WINSTAR

2015~2016

Cutting Tools Catalogue

Vol. 16B

Winstar Cutting Technologies Corp. *Is a Taiwanese company that started operations in the year 2008 by Tim Chen following a dream and personal interest in developing solid tools. We are a professional manufacturer of Cutting Tools and Inserts. Since WINSTAR started it has specialized in the Design and Manufacture of High-Quality Cutting Tools. Having more than 4,400 different kinds of items and huge stocks. We are able to meet customer's needs. 90% of our products provide our own brand tools and 10% to do OEM project for world-class cutting group. WINSTAR has become one of the most successful companies in Taiwan. We base our company's success on our long-standing commitment to satisfy our customers' needs. By Utilizing the Finest Raw Materials and introducing Innovative Cutting Tools.*

Why Winstar?
Your order will receive personal attention from our sales staff. We offer full technical support for our products and are always just a phone call away. Your satisfaction is very important to us. We stock our shelves to support our full product line. This means we probably have what you need ready to ship today.

Taiwanese made Quality
Your satisfaction is 100% guaranteed! Our complete line of end mills, drills, holders, and insert will stand-up-to or out-perform any premium cutting tool brand on the market.

Privacy and Security
We aggressively protect your privacy rights. All transactions are conducted via our secure, encrypted online system. Your customer information will never be sold, reproduced, or distributed.

Optimized Carbide Grades
Maximum cutting performance is only achieved when the carbide grade characteristics ideally fit the specific application needs.

Superior Grinding Quality
Research on better surface quality remains an area of continuous technological advancement. Since the cutting edge quality determines the tool life and cutting action, a superior grinding quality is critical. WINSTAR provides the latest Swiss and German grinding Technology to get a superior surface finish.

Highly Innovative Tool Geometries
Highest cutting action cannot be accomplished by using only the standard geometries of universal tools. Efficient chip forming and evacuation is critical for optimal cutting performance. Such geometries are designed to manage a broad range of cutting forces and provide the highest cutting action for aerospace applications. As a recognized provider for "special" tools, WINSTAR possesses the engineering know-how to design highly innovative tool geometries for maximum cutting.

Advanced Tool Coating Technology
We are committed to provide our Customers with Crafted precision and Excellence. Longest tool life and maximum application performance require the utilization of advanced coating technology. As this highly innovative field continues to rapidly change.

Winstar Friends and Family
In WINSTAR CUTTING TECHNOLOGIES Corp. We believe in partnership and understands that the best way to grow is together. That is the reason Winstar works as a team, to provide the customer with a better efficient service. We also have partnerships around the globe. With this special friends we work just the same way we work together in WINSTAR. To make bigger and better alliances so we can grow together as a big family.

Welcome to WINSTAR Family

Milling

A Solid Carbide EndMill A01~A94

B Milling Insert & Cutter B01~B61

Drilling

C Solid Carbide Drill C01~C31

D Drilling Insert & Holder D01~D07

Technical Data

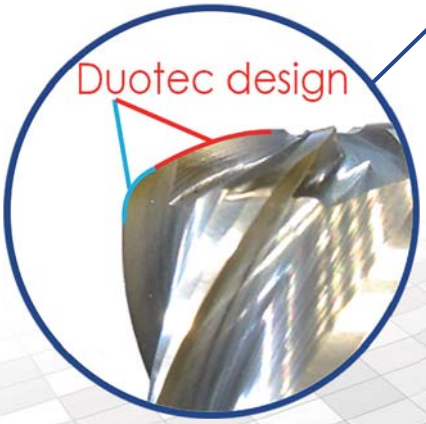
E Cutting Technical Data E01~E03

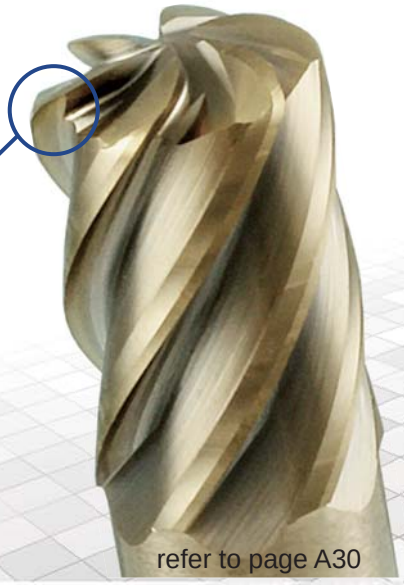
NEW

EHWSA High Feed Endmill

Duotec Design

- Double corner radius and multi-flute geometry design.
- High feed and high metal removal rate in surface milling.
- Use SICO Nano coating.
- UMG Carbide substrate possess high TRS and good wear resistance.

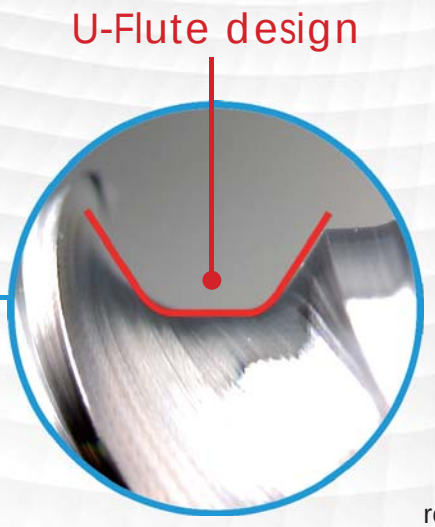




refer to page A30

EHWSA High Performance Endmill for Aluminum

- U-Flute design with high chips volume space and easy to remove chips.
- Excellent for high feed rough milling.
- Also suitable for surface finish in high speed milling.



refer to page A92

NEW

ENSSC EndMill for Non-ferrous

- DICO Coating surface hardness exceeds 50GPa.
- Suitable for Non-ferrous cutting, e.g., copper, aluminum, graphite, plastic processing special.
- Multiple processing efficiency, coefficient of friction <0.1μm.
- Large positive rake angle and deep flute design, improves cutting efficiency.

refer to page A93

EPT Series Special Tool for Non-ferrous

- Customize for special specification.
- Low cutting resistance, high-speed cutting.
- Polish edge with even force, low vibration and high finishing surface.
- High feed, high cutting efficiency.
- Blade design for Aluminum and Stainless steel.

EPTSS Slot T Type

EPTST Angular L Type

EPTSV Angular V Type

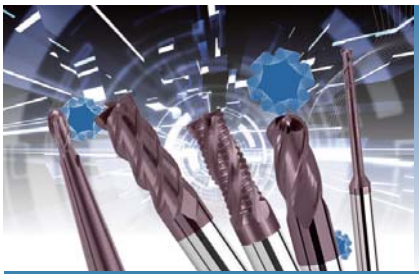
WINSTAR

A Solid Carbide EndMill

H650 Series up to HRC 60

- For hardened steel, HRC 40~60.
- Ultra grain carbide.
- SICO, TOP ARCO coating.

A01~A30



G550 Series up to HRC 55

- For ordinary steel, alloy steel, cast iron, HRC 30~55.
- Micro grain carbide.
- UNICO coating.

A31~A70

M500 Series up to HRC 50

- For stainless steel, difficult-to-cut material, HRC 20~50.
- Ultra grain carbide.
- ARCO coating.

A71~A80

G450 Series up to HRC 48

- For steel, alloy steel, cast iron, aluminum alloy (Si > 15%), HRC 20~48.
- Micro grain carbide.
- UNICO coating.

A81~A86

A100 Series up to HRC 18

- For non-ferrous, aluminum, aluminum alloy, copper, HRC < 18.
- Micro grain carbide.
- Uncoating.

