	735	0.054	16290	515	0.042	14400	385	0.030
1.5	12	17280	735	0.054	16290	515	0.042	14400	385	0.030
1.5	14	17280	735	0.034	16290	515	0.026	14400	385	0.019
1.5	16	15360	580	0.034	14480	405	0.026	12800	305	0.019
1.5	18	15360	580	0.034	14480	405	0.026	12800	305	0.019
1.5	20	15360	580	0.020	14480	405	0.016	12800	305	0.011
1.5	22	15360	580	0.020	14480	405	0.016	12800	305	0.011
1.5	26	11520	380	0.014	10860	265	0.011	9600	200	0.008
1.5	30	11520	380	0.014	10860	265	0.011	9600	200	0.008
1.6	8	17800	840	0.101	16800	655	0.078	14800	490	0.056
1.6	10	16020	680	0.058	15120	530	0.045	13320	395	0.032
1.6	12	16020	680	0.058	15120	530	0.045	13320	395	0.032
1.6	16	16020	680	0.036	15120	530	0.028	13320	395	0.020
1.6	20	14240	540	0.036	13440	420	0.028	11840	315	0.020
1.8	8	17800	840	0.113	16800	655	0.088	14800	490	0.063
1.8	10	16020	680	0.065	15120	530	0.050	13320	395	0.036
1.8	12	16020	680	0.065	15120	530	0.050	13320	395	0.036
1.8	16	16020	680	0.041	15120	530	0.032	13320	395	0.023
1.8	20	14240	540	0.041	13440	420	0.032	11840	315	0.023
2.0	6	14400	820	0.180	13600	620	0.140	12000	475	0.100
2.0	8	14400	820	0.126	13600	620	0.098	12000	475	0.070
2.0	10	14400	820	0.126	13600	620	0.098	12000	475	0.070
2.0	12	12960	665	0.072	12240	500	0.056	10800	385	0.040
2.0	14	12960	665	0.072	12240	500	0.056	10800	385	0.040
2.0	16	12960	665	0.072	12240	500	0.056	10800	385	0.040
2.0	18	12960	665	0.045	12240	500	0.035	10800	385	0.025
2.0	20	12960	665	0.045	12240	500	0.035	10800	385	0.025
2.0	22	11520	525	0.045	10880	395	0.035	9600	305	0.025
2.0	26	11520	525	0.045	10880	395	0.035	9600	305	0.025
2.0	30	11520	525	0.027	10880	395	0.021	9600	305	0.015
2.0	35	8640	345	0.018	8160	260	0.014	7200	200	0.010
2.0	40	8640	345	0.018	8160	260	0.014	7200	200	0.010
2.0	45	4320	150	0.018	4080	110	0.014	3600	85	0.010
2.0	50	4320	150	0.018	4080	110	0.014	3600	85	0.010
2.0	60	4320	150	0.018	4080	110	0.014	3600	85	0.010
2.5	8	12300	970	0.158	11600	680	0.123	10300	510	0.088
2.5	10	12300	970	0.158	11600	680	0.123	10300	510	0.088
2.5	12	12300	970	0.158	11600	680	0.123	10300	510	0.088
2.5	14	11070	785	0.090	10440	550	0.070	9270	415	0.050
2.5	16	11070	785	0.090	10440	550	0.070	9270	415	0.050
2.5	18	11070	785	0.090	10440	550	0.070	9270	415	0.050
2.5	20	11070	785	0.090	10440	550	0.070	9270	415	0.050
2.5	22	11070	785	0.056	10440	550	0.044	9270	415	0.031
2.5	26	9840	620	0.056	9280	435	0.044	8240	325	0.031
2.5	30	9840	620	0.056	9280	435	0.044	8240	325	0.031
2.5	35	9840	620	0.034	9280	435	0.026	8240	325	0.019
2.5	40	7380	405	0.034	6960	285	0.026	6180	215	0.019
2.5	45	7380	405	0.023	6960	285	0.018	6180	215	0.013
2.5	50	7380	405	0.023	6960	285	0.018	6180	215	0.013
3.0	6	10900	860	0.270	10300	605	0.210	6600	450	0.150
3.0	8	10900	860	0.270	10300	605	0.210	6600	450	0.150
3.0	10	10900	860	0.189	10300	605	0.147	6600	450	0.105
3.0	12	10900	860	0.189	10300	605	0.147	6600	450	0.105

RPM=rev./min.
FEED=mm/min.