A87~A94

ICONS GUIDE

WINSTAR

Micro Grain	MG
Ultra Micro Grain	UMG
Ultra Micro Grain 0.4μm	UMG 0.4μm
Helix Angle	30°
Material Hardness	HRC 35
Unequal	
Variable Helix	Varix
UNICO Coated	UNICO

TOP ARCO Coated	TOP ARCO
ARCO Coated	ARCO
SICO Coated	SICO
Sharp Corner Type	
Flatland Type	
Chamfer Type	C
Corner Radius	R
Square Type 2F	

Square Type 3F	
Square Type 4F	
Square Type 6F	
Square Type 8F	
Ball Nose 2F	
Ball Nose 4F	
Corner Radius 2F	
Corner Radius 4F	

Index A

Solid Carbide EndMill

Appearance	Series	Code No .	Ø Range	Num.of Teeth	HelixAngle	Coating	Working Materials P	M	K	N	S	H	Page
H650 Series	***up to HRC 60***												
	Square Type - 2F	EHSFA2, EHSSA2	Ø1~Ø20	2	30°	ARCO	√	√	√			√	A02
	Square Type - 4F	EHSFA4, EHSSA4	Ø1~Ø20	4	30°	ARCO	√	√	√			√	A03
	High Helix Square Type - 4F	EHSFH4, EHSSH4	Ø3~Ø16	4	45°	ARCO	√	√	√			√	A04
	High Helix Square Type - 6F	EHSSS6	Ø6~Ø14	6	45°	SICO	√	√	√			√	A05
	High Helix Square Type - 8F	EHSSS8	Ø16~Ø20	8	45°	SICO	√	√	√			√	A05
	High Helix & Short Flute Square Type - 4F	EHSPS4, EHSUS4	Ø1~Ø5	4	45°	SICO	√	√	√			√	A06
	High Helix & Short Flute Square Type - 6F	EHSUS6	Ø6~Ø12	6	45°	SICO	√	√	√			√	A06
	High Helix & Short Flute Square Type - 8F	EHSUS8	Ø16~Ø20	8	45°	SICO	√	√	√			√	A06
	Long Neck Square Type - 2F	EHSBC2, EHSRC2	Ø0.2~Ø12	2	30°	ARCO	√	√	√			√	A07 ~ A09
	Long Neck Square Type - 4F	EHSBC4, EHSRC5	Ø1~Ø12	4	30°	ARCO	√	√	√			√	A10 ~ A11
	Ball Nose Type - 2F	EHBFH2, EHBSH2	1R~8R	2	30°	ARCO	√	√	√			√	A12
	Short Flute Ball Nose Type - 2F	EHBUH2	1R~8R	2	30°	SICO	√	√	√			√	A13
	High Precision & Short Flute Ball Nose Type - 2F	EHBUP2	0.75R~6R	2	30°	SICO	√	√	√			√	A14
	Low Helix & Short Flute Ball Nose Type - 2F	EHBPS2, EHBUS2	0.5R~8R	2	15°	SICO	√	√	√			√	A15
	Long Neck Ball Nose Type - 2F	EHBBC2, EHBRC2	0.15R~6R	2	30°	ARCO	√	√	√			√	A16 ~ A18
	Taper Neck Ball Nose Type - 2F	EHBRT2	1R~6R	2	30°	ARCO	√	√	√			√	A19
	Corner Radius Type - 4F	EHCFH4, EHCSH4	Ø4~Ø12	4	30°	ARCO	√	√	√			√	A20
	Short Flute Corner Radius Type - 4F	EHCUH4	Ø3~Ø12	4	30°	SICO	√	√	√			√	A21
	Straight Short Flute Corner Radius Type - 4F	EHCPS4, EHCUS4	Ø1~Ø12	4	0°	SICO	√	√	√			√	A22
	Long Neck Corner Radius Type - 2F	EHCBC2, EHCRC2	Ø1~Ø12	2	30°	ARCO	√	√	√			√	A23 ~ A26
	Long Neck Corner Radius Type - 4F	EHCBC4, EHCRC4	Ø2~Ø12	4	30°	ARCO	√	√	√			√	A27 ~ A29
	Double Corner High Feed EndMill - 6F	EHWSA4, EHWSA6	Ø6~Ø12	6	38°	SICO	√	√	√			√	A30

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Solid Carbide EndMill

Appearance	Series	Code No .	Ø Range	Num.of Teeth	HelixAngle	Coating	Working Materials P	M	K	N	S	H	Page
G550 Series	***up to HRC 55***												
	Square Type - 2F	EPSFC2, EPSSC2	Ø0.2~Ø25	2	30°	UNICO	√	√	√			√	A32
	Square Type - 4F	EPSFC4, EPSSC4	Ø1~Ø25	4	30°	UNICO	√	√	√			√	A33
	Anti-Vibration Square Type - 4F	EPSSD4	Ø5~Ø16	4	30°	UNICO	√	√	√			√	A34
	High Helix & Anti-Vibration SquareType - 4F	EPSSF4	Ø5~Ø16	4	45°	UNICO	√	√	√			√	A35
	High Helix Square Type - 4F	EPSFC4, EPSSC4	Ø3~Ø16	4	45°	UNICO	√	√	√			√	A36
	Long Flute Square Type - 4F	EPSCA4	Ø3~Ø25	4	35°	UNICO	√	√	√			√	A37
	Long Shank Square Type - 2F	EPSEC2, EPSKC2 EPSLC2, EPSNC2	Ø4~Ø16	2	30°	UNICO	√	√	√			√	A38
	Long Shank Square Type - 4F	EPSEC4, EPSKC4 EPSLC4, EPSNC4	Ø4~Ø20	4	30°	UNICO	√	√	√			√	A39
	Roughing Square Type - 4F	EPSRR4	Ø6~Ø20	4	30°	UNICO	√	√	√			√	A40
	Long Neck Square Type - 2F	EPSBC2, EPSRC2	Ø0.2~Ø12	2	30°	UNICO	√	√	√			√	A41 ~ A43
	Long Neck Square Type - 4F	EPSBC4, EPSRC4	Ø1~Ø12	4	30°	UNICO	√	√	√			√	A44 ~ A45
	Taper Square Type - 2F	EPSFT2, EPSST2	Ø1~Ø4	2	35°	UNICO	√	√	√			√	A46 ~ A47
	Ball Nose Type - 2F	EPBFC2, EPBSC2	0.1R~10R	2	30°	UNICO	√	√	√			√	A48
	Ball Nose Type - 4F	EPBFC4, EPBSC4	1R~10R	4	30°	UNICO	√	√	√			√	A49
	Long Shank Ball Nose Type - 2F	EPBEC2, EPBKC2 EPBLC2, EPBNC2	2R~8R	2	30°	UNICO	√	√	√			√	A50
	Long Shank Ball Nose Type - 4F	EPBEC4, EPBKC4 EPBLC4, EPBNC4	2R~8R	4	30°	UNICO	√	√	√			√	A51
	Long Neck Ball Nose Type - 2F	EPBBC2, EPBRC2	0.15R~6R	2	30°	UNICO	√	√	√			√	A52 ~ A54
	Taper Ball Nose Type - 2F	EPBFT2, EPBST2	1R~3R	2	30°	UNICO	√	√	√			√	A55
	Taper Neck Ball Nose Type - 2F	EPBRT2	0.5R~2R	2	30°	UNICO	√	√	√			√	A56
	Corner Radius Type - 2F	EPCSC2	Ø4~Ø16	2	30°	UNICO	√	√	√			√	A57
	Corner Radius Type - 4F	EPCSC2	Ø3~Ø16	4	30°	UNICO	√	√	√			√	A58
	High Helix Corner Radius Type - 4F	EPCSH4	Ø3~Ø12	4	45°	UNICO	√	√	√			√	A59
	Long Shank Corner Radius Type - 4F	EPCLC4	Ø3~Ø16	4	30°	UNICO	√	√	√			√	A60
	Long Neck Corner Radius Type - 2F	EPCBC2, EPCRC2	Ø1~Ø12	2	30°	UNICO	√	√	√			√	A61 ~ A64
	Long Neck Corner Radius Type - 4F	EPCBC2, EPCRC2	Ø2~Ø12	4	30°	UNICO	√	√	√			√	A65 ~ A67
	Taper Neck Corner Radius Type - 2F	EPCRT2	Ø2~Ø10	2	30°	UNICO	√	√	√			√	A68
	Inner Radius Type - 2F	EPIFA2, EPISA2	0.5R~6R	2	0°	UNICO	√	√	√				A69
	Inner Radius Type - 4F	EPIFA4, EPISA4	0.5R~6R	4	0°	UNICO	√	√	√				A70

Index A

Solid Carbide EndMill

Appearance	Series	Code No .	Ø Range	Num.of Teeth	HelixAngle	Coating	Working Materials P	M	K	N	S	H	Page
M500 Series up to HRC 50													
	Square Type - 2F	ESSFA2, ESSSA2	Ø3~Ø16	2	35°	ARCO	√	√			√		A72
	Square Type - 4F	ESSFA4, ESSSA4	Ø3~Ø16	4	35°	ARCO	√	√			√		A73
	Anti-Vibration Square Type - 4F	ESSSD4	Ø5~Ø16	4	35°	ARCO	√	√			√		A74
	Varix & Anti-Vibration Square Type - 4F	ESSSV4	Ø4~Ø16	4	35 & 38	ARCO	√	√			√		A75
	Wave Edge Square Type - 3F	ESSSW3	Ø6~Ø20	3	30°	ARCO	√	√			√		A76
	Wave Edge Square Type - 4F	ESSSW4	Ø6~Ø20	4	30°	ARCO	√	√			√		A77
	Ball Nose Type - 2F	ESBFA2, ESBSA2	1R~8R	2	30°	ARCO	√	√			√		A78
	Corner Radius Type - 4F	ESBFA2, ESBSA2	Ø3~Ø12	4	30°	ARCO	√	√			√		A79
	Varix & Anti-Vibration Corner Radius Type - 4F	ESCSV4	Ø4~Ø16	4	35 & 38	ARCO	√	√			√		A80
G450 Series up to HRC 48													
	Square Type - 2F	EPSFA2, EPSSA2	Ø1~Ø25	2	35°	UNICO	√	√	√				A82
	Square Type - 4F	EPSFA4, EPSSA4	Ø1~Ø25	4	35°	UNICO	√	√	√				A83
	Long Flute Square Type - 4F	EPSCA4	Ø3~Ø25	4	35°	UNICO	√	√	√				A84
	Long Shank SquareType - 2F	EPSEA2, EPSKA2 EPSLA2, EPSNA2	Ø4~Ø16	2	30°	UNICO	√	√	√				A85
	Long Shank Square Type - 4F	EPSEA4, EPSKA4 EPSLA4, EPSNA4	Ø4~Ø20	4	30°	UNICO	√	√	√				A86

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Solid Carbide EndMill

Appearance	Series	Code No .	Ø Range	Num.of Teeth	Helix Angle	Coating	Working Materials P	M	K	N	S	H	Page
A100 Series up to HRC 20 (for Aluminium alloy)													
	Square Type - 2F	ENSFS2, ENSSS2	Ø1~Ø20	2	45°					√			A88
	Square Type - 3F	ENSFS3, ENSSS3	Ø2~Ø20	3	45°					√			A89
	Square & Long Flute Type - 3F	ENSCS3	Ø3~Ø20	3	45°					√			A90
	Square & High Helix Type - 3F	ENSSH3	Ø4~Ø16	3	55°					√			A91
	High Performance Square Type - 3F for side milling	ENSSB3	Ø2~Ø20	3	45°					√			A92
	High Performance Square Type - 4F for slot milling	ENSSC4	Ø5~Ø12	4	30°					√			A93
	Ball Nose Type - 2F	ENBFA2, ENBSA2	0.5R~8R	2	35°					√			A94

H650 series

up to HRC 60

Benefits of High-Helix

- Suitable for HRC50 and over HRC50 Hardened Steel, also for preheated steels, HRC35 and over HRC35.
- Thick coating is wear resistance and it provides very high tool life.
- Tool Deflection is reduced because the transferred stresses are vertically thru the spindle rather than horizontal.
- Speeds chip removal because chip evacuation is vertical.
- You have more cutting-edge in side cutting.
- High-Helix end mills increases tool life in side milling
- Greater shearing action results in increased speeds and feeds and faster stock removal.
- Horsepower consumption will be decreased with greater shearing action.
- Inherent to the production of Hi-Helix End Mills is a much thicker core resulting in a much stronger tool.

Benefits of Low-Helix

- Less Aggressive, and high rigidity which mean better performance in 3D surface milling.
- Stronger cutting edge Tools for Hardened Materials.

H650 Series

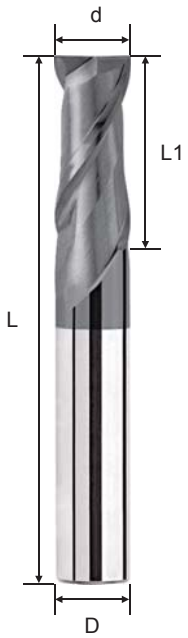
WINSTAR

CARBIDE ENDMILLS - Square Type - 2F

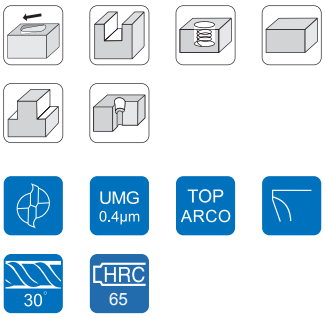
- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- UMG Carbide with Incredible toughness and wear resistance at hi speeds.
- Negative angle design with stronger cutting edge.
- The coating can change to SICO, the prices will differ.

EHSFA2
EHSSA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EHSFA201000A	1	3	50	4	2
EHSFA202000A	2	5	50	4	2
EHSFA203000A	3	8	50	4	2
EHSFA204000A	4	10	50	4	2
EHSSA203000A	3	8	50	6	2
EHSSA204000A	4	10	50	6	2
EHSSA205000A	5	13	50	6	2
EHSSA206000A	6	15	50	6	2
EHSSA208000A	8	20	60	8	2
EHSSA210000A	10	25	75	10	2
EHSSA212000A	12	30	75	12	2
EHSSA216000A	16	35	100	16	2
EHSSA220000A	20	45	100	20	2



WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	SKT, SKD		SKT, SKD		SKT, SKD	
HARDNESS	HRC 35~45		HRC 45~55		HRC 55~60	
Vc	143 M/min		124 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	15,340	1,150	13,000	830	10,920	500
4MM	11,440	1,070	9,880	780	8,190	460
5MM	9,100	990	7,800	730	6,500	420
6MM	7,670	910	6,500	660	5,460	400
8MM	5,720	830	4,940	610	4,160	400
10MM	4,550	830	3,900	610	3,315	400
12MM	3,770	830	3,250	610	2,730	400

d	Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03

Milling Amount (mm)

	aa	ar
D < Ø 6	0.9D	0.01D
Ø 6 ≦ D	0.9D	0.02D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

H650 Series

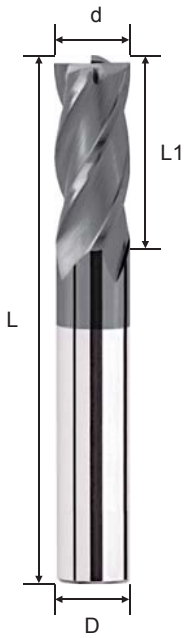
WINSTAR

CARBIDE ENDMILLS - Square Type - 4F

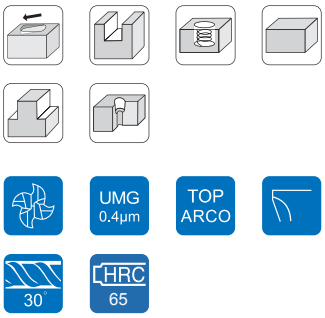
- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- High helix angle on side milling with good surface and long tool life.
- UMG Carbide with Incredible toughness and wear resistance at hi speeds.
- The coating can change to SICO, the prices will differ.

EHSFA4
EHSSA4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EHSFA401000A	1	3	50	4	4
EHSFA402000A	2	5	50	4	4
EHSFA403000A	3	8	50	4	4
EHSFA404000A	4	10	50	4	4
EHSSA403000A	3	8	50	6	4
EHSSA404000A	4	10	50	6	4
EHSSA405000A	5	13	50	6	4
EHSSA406000A	6	15	50	6	4
EHSSA408000A	8	20	60	8	4
EHSSA410000A	10	25	75	10	4
EHSSA412000A	12	30	75	12	4
EHSSA416000A	16	35	100	16	4
EHSSA420000A	20	45	100	20	4



WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	SKT, SKD		SKT, SKD		SKT, SKD	
HARDNESS	HRC 35~45		HRC 45~55		HRC 55~60	
Vc	143 M/min		124 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	15,340	1,150	13,000	830	10,920	500
4MM	11,440	1,070	9,880	780	8,190	460
5MM	9,100	990	7,800	730	6,500	420
6MM	7,670	910	6,500	660	5,460	400
8MM	5,720	830	4,940	610	4,160	400
10MM	4,550	830	3,900	610	3,315	400
12MM	3,770	830	3,250	610	2,730	400

d	Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03

Milling Amount (mm)

	aa	ar
D < Ø 6	0.9D	0.01D
Ø 6 ≦ D	0.9D	0.02D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

H650 Series

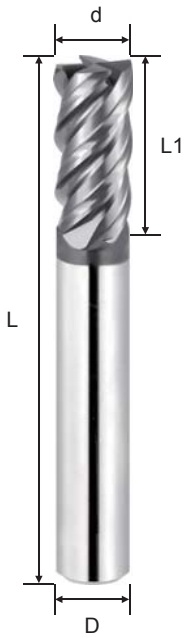
WINSTAR

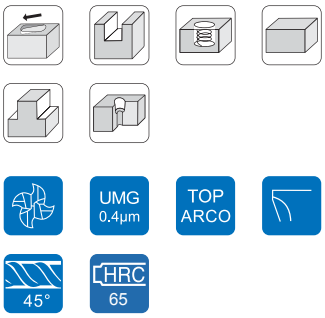
CARBIDE ENDMILLS - High Helix Square Type - 4F

- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- UMG Carbide with Incredible toughness and wear resistance at hi speeds.
- Good surface and long tool life.
- The coating can change to SICO, the prices will differ.