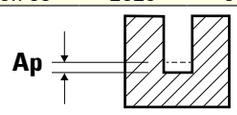
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Technical Data

WE512 series

Workpiece		AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)			PREHARDENED STEELS (NAK, CENA, KP4)			HARDENED STEELS (SKD, SKT, STAVAX)		
Hardness		~HRc35			HRc35~HRc45			HRc45~HRc55		
Strength		~1100N/㎟			1100~1500N/㎟			1500~2000N/㎟		
Diameter	Effective Length	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
3.0	14	10900	860	0.189	10300	605	0.147	6600	450	0.105
3.0	16	9810	695	0.108	9270	490	0.084	5940	365	0.060
3.0	18	9810	695	0.108	9270	490	0.084	5940	365	0.060
3.0	20	9810	695	0.108	9270	490	0.084	5940	365	0.060
3.0	22	9810	695	0.108	9270	490	0.084	5940	365	0.060
3.0	26	9810	695	0.068	9270	490	0.053	5940	365	0.038
3.0	30	9810	695	0.068	9270	490	0.053	5940	365	0.038
3.0	35	8720	550	0.068	8240	385	0.053	5280	290	0.038
3.0	40	8720	550	0.041	8240	385	0.032	5280	290	0.023
3.0	45	8720	550	0.041	8240	385	0.032	5280	290	0.023
3.0	50	6540	360	0.027	6180	255	0.021	3960	190	0.015
3.0	60	6540	360	0.027	6180	255	0.021	3960	190	0.015
4.0	8	8000	1300	0.360	7600	1160	0.280	6700	770	0.200
4.0	10	8000	1300	0.360	7600	1160	0.280	6700	770	0.200
4.0	12	8000	1300	0.360	7600	1160	0.280	6700	770	0.200
4.0	14	8000	1300	0.252	7600	1160	0.196	6700	770	0.140
4.0	16	8000	1300	0.252	7600	1160	0.196	6700	770	0.140
4.0	18	8000	1300	0.252	7600	1160	0.196	6700	770	0.140
4.0	20	8000	1300	0.252	7600	1160	0.196	6700	770	0.140
4.0	22	7200	1055	0.144	6840	940	0.112	6030	625	0.080
4.0	26	7200	1055	0.144	6840	940	0.112	6030	625	0.080
4.0	30	7200	1055	0.144	6840	940	0.112	6030	625	0.080
4.0	35	7200	1055	0.090	6840	940	0.070	6030	625	0.050
4.0	40	7200	1055	0.090	6840	940	0.070	6030	625	0.050
4.0	45	6400	830	0.090	6080	740	0.070	5360	495	0.050
4.0	50	6400	830	0.090	6080	740	0.070	5360	495	0.050
4.0	60	6400	830	0.054	6080	740	0.042	5360	495	0.030
5.0	16	6400	1155	0.315	6100	900	0.245	5400	605	0.175
5.0	20	6400	1155	0.315	6100	900	0.245	5400	605	0.175
5.0	26	5760	935	0.180	5490	730	0.140	4860	490	0.100
5.0	30	5760	935	0.180	5490	730	0.140	4860	490	0.100
5.0	35	5760	935	0.180	5490	730	0.140	4860	490	0.100
5.0	40	5760	935	0.180	5490	730	0.140	4860	490	0.100
5.0	50	5760	935	0.113	5490	730	0.088	4860	490	0.063
5.0	60	5120	740	0.113	4880	575	0.088	4320	385	0.063
6.0	15	5300	1055	0.540	5000	820	0.420	4400	550	0.300
6.0	20	5300	1055	0.378	5000	820	0.294	4400	550	0.210
6.0	30	5300	1055	0.378	5000	820	0.294	4400	550	0.210
6.0	32	4770	855	0.216	4500	665	0.168	3960	445	0.120
8.0	25	4000	950	0.504	3800	750	0.392	3300	500	0.280
8.0	30	4000	950	0.504	3800	750	0.392	3300	500	0.280
8.0	42	3600	770	0.288	3400	605	0.224	2950	405	0.160
10.0	30	3200	900	0.900	3050	680	0.700	2630	400	0.500
10.0	35	3200	900	0.630	3050	680	0.490	2630	400	0.350
10.0	45	3200	900	0.630	3050	680	0.490	2630	400	0.350
12.0	35	2650	800	1.080	2520	600	0.840	2180	350	0.600
12.0	40	2650	800	0.756	2520	600	0.588	2180	350	0.420
12.0	50	2650	800	0.756	2520	600	0.588	2180	350	0.420