EHSFH4
EHSSH4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EHSFH401000A	1.0	3	50	4	4
EHSFH401500A	1.5	4	50	4	4
EHSFH402000A	2.0	5	50	4	4
EHSFH402500A	2.5	6	50	4	4
EHSFH403000A	3.0	8	50	4	4
EHSFH404000A	4.0	10	50	4	4
EHSSH404000A	4.0	10	50	6	4
EHSSH405000A	5.0	13	50	6	4
EHSSH406000A	6.0	15	50	6	4
EHSSH408000A	8.0	20	60	8	4
EHSSH410000A	10.0	25	75	10	4
EHSSH412000A	12.0	30	75	12	4
EHSSH416000A	16.0	35	100	16	4
EHSSH420000A	20.0	45	100	20	4

WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	SKT, SKD		SKT, SKD		SKT, SKD	
HARDNESS	HRC 35~45		HRC 45~55		HRC 55~60	
Vc	143 M/min		124 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	15,340	1,150	13,000	830	10,920	500
4MM	11,440	1,070	9,880	780	8,190	460
5MM	9,100	990	7,800	730	6,500	420
6MM	7,670	910	6,500	660	5,460	400
8MM	5,720	830	4,940	610	4,160	400
10MM	4,550	830	3,900	610	3,315	400
12MM	3,770	830	3,250	610	2,730	400

Milling Amount (mm)

	aa	ar
D < Ø 6	0.9D	0.01D
Ø 6 ≦ D	0.9D	0.02D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

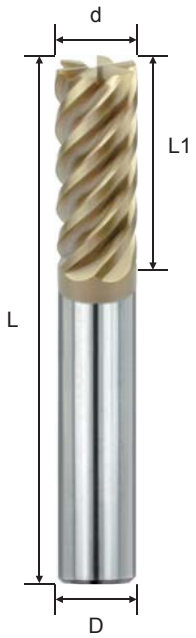
WINSTAR

CARBIDE ENDMILLS - High Helix Square Type - 6F / 8F

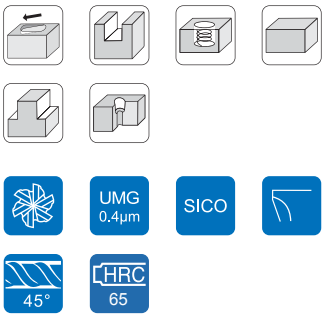
- SICO Nano coating provides a superior wear and heat resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Horsepower consumption will be decreased with greater shearing action.
- High Helix and 6 Flutes design gives a good finishing surface.
- The coating can change to TOP ARCO, the prices will differ.

EHSSS6
EHSSS8

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EHSSS606000S	6	15	50	6	6
EHSSS608000S	8	20	60	8	6
EHSSS610000S	10	25	75	10	6
EHSSS612000S	12	30	75	12	6
EHSSS614000S	14	30	75	14	6
EHSSS816000S	16	40	100	16	8
EHSSS818000S	18	40	100	18	8
EHSSS820000S	20	45	100	20	8



d	Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03

WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	SKT, SKD		SKT, SKD		SKT, SKD	
HARDNESS	HRC 45~55		HRC 55~60		HRC 60~70	
Vc	129 M/min		98 M/min		65 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
6MM	6,890	1,900	5,200	1,000	3,445	505
8MM	5,200	1,900	3,900	1,000	2,600	505
10MM	4,160	1,900	3,120	1,000	2,080	505
12MM	3,445	1,900	2,600	1,000	1,755	505
14MM	2,925	1,800	2,210	1,000	1,430	505
16MM	2,535	1,700	2,015	930	1,294	505
18MM	2,275	1,600	1,885	895	1,151	505
20MM	2,015	1,500	1,495	845	1,040	505
25MM	1,625	1,500	1,242	915	826	505

Milling Amount (mm)	ap	ae	ap	ae	ap	ae
	1.5D	0.05D	1.5D	0.03D	1.0D	0.02D
	aeMax=1.0mm以下		aeMax=0.5mm以下		aeMax=0.5mm以下	

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

H650 Series

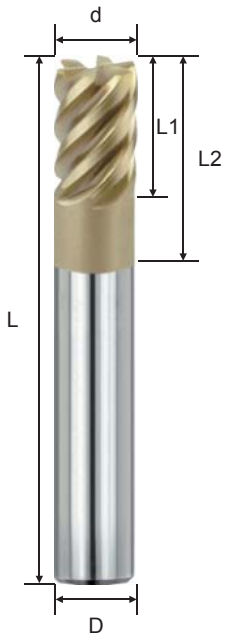
WINSTAR

CARBIDE ENDMILLS - High Helix & Short Flute Square Type - 4F / 6F / 8F

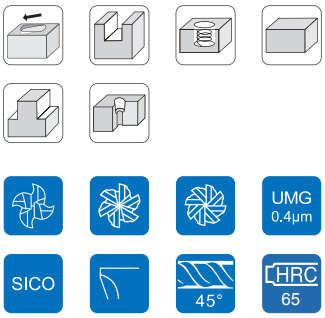
- SICO Nano coating provides a superior wear and heat resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Greater shearing action results in increased speeds and feeds and faster stock removal.
- Prevents clogging of the flutes.
- The coating can change to TOP ARCO, the prices will differ.

EHSPS4
EHSUS4
EHSUS6
EHSUS8

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



Order No.	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHSPS401000S	1	1.5	2.5	50	4	4
EHSPS402000S	2	3.0	5.0	50	4	4
EHSUS403000S	3	4.5	7.5	50	6	4
EHSUS404000S	4	6.0	10.0	50	6	4
EHSUS405000S	5	7.5	12.5	50	6	4
EHSUS606000S	6	9.0	15.0	50	6	6
EHSUS608000S	8	12.0	20.0	60	8	6
EHSUS610000S	10	15.0	25.0	75	10	6
EHSUS612000S	12	18.0	30.0	75	12	6
EHSUS816000S	16	24.0	40.0	100	16	8
EHSUS820000S	20	30.0	50.0	100	20	8



d	Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03

WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	SKT, SKD		SKT, SKD		SKT, SKD	
HARDNESS	HRC 45~55		HRC 55~60		HRC 60~70	
Vc	208 M/min		195 M/min		129 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
6MM	11,050	2,450	10,335	2,000	6,890	1,210
8MM	8,255	2,440	7,735	1,995	5,200	1,215
10MM	6,630	2,450	6,110	1,970	4,160	1,215
12MM	5,525	2,450	5,135	1,985	3,445	1,210
14MM	4,680	2,420	4,420	1,995	2,925	1,200
16MM	4,095	2,420	3,900	2,000	2,535	1,285
18MM	3,640	2,420	3,445	2,000	2,275	1,200
20MM	3,250	2,400	3,055	1,970	2,015	1,180
25MM	2,600	2,400	2,470	1,990	1,625	1,190

Milling Amount (mm)	ap	ae	ap	ae	ap	ae
	1.5D	0.05D	1.5D	0.03D	1.0D	0.02D
	aeMax=1.0mm以下		aeMax=0.5mm以下		aeMax=0.5mm以下	

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

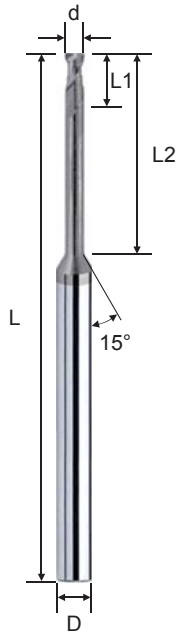
WINSTAR

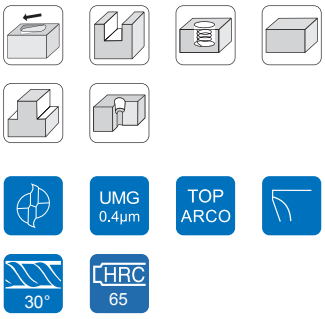
CARBIDE ENDMILLS - Long Neck Square Type - 2F

- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Long neck design is suitable for Rib cutting.
- The coating can change to SICO, the prices will differ.

EHSBC2
EHSRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ -0.02

Order No.	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHSBC200201A	0.2	0.3	1	50	4	2
EHSBC200202A	0.2	0.3	2	50	4	2
EHSBC200301A	0.3	0.4	1	50	4	2
EHSBC200302A	0.3	0.4	2	50	4	2
EHSBC200303A	0.3	0.4	3	50	4	2
EHSBC200304A	0.3	0.4	4	50	4	2
EHSBC200305A	0.3	0.4	5	50	4	2
EHSBC200401A	0.4	0.5	1	50	4	2
EHSBC200402A	0.4	0.5	2	50	4	2
EHSBC200403A	0.4	0.5	3	50	4	2
EHSBC200404A	0.4	0.5	4	50	4	2
EHSBC200405A	0.4	0.5	5	50	4	2
EHSBC200406A	0.4	0.5	6	50	4	2
EHSBC200408A	0.4	0.5	8	50	4	2
EHSBC200410A	0.4	0.5	10	50	4	2
EHSBC200502A	0.5	0.6	2	50	4	2
EHSBC200503A	0.5	0.6	3	50	4	2
EHSBC200504A	0.5	0.6	4	50	4	2
EHSBC200505A	0.5	0.6	5	50	4	2
EHSBC200506A	0.5	0.6	6	50	4	2
EHSBC200508A	0.5	0.6	8	50	4	2
EHSBC200510A	0.5	0.6	10	50	4	2
EHSBC200512A	0.5	0.6	12	50	4	2
EHSBC200514A	0.5	0.6	14	50	4	2
EHSBC200602A	0.6	0.7	2	50	4	2
EHSBC200603A	0.6	0.7	3	50	4	2
EHSBC200604A	0.6	0.7	4	50	4	2
EHSBC200605A	0.6	0.7	5	50	4	2
EHSBC200606A	0.6	0.7	6	50	4	2
EHSBC200608A	0.6	0.7	8	50	4	2
EHSBC200610A	0.6	0.7	10	50	4	2
EHSBC200612A	0.6	0.7	12	50	4	2
EHSBC200614A	0.6	0.7	14	50	4	2
EHSBC200616A	0.6	0.7	16	50	4	2
EHSBC200702A	0.7	0.8	2	50	4	2
EHSBC200704A	0.7	0.8	4	50	4	2
EHSBC200706A	0.7	0.8	6	50	4	2
EHSBC200708A	0.7	0.8	8	50	4	2
EHSBC200710A	0.7	0.8	10	50	4	2
EHSBC200712A	0.7	0.8	12	50	4	2
EHSBC200802A	0.8	1.0	2	50	4	2
EHSBC200804A	0.8	1.0	4	50	4	2
EHSBC200806A	0.8	1.0	6	50	4	2
EHSBC200808A	0.8	1.0	8	50	4	2
EHSBC200810A	0.8	1.0	10	50	4	2
EHSBC200812A	0.8	1.0	12	50	4	2
EHSBC200814A	0.8	1.0	14	50	4	2
EHSBC200906A	0.9	1.1	6	50	4	2
EHSBC200908A	0.9	1.1	8	50	4	2
EHSBC200910A	0.9	1.1	10	50	4	2
EHSBC201002A	1.0	1.2	2	50	4	2
EHSBC201003A	1.0	1.2	3	50	4	2
EHSBC201004A	1.0	1.2	4	50	4	2
EHSBC201005A	1.0	1.2	5	50	4	2

H650 Series

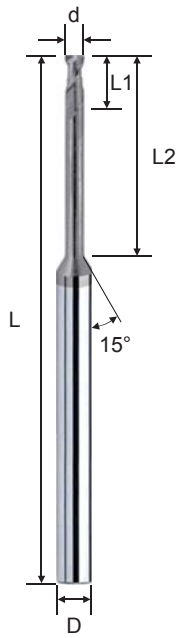
WINSTAR

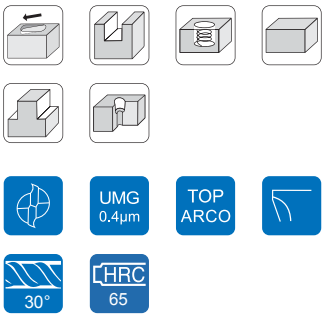
CARBIDE ENDMILLS - Long Neck Square Type - 2F

- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Long neck design is suitable for Rib cutting.
- The coating can change to SICO, the prices will differ.

EHSBC2
EHSRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ -0.02

Order No.	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHSBC201006A	1.0	1.2	6	50	4	2
EHSBC201008A	1.0	1.2	8	50	4	2
EHSBC201010A	1.0	1.2	10	50	4	2
EHSBC201012A	1.0	1.2	12	50	4	2
EHSBC201014A	1.0	1.2	14	50	4	2
EHSBC201016A	1.0	1.2	16	50	4	2
EHSBC201018A	1.0	1.2	18	50	4	2
EHSBC201020A	1.0	1.2	20	50	4	2
EHSBC201204A	1.2	1.5	4	50	4	2
EHSBC201206A	1.2	1.5	6	50	4	2
EHSBC201208A	1.2	1.5	8	50	4	2
EHSBC201210A	1.2	1.5	10	50	4	2
EHSBC201212A	1.2	1.5	12	50	4	2
EHSBC201216A	1.2	1.5	16	50	4	2
EHSBC201220A	1.2	1.5	20	50	4	2
EHSBC201406A	1.4	1.8	6	50	4	2
EHSBC201408A	1.4	1.8	8	50	4	2
EHSBC201410A	1.4	1.8	10	50	4	2
EHSBC201414A	1.4	1.8	14	50	4	2
EHSBC201416A	1.4	1.8	16	50	4	2
EHSBC201420A	1.4	1.8	20	50	4	2
EHSBC201504A	1.5	1.8	4	50	4	2
EHSBC201506A	1.5	1.8	6	50	4	2
EHSBC201508A	1.5	1.8	8	50	4	2
EHSBC201510A	1.5	1.8	10	50	4	2
EHSBC201512A	1.5	1.8	12	50	4	2
EHSBC201514A	1.5	1.8	14	50	4	2
EHSBC201516A	1.5	1.8	16	50	4	2
EHSBC201518A	1.5	1.8	18	50	4	2
EHSBC201520A	1.5	1.8	20	50	4	2
EHSBC201610A	1.6	1.9	10	50	4	2
EHSBC201614A	1.6	1.9	14	50	4	2
EHSBC201618A	1.6	1.9	18	50	4	2
EHSBC201810A	1.8	2.0	10	50	4	2
EHSBC201814A	1.8	2.0	14	50	4	2
EHSBC201818A	1.8	2.0	18	50	4	2
EHSBC202004A	2.0	2.5	4	50	4	2
EHSBC202006A	2.0	2.5	6	50	4	2
EHSBC202008A	2.0	2.5	8	50	4	2
EHSBC202010A	2.0	2.5	10	50	4	2
EHSBC202012A	2.0	2.5	12	50	4	2
EHSBC202014A	2.0	2.5	14	50	4	2
EHSBC202016A	2.0	2.5	16	50	4	2
EHSBC202018A	2.0	2.5	18	50	4	2
EHSBC202020A	2.0	2.5	20	50	4	2
EHSBC202022A	2.0	2.5	22	60	4	2
EHSBC202025A	2.0	2.5	25	60	4	2
EHSBC202030A	2.0	2.5	30	60	4	2
EHSBC202035A	2.0	2.5	35	60	4	2
EHSBC202508A	2.5	3.0	8	50	4	2
EHSBC202510A	2.5	3.0	10	50	4	2
EHSBC202512A	2.5	3.0	12	50	4	2
EHSBC202516A	2.5	3.0	16	50	4	2

H650 Series

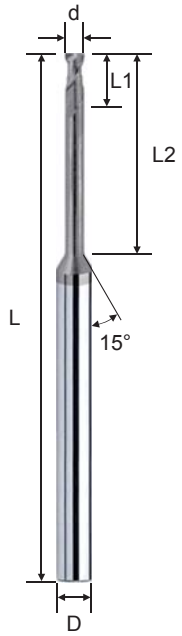
WINSTAR

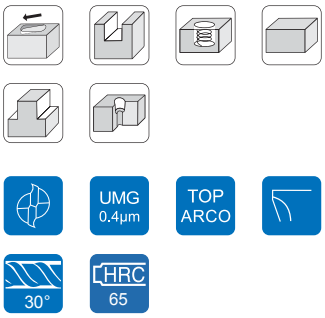
CARBIDE ENDMILLS - Long Neck Square Type - 2F

- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Long neck design is suitable for Rib cutting.
- The coating can change to SICO, the prices will differ.