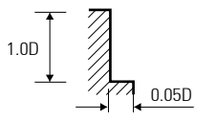


RPM=rev./min.
FEED=mm/min.

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WME504, WXE504series

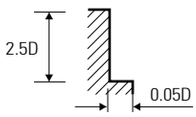
Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		STAINLESS STEELS (SUS)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45				HRc45~HRc55	
Strength	~1100N/㎟		1100~1500N/㎟				1500~2000N/㎟	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	11560	280	7560	170	6300	140	5040	50
3.0	8920	320	5560	200	4620	170	3360	60
4.0	7560	570	4620	350	3880	280	2940	60
5.0	6300	600	3780	360	3160	300	2320	70
6.0	5560	660	3360	410	2840	330	2000	80
8.0	4200	710	2520	380	2100	350	1680	110
10.0	3260	610	2000	300	1680	300	1360	90
12.0	2740	520	1680	250	1360	240	1160	80
16.0	2200	410	1360	200	1100	300	900	60
20.0	1680	320	1060	160	840	150	680	40
25.0	1360	250	840	130	680	120	540	30

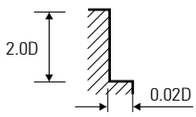


RPM=rev./min.
FEED=mm/min.

WE524 series

Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/㎟		1100~1500N/㎟		1500~2000N/㎟	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
2.0	6300	100	5040	80	3150	45
3.0	4410	115	3570	100	2200	55
4.0	3570	140	2840	115	1790	60
5.0	3050	180	2420	140	1580	70
6.0	2630	215	2100	180	1370	90
8.0	2000	230	1580	180	1050	90
10.0	1680	230	1370	180	840	90
12.0	1370	180	1160	160	700	70
16.0	1160	160	890	125	560	60
20.0	840	115	680	90	420	45





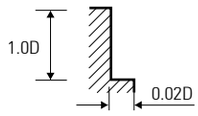
RPM=rev./min.
FEED=mm/min.



Technical Data

WE514 series

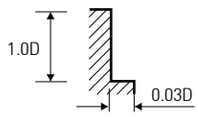
Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		STAINLESS STEELS (SUS)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45				HRc45~HRc55	
Strength	~1100N/mm²		1100~1500N/mm²				1500~2000N/mm²	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1.0	22000	310	13500	180	10750	140	8500	50
1.5	17000	320	10700	190	8500	150	6500	50
2.0	13900	330	9070	200	7560	165	6000	60
2.5	12000	350	7600	220	6000	180	4500	60
3.0	10700	380	6670	240	5110	200	4030	70
4.0	9070	680	5540	420	4650	330	3530	70
5.0	7560	720	4530	430	3800	360	2780	85
6.0	6670	790	4030	490	3400	390	2400	95
8.0	5040	850	3020	450	2520	420	2010	130
10.0	3910	730	2400	360	2010	360	1630	105
12.0	3300	620	2010	300	1630	280	1400	95



RPM=rev./min.
FEED=mm/min.