EHSBC2
EHSRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ -0.02

Order No.	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHSBC202520A	2.5	3.0	20	50	4	2
EHSBC202525A	2.5	3.0	25	60	4	2
EHSBC202530A	2.5	3.0	30	60	4	2
EHSBC202535A	2.5	3.0	35	60	4	2
EHSRC203006A	3.0	3.5	6	50	6	2
EHSRC203010A	3.0	3.5	10	50	6	2
EHSRC203012A	3.0	3.5	12	50	6	2
EHSRC203016A	3.0	3.5	16	50	6	2
EHSRC203020A	3.0	3.5	20	60	6	2
EHSRC203025A	3.0	3.5	25	60	6	2
EHSRC203030A	3.0	3.5	30	60	6	2
EHSRC203035A	3.0	3.5	35	75	6	2
EHSRC204008A	4.0	4.5	8	50	6	2
EHSRC204010A	4.0	4.5	10	50	6	2
EHSRC204012A	4.0	4.5	12	50	6	2
EHSRC204016A	4.0	4.5	16	50	6	2
EHSRC204020A	4.0	4.5	20	60	6	2
EHSRC204025A	4.0	4.5	25	60	6	2
EHSRC204030A	4.0	4.5	30	60	6	2
EHSRC204035A	4.0	4.5	35	75	6	2
EHSRC205016A	5.0	7.0	16	50	6	2
EHSRC205020A	5.0	7.0	20	60	6	2
EHSRC205025A	5.0	7.0	25	60	6	2
EHSRC205030A	5.0	7.0	30	60	6	2
EHSRC205035A	5.0	7.0	35	75	6	2
EHSRC206020A	6.0	10.0	20	60	6	2
EHSRC206030A	6.0	10.0	30	75	6	2
EHSRC208020A	8.0	15.0	20	60	8	2
EHSRC208030A	8.0	15.0	30	75	8	2
EHSRC208040A	8.0	15.0	40	100	8	2
EHSRC210025A	10.0	20.0	25	75	10	2
EHSRC210035A	10.0	20.0	35	75	10	2
EHSRC210045A	10.0	20.0	45	100	10	2
EHSRC212030A	12.0	25.0	30	75	12	2
EHSRC212040A	12.0	25.0	40	100	12	2
EHSRC212050A	12.0	25.0	50	100	12	2

WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	NAK, SKD		SKT, SKT		SKT, SKT	
HARDNESS	HRC 35~45		HRC 45~55		HRC > 55	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.2MM	52,000	250	40,800	160	13,000	8
0.4MM	44,600	420	35,700	280	11,600	17
0.8MM	21,100	450	17,300	300	7,000	17
1.0MM	19,500	480	15,200	370	5,700	13
2.0MM	11,500	550	9,000	400	8,900	200
3.0MM	6,200	560	5,000	400	7,300	200
4.0MM	5,100	600	4,100	410	6,000	380
5.0MM	3,300	460	2,600	330	4,600	430
6.0MM	2,400	440	1,900	310	3,800	580
Milling Amount (mm)			Ad = 0.1D (D < 3, Ad ≦ 0.05D)		Ad = 0.5D (D < 3, Ad ≦ 0.25D)	

Please refer to 3xD table, reduce R.P.M. & Feed while efficient length is increasing.

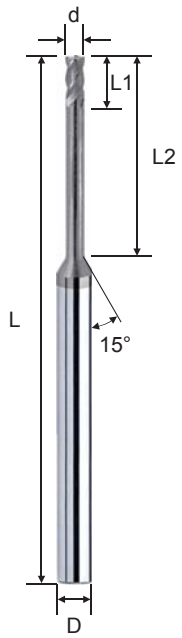
WINSTAR

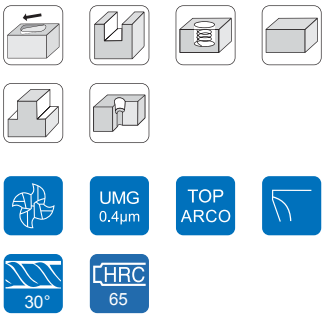
CARBIDE ENDMILLS - Long Neck Square Type - 4F

- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Polish cutting edge provides stronger tip.
- The long neck is suitable for deep cutting.
- The coating can change to SICO, the prices will differ.

EHSBC4
EHSRC4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ -0.02

Order No.	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHSBC401003A	1.0	1.0	3	50	4	4
EHSBC401004A	1.0	1.0	4	50	4	4
EHSBC401006A	1.0	1.0	6	50	4	4
EHSBC401008A	1.0	1.0	8	50	4	4
EHSBC401010A	1.0	1.0	10	50	4	4
EHSBC401012A	1.0	1.0	12	50	4	4
EHSBC401016A	1.0	1.0	16	50	4	4
EHSBC401020A	1.0	1.0	20	50	4	4
EHSBC401025A	1.0	1.0	25	60	4	4
EHSRC401004A	1.0	1.0	4	50	6	4
EHSRC401006A	1.0	1.0	6	50	6	4
EHSRC401008A	1.0	1.0	8	50	6	4
EHSRC401010A	1.0	1.0	10	50	6	4
EHSRC401010A	1.0	1.0	12	50	6	4
EHSBC401506A	1.5	1.5	6	50	4	4
EHSBC401508A	1.5	1.5	8	50	4	4
EHSBC401510A	1.5	1.5	10	50	4	4
EHSBC401512A	1.5	1.5	12	50	4	4
EHSBC401516A	1.5	1.5	16	50	4	4
EHSBC401520A	1.5	1.5	20	50	4	4
EHSBC401525A	1.5	1.5	25	60	4	4
EHSRC401506A	1.5	1.5	6	50	6	4
EHSRC401508A	1.5	1.5	8	50	6	4
EHSRC401510A	1.5	1.5	10	50	6	4
EHSRC401512A	1.5	1.5	12	50	6	4
EHSBC402006A	2.0	2.0	6	50	4	4
EHSBC402008A	2.0	2.0	8	50	4	4
EHSBC402010A	2.0	2.0	10	50	4	4
EHSBC402012A	2.0	2.0	12	50	4	4
EHSBC402016A	2.0	2.0	16	50	4	4
EHSBC402020A	2.0	2.0	20	50	4	4
EHSBC402025A	2.0	2.0	25	60	4	4
EHSBC402030A	2.0	2.0	30	60	4	4
EHSRC402006A	2.0	2.0	6	50	6	4
EHSRC402008A	2.0	2.0	8	50	6	4
EHSRC402010A	2.0	2.0	10	50	6	4
EHSRC402016A	2.0	2.0	16	50	6	4
EHSBC402510A	2.5	2.5	10	50	4	4
EHSBC402512A	2.5	2.5	12	50	4	4
EHSBC402516A	2.5	2.5	16	50	4	4
EHSBC402520A	2.5	2.5	20	50	4	4
EHSBC402525A	2.5	2.5	25	60	4	4
EHSBC402530A	2.5	2.5	30	60	4	4
EHSRC402506A	2.5	2.5	6	50	6	4
EHSRC402510A	2.5	2.5	10	50	6	4

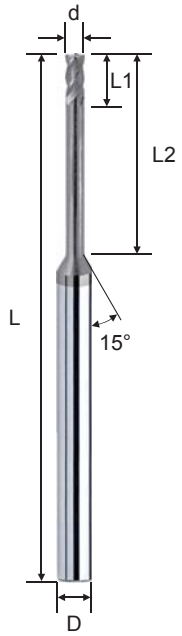
WINSTAR

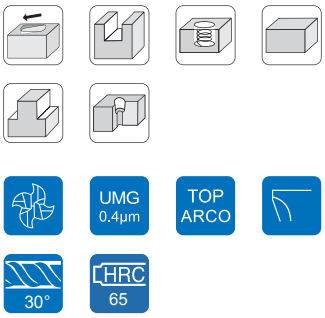
CARBIDE ENDMILLS - Long Neck Square Type - 4F

- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Polish cutting edge provides stronger tip.
- The long neck is suitable for deep cutting.
- The coating can change to SICO, the prices will differ.

EHSBC4
EHSRC4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ -0.02

Order No.	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHSRC403010A	3.0	3.0	10	50	6	4
EHSRC403012A	3.0	3.0	12	50	6	4
EHSRC403016A	3.0	3.0	16	50	6	4
EHSRC403020A	3.0	3.0	20	60	6	4
EHSRC403025A	3.0	3.0	25	60	6	4
EHSRC403030A	3.0	3.0	30	60	6	4
EHSRC403035A	3.0	3.0	35	75	6	4
EHSRC404010A	4.0	4.0	10	50	6	4
EHSRC404012A	4.0	4.0	12	50	6	4
EHSRC404016A	4.0	4.0	16	50	6	4
EHSRC404020A	4.0	4.0	20	60	6	4
EHSRC404025A	4.0	4.0	25	60	6	4
EHSRC404030A	4.0	4.0	30	60	6	4
EHSRC405016A	5.0	5.0	16	50	6	4
EHSRC405020A	5.0	5.0	20	60	6	4
EHSRC405025A	5.0	5.0	25	60	6	4
EHSRC405030A	5.0	5.0	30	60	6	4
EHSRC406020A	6.0	6.0	20	60	6	4
EHSRC406030A	6.0	6.0	30	75	6	4
EHSRC408020A	8.0	15.0	20	60	8	4
EHSRC408030A	8.0	15.0	30	75	8	4
EHSRC408040A	8.0	15.0	40	100	8	4
EHSRC410025A	10.0	20.0	25	75	10	4
EHSRC410035A	10.0	20.0	35	100	10	4
EHSRC410045A	10.0	20.0	45	100	10	4
EHSRC412030A	12.0	25.0	30	75	12	4
EHSRC412040A	12.0	25.0	40	100	12	4
EHSRC412050A	12.0	25.0	50	100	12	4

WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	NAK, SKD		SKT, SKT		SKT, SKT	
HARDNESS	HRC 35~45		HRC 45~55		HRC > 55	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.8MM	21,500	640	17,200	450	9,800	220
1.0MM	20,500	620	16,200	440	9,100	210
1.5MM	13,300	740	10,400	570	7,600	290
2.0MM	11,900	1000	9,500	760	7,000	380
2.5MM	7,600	680	6,000	480	5,300	310
3.0MM	6,800	710	5,200	500	4,800	380
4.0MM	4,700	720	3,900	500	3,900	440
5.0MM	3,900	650	3,100	460	3,100	460
6.0MM	3,100	680	2,400	480	3,100	570
8.0MM	2,900	690	2,400	490	2,900	580
10.0MM	2,500	700	2,100	490	2,500	580
12.0MM	2,100	730	1,700	490	2,100	590

Milling Amount (mm)

Please refer to 3xD table, reduce R.P.M. & Feed while efficient length is increasing.

H650 Series

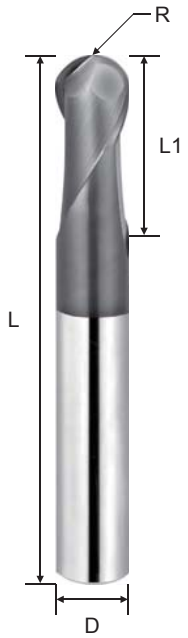
WINSTAR

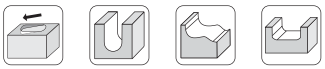
CARBIDE ENDMILLS - Ball Nose Type - 2F

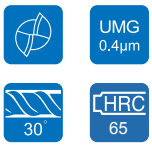
- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Due to short cutting length provides an excellent face milling surface roughness of the work pieces.
- New tool geometry increases wear resistance and cutting force is decreased.
- The coating can change to SICO, the prices will differ.

EHBFH2
EHBSH2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



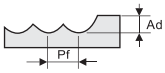




d	R Tolerance
Ø ≦ 12	± 0.01
Ø > 12	± 0.015

Order No.	Radius (R)	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EHBFH201000A	0.50R	1.0	2	50	4	2
EHBFH201500A	0.75R	1.5	3	50	4	2
EHBFH202000A	1.00R	2.0	4	50	4	2
EHBFH203000A	1.50R	3.0	6	50	4	2
EHBFH204000A	2.00R	4.0	8	50	4	2
EHBSH205000A	2.50R	5.0	10	50	6	2
EHBSH206000A	3.00R	6.0	12	50	6	2
EHBSH208000A	4.00R	8.0	16	60	8	2
EHBSH210000A	5.00R	10.0	20	75	10	2
EHBSH212000A	6.00R	12.0	24	75	12	2
EHBSH216000A	8.00R	16.0	32	100	16	2

WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	SKT, SKD		SKT, SKD		SKT, SKD	
HARDNESS	HRC 35~45		HRC 45~55		HRC 55~60	
Vc	260 M/min		195 M/min		131 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1.0R	41,600	1,920	31,200	1,440	20,800	960
2.0R	20,800	1,920	15,600	1,440	10,335	955
3.0R	13,650	1,890	10,335	1,430	6,890	955
4.0R	10,335	1,910	7,735	1,430	5,200	960
5.0R	8,255	1,905	6,240	1,440	4,160	960
6.0R	6,890	1,910	5,200	1,440	3,445	955
8.0R	5,200	1,920	3,900	1,440	2,600	960
10.0R	4,160	1,920	3,120	1,440	2,080	960

Milling Amount (mm)		Ad	Pf	Ad	Pf	Ad	Pf
		0.05D	0.1D	0.03D	0.1D	0.02D	0.05D
		apMax=0.6mm以下		apMax=0.5mm以下		apMax=0.3mm以下	

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

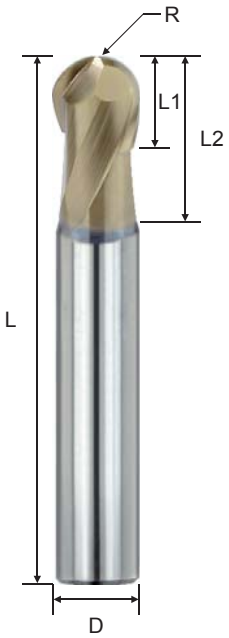
WINSTAR

CARBIDE ENDMILLS - Short Flute Ball Nose Type - 2F

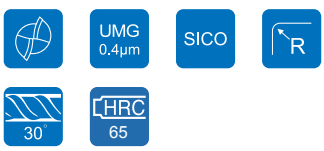
- SICO Nano coating provides a superior wear and heat resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Due to short cutting length provides an excellent face milling surface roughness of the work pieces.
- Short cutting length provides hi resistance for hi speed cutting.
- The coating can change to TOP ARCO, the prices will differ.

EHBUH2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



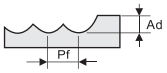
Order No.	Radius (R)	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHBUH202000S	1.0R	2	2	4	50	6	2
EHBUH203000S	1.5R	3	3	6	50	6	2
EHBUH204000S	2.0R	4	4	8	50	6	2
EHBUH205000S	2.5R	5	5	10	50	6	2
EHBUH206000S	3.0R	6	6	12	50	6	2
EHBUH208000S	4.0R	8	8	16	60	8	2
EHBUH210000S	5.0R	10	10	20	75	10	2
EHBUH212000S	6.0R	12	12	24	75	12	2
EHBUH216000S	8.0R	16	16	32	100	16	2



d	R Tolerance
Ø ≦ 12	± 0.01
Ø > 12	± 0.015

WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	SKT, SKD		SKT, SKD		SKT, SKD	
HARDNESS	HRC 35~45		HRC 45~55		HRC 55~60	
Vc	260 M/min		195 M/min		131 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1.0R	41,600	1,920	31,200	1,440	20,800	960
2.0R	20,800	1,920	15,600	1,440	10,335	955
3.0R	13,650	1,890	10,335	1,430	6,890	955
4.0R	10,335	1,910	7,735	1,430	5,200	960
5.0R	8,255	1,905	6,240	1,440	4,160	960
6.0R	6,890	1,910	5,200	1,440	3,445	955
8.0R	5,200	1,920	3,900	1,440	2,600	960
10.0R	4,160	1,920	3,120	1,440	2,080	960

Milling Amount (mm)



Ad	Pf	Ad	Pf	Ad	Pf
0.05D	0.1D	0.03D	0.1D	0.02D	0.05D
apMax=0.6mm以下		apMax=0.5mm以下		apMax=0.3mm以下	

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

H650 Series

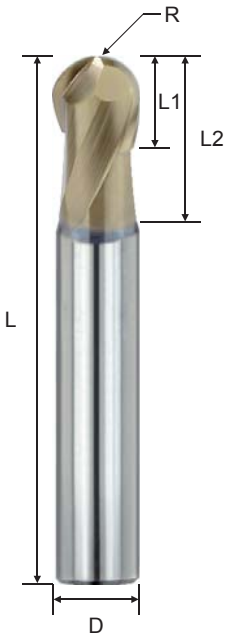
WINSTAR

CARBIDE ENDMILLS - High Precision & Short Flute Ball Nose Type - 2F

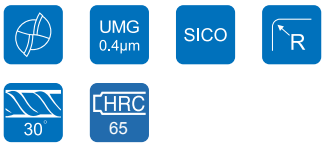
- SICO Nano coating provides a superior wear and heat resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Specialized for high precision finishing cutting.
- Due to short cutting length provides an excellent face milling surface roughness of the work pieces.
- Short cutting length provides hi resistance for hi speed cutting.
- The coating can change to TOP ARCO, the prices will differ.