WE504...H series

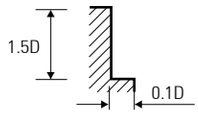
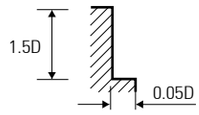
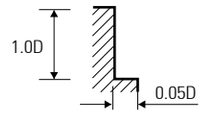
Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/mm²		1100~1500N/mm²		1500~2000N/mm²	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1.0	45000	750	37000	560	23000	300
2.0	23500	800	18000	540	12000	360
3.0	15750	810	12600	580	8280	380
4.0	12150	830	9540	600	6345	400
6.0	9450	900	7470	640	4950	440
8.0	7110	860	5625	620	3780	410
10.0	5580	800	4410	570	2925	380
12.0	4770	800	3780	570	2520	380
16.0	3600	810	2900	570	2000	400
20.0	3000	810	2300	570	1600	400



RPM=rev./min.
FEED=mm/min.

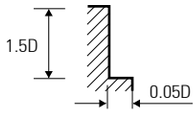
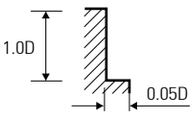
WE506 series

• Normal Speed

Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/㎟		1100~1500N/㎟		1500~2000N/㎟	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
6.0	5560	2000	3880	1370	1580	210
8.0	4200	2000	2940	1370	1160	210
10.0	3360	2000	2320	1370	1000	210
12.0	2840	1680	2000	1160	840	180
16.0	2100	1260	1480	880	640	130
20.0	1680	1010	1160	690	500	110
25.0	1500	90	1100	600	430	90
						

RPM=rev./min.
FEED=mm/min.

• High Speed

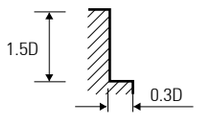
Workpiece	PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	HRc35~HRc45		HRc45~HRc55	
Strength	1100~1500N/㎟		1500~2000N/㎟	
Diameter	RPM	FEED	RPM	FEED
6.0	16800	6090	8400	3050
8.0	12600	6090	6300	3050
10.0	9980	5990	5040	3050
12.0	8400	5040	4200	2520
16.0	6300	3780	3160	1890
20.0	5040	3050	2520	1470
25.0	4500	2700	2200	1300
				

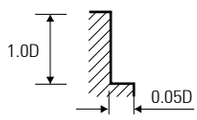
RPM=rev./min.
FEED=mm/min.

Technical Data

WF61 series

Workpiece	AlloY STEELS CARBON STEELS (SCM, SNCM, S45C)		PREHARDENED STEELS (NAK, CENA, KP4)		HARDENED STEELS (SKD, SKT, STAVAX)	
Hardness	~HRc35		HRc35~HRc45		HRc45~HRc55	
Strength	~1100N/mm²		1100~1500N/mm²		1500~2000N/mm²	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED
6.0	12400	840	8400	570	3400	260
8.0	9200	840	6300	570	2400	240
10.0	7600	840	5100	570	2000	290
12.0	6000	800	4200	570	1680	260
14.0	5200	840	3600	570	1400	200
16.0	4800	760	3300	510	1200	160
18.0	4400	720	2700	420	1100	150
20.0	3600	560	2400	360	1000	150
25.0	3200	620	2160	410	900	160

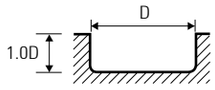


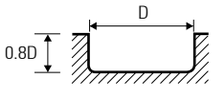


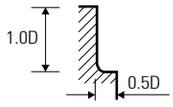
RPM=rev./min.
FEED=mm/min.

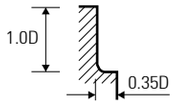
WF60 series

Workpiece	AlloY STEELS CARBON STEELS (SCM, S45C, S50C)		ALLOY STEELS CARBON STEELS PREHARDENED STEELS (SCM, SKD, NAK, KP4)		ALLOY STEELS CARBON STEELS [SCM, S45C, S50C]		ALLOY STEELS CARBON STEELS PREHARDENED STEELS [SCM, SKD, NAK, KP4]	
Hardness	~HRc25		HRc25~HRc40		~HRc25		HRc25~HRc40	
Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6.0	12000	1550	10600	1100	15800	2570	14300	1850
8.0	9000	1650	8100	1180	11900	2700	10700	1950
10.0	7200	1650	6400	1180	9500	2700	8500	1950
12.0	6000	1540	5400	1140	8000	2570	7100	1850
16.0	4500	1500	4100	1050	6000	2450	5400	1750
20.0	3600	1330	3200	900	4800	2140	4300	1500





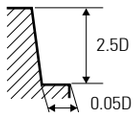




RPM=rev./min.
FEED=mm/min.

WTE502 series

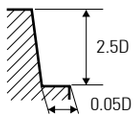
Workpiece	ALLOY STEELS CARBON STEELS [SCM, SNCM, S45C]		PREHARDENED STEELS [NAK, CENA, KP4]	
Hardness	~ HRc 35		HRc35~HRc45	
Strength	~1100N/㎟		1100~1500N/㎟	
Diameter	RPM	FEED	RPM	FEED
0.3	45000	135	35000	105
0.4	36000	144	27900	113
0.6	25200	144	18900	113
0.8	18000	144	13950	108
1.0	14850	149	11250	113
2.0	7560	153	5670	113
3.0	3969	108	3213	90
4.0	3213	126	2556	104
6.0	2367	189	1890	153
8.0	1800	225	1422	162
10.0	1440	225	1170	167



RPM=rev./min.
FEED=mm/min.

WTE504, WTE514 series

Workpiece	ALLOY STEELS CARBON STEELS [SCM, SNCM, S45C]		PREHARDENED STEELS [NAK, CENA, KP4]	
Hardness	~ HRc 35		HRc35~HRc45	
Strength	~1100N/㎟		1100~1500N/㎟	
Diameter	RPM	FEED	RPM	FEED
3.0	3969	216	3213	180
4.0	3213	252	2556	207
6.0	2367	378	1890	306
8.0	1800	450	1422	324
10.0	1440	450	1170	333



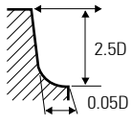
RPM=rev./min.
FEED=mm/min.



Technical Data

WTB502 series

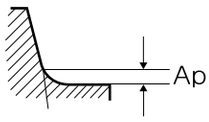
Workpiece	ALLOY STEELS CARBON STEELS [SCM, SNCM, S45C]		PREHARDENED STEELS [NAK, CENA, KP4]	
Hardness	~ HRc 35		HRc 35 ~ HRc 45	
Strength	~1100N/㎟		1100~1500N/㎟	
Diameter	RPM	FEED	RPM	FEED
0.4	36000	144	27900	113
0.6	25200	144	18900	113
0.8	18000	144	13950	108
1.0	14850	149	11250	113
2.0	7560	153	5670	113
3.0	3969	108	3213	90
4.0	3213	126	2556	104



RPM=rev./min.
FEED=mm/min.

WTR504 series

Workpiece	AlIOY STEELS CARBON STEELS (SCM, SNCM, S45C)			PREHARDENED STEELS (NAK, CENA, KP4)			HARDENED STEELS (SKD, SKT, STAVAX)		
Hardness	~HRc35			HRc35~HRc45			HRc45~HRc55		
Strength	~1100N/㎟			1100~1500N/㎟			1500~2000N/㎟		
Diameter	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)	RPM	FEED	Ap(mm)
0.4	40000	630	0.008~0.016	32000	450	0.008~0.012	22000	270	0.004~0.008
0.6	30000	630	0.012~0.024	23000	450	0.012~0.018	15000	270	0.006~0.012
0.8	22500	630	0.016~0.032	17000	450	0.016~0.024	11500	270	0.008~0.016
1.0	18000	630	0.020~0.040	13500	450	0.020~0.030	9000	270	0.010~0.020
1.2	14400	630	0.025~0.050	11700	450	0.025~0.040	7200	270	0.012~0.025
1.5	11700	630	0.030~0.060	9000	450	0.030~0.050	5850	270	0.015~0.030
2.0	9000	630	0.040~0.080	7200	450	0.040~0.060	4500	270	0.020~0.040



RPM=rev./min.
FEED=mm/min.

Trouble Shooting

Specific problem	Cause	Solution
Breakage	–Too fast feed speed –Too much feed rate –Excessive chip evacuation –Excessive abrasion –Excessive flute length	–Decrease feed speed –Decrease feed rate –Decrease chip evacuation –Regrind at earlier stage –Shorten the flute length
Abrasion and Burning	–Too fast cutting speed –Improper side cutting angle –Hard Material	–Decrease the cutting speed and increase coolant –Adjust proper side cutting angle –Supply the coolant and add surface treatment in order of Dry 〉 water soluble 〉 water in soluble
Chattering	–Improper cutting condition –Lack of rigidity of Chuck & Machine –Improper setting of workpiece –Excessive chip evacuation –Excessive relief angle	–Adjust cutting speed and feed. –Change chuck or machine. –Tighten workpiece –Shorten flute length and chip evacuation –Decrease the 1st relief angle of side edge
Defect on cutting edge	–Too fast feed speed –Small cutting angle –Vibration –Improper setting of workpiece –Too much feed rate –Excessive chip evacuation –Lack of rigidity on Machine	–Decrease feed speed –Adjust angle properly –Reduce RPM –Tighten workpiece –Decrease feed rate –Decrease chip evacuation –Re–set machine
Poor cutting	–Serious abrasion on cutting edge –Improper choice of endmill –Small cutting angle	–Regrind at earlier stage –Change proper endmill –Change angle
Chipping	–Low pressure of coolant –Improper chip pocket –Serious abrasion on cutting edge –Excessive chip evacuation	–Increase coolant and pressure –Decrease feed or change endmill –Regrind at earlier stage –Decrease feed rate
Burr	–Too fast feed rate –Too slow cutting speed –Serious abrasion on cutting edge –Excessive chip evacuation	–Decrease feed speed –Increase cutting speed –Regrind at earlier stage –Decrease feed rate
Oversize or Undersize	–Machinery & Chuck tolerance is out of range –Poor mechanical rigidity –Excessive flute length –Few number of flute	–Repair Machine or chuck –Change machine or chuck –Adjust proper flute length –Change endmill
Built-up Edge	–Incompatible with workpiece and shortage of coolant	–Supply coolant enough in order of Dry 〉 water soluble 〉 water insoluble –Use proper coolant

Hardness Conversion Table

Rm[N/mm²]	HV 10	HB	HRc
240	75	71	
255	80	76	
270	85	81	
285	90	86	
305	95	90	
320	100	95	
335	105	100	
350	110	105	
370	115	109	
385	120	114	
400	125	119	
415	130	124	
430	135	128	
450	140	133	
465	145	138	
480	150	143	
495	155	147	
510	160	152	
530	165	157	
545	170	162	
560	175	166	
575	180	171	
595	185	176	
610	190	181	
625	195	185	
640	200	190	
660	205	195	
675	210	199	
690	215	204	
705	220	209	
720	225	214	
740	230	219	
755	135	223	
770	140	228	
785	145	233	
800	150	238	22
820	155	242	23
835	160	247	24
860	268	255	25
870	272	258	26
900	280	266	27

Rm[N/mm2]	HV 10	HB	HRc
920	287	273	28
940	293	278	29
970	302	287	30
995	310	295	31
1020	317	301	32
1050	327	311	33
1080	336	319	34
1110	345	328	35
1140	355	337	36
1170	364	346	37
1200	373	354	38
1230	382	363	39
1260	392	372	40
1300	403	383	41
1330	413	393	42
1360	423	402	43
1400	434	413	44
1440	446	424	45
1480	458	435	46
1530	473	449	47
1570	484	460	48
1620	497	472	49
1680	514	488	50
1730	527	501	51
1790	544	517	52
1845	560	532	53
1910	578	549	54
1980	596	567	55
2050	615	584	56
2140	639	607	57
	655	622	58
	675		59
	698		60
	720		61
	745		62
	773		63
	800		64
	829		65
	864		66
	900		67
	940		68