EHBUP2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



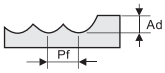
Order No.	Radius (R)	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHBUP201500S	0.75R	1.5	1.5	3	50	6	2
EHBUP202000S	1.00R	2.0	2.0	4	50	6	2
EHBUP202500S	1.25R	2.5	2.5	5	50	6	2
EHBUP203000S	1.50R	3.0	3.0	6	50	6	2
EHBUP204000S	2.00R	4.0	4.0	8	50	6	2
EHBUP205000S	2.50R	5.0	5.0	10	50	6	2
EHBUP206000S	3.00R	6.0	6.0	12	50	6	2
EHBUP208000S	4.00R	8.0	8.0	16	60	8	2
EHBUP210000S	5.00R	10.0	10.0	20	75	10	2
EHBUP212000S	6.00R	12.0	12.0	24	75	12	2



WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	SKT, SKD		SKT, SKD		SKT, SKD	
HARDNESS	HRC 35~45		HRC 45~55		HRC 55~60	
Vc	260 M/min		195 M/min		131 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1.0R	41,600	1,920	31,200	1,440	20,800	960
2.0R	20,800	1,920	15,600	1,440	10,335	955
3.0R	13,650	1,890	10,335	1,430	6,890	955
4.0R	10,335	1,910	7,735	1,430	5,200	960
5.0R	8,255	1,905	6,240	1,440	4,160	960
6.0R	6,890	1,910	5,200	1,440	3,445	955
8.0R	5,200	1,920	3,900	1,440	2,600	960
10.0R	4,160	1,920	3,120	1,440	2,080	960

d	R Tolerance
Ø ≦ 3	± 0.005
Ø > 3	± 0.007

Milling Amount (mm)



Ad	Pf	Ad	Pf	Ad	Pf
0.05D	0.1D	0.03D	0.1D	0.02D	0.05D
apMax=0.6mm以下		apMax=0.5mm以下		apMax=0.3mm以下	

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

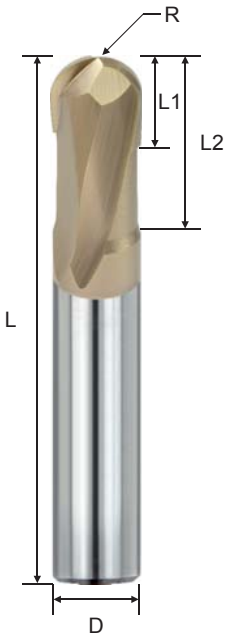
WINSTAR

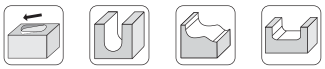
CARBIDE ENDMILLS - Low Helix & Short Flute Ball Nose Type - 2F

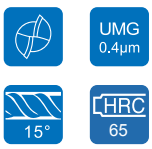
- SICO Nano coating provides a superior wear and heat resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Due to short cutting length it provides an excellent surface roughness of the work pieces.
- Low helix design is suitable for hardened steel cutting.
- The coating can change to TOP ARCO, the prices will differ.

EHBPS2
EHBUS2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑







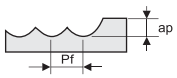
d	R Tolerance
Ø ≦ 12	± 0.01
Ø > 12	± 0.015

Order No.	Radius (R)	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHBPS201000S	0.50R	1.0	1.0	2	50	4	2
EHBPS201500S	0.75R	1.5	1.5	3	50	4	2
EHBUS202000S	1.00R	2.0	2.0	4	50	6	2
EHBUS203000S	1.50R	3.0	3.0	6	50	6	2
EHBUS204000S	2.00R	4.0	4.0	8	50	6	2
EHBUS205000S	2.50R	5.0	5.0	10	50	6	2
EHBUS206000S	3.00R	6.0	6.0	12	50	6	2
EHBUS208000S	4.00R	8.0	8.0	16	60	8	2
EHBUS210000S	5.00R	10.0	10.0	20	75	10	2
EHBUS212000S	6.00R	12.0	12.0	24	75	12	2
EHBUS216000S	8.00R	16.0	16.0	32	100	16	2

WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	SKT, SKD		SKT, SKD		SKT, SKD	
HARDNESS	HRC 45~55		HRC 55~60		HRC 60~70	
Vc	129 M/min		116 M/min		63 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.5R	41,600	960	39,000	850	33,150	500
1.0R	40,950	1,900	37,050	1,880	20,150	600
1.5R	27,300	2,080	24,700	1,880	13,650	625
2.0R	20,150	2,050	18,200	1,850	10,335	630
2.5R	16,250	2,060	14,300	1,815	8,255	630
3.0R	13,650	2,080	12,350	1,880	6,890	630
4.0R	10,335	1,550	9,295	1,400	5,135	470
5.0R	8,255	1,250	7,410	1,100	4,095	375
6.0R	6,890	1,050	6,175	950	3,445	315
8.0R	5,135	790	4,745	710	2,535	230

Milling Amount (mm)

	ap	Pf
R ≦ 8	0.02D	0.1D
R > 8	0.32mm	0.1D



The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

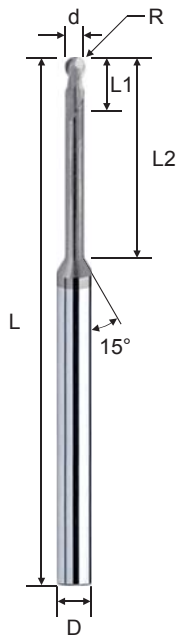
WINSTAR

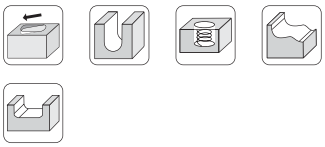
CARBIDE ENDMILLS - Long Neck Ball Nose Type - 2F

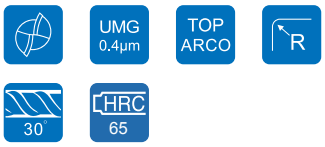
- TOP ARCO coating provides a superior wear and heat resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Suitable for deep cutting due to the long neck design.
- Polish cutting edge provides stronger tip.
- The coating can change to SICO, the prices will differ.

EHBBC2
EHBRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑







d	R Tolerance
Ø	± 0.02

Order No.	Radius (R)	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHBBC200301A	0.15R	0.3	0.3	1	50	4	2
EHBBC200302A	0.15R	0.3	0.3	2	50	4	2
EHBBC200303A	0.15R	0.3	0.3	3	50	4	2
EHBBC200401A	0.20R	0.4	0.4	1	50	4	2
EHBBC200402A	0.20R	0.4	0.4	2	50	4	2
EHBBC200403A	0.20R	0.4	0.4	3	50	4	2
EHBBC200404A	0.20R	0.4	0.4	4	50	4	2
EHBBC200405A	0.20R	0.4	0.4	5	50	4	2
EHBBC200406A	0.20R	0.4	0.4	6	50	4	2
EHBBC200408A	0.20R	0.4	0.4	8	50	4	2
EHBBC200501A	1.00R	0.5	0.5	1	50	4	2
EHBBC200502A	0.25R	0.5	0.5	2	50	4	2
EHBBC200503A	0.25R	0.5	0.5	3	50	4	2
EHBBC200504A	0.25R	0.5	0.5	4	50	4	2
EHBBC200505A	0.25R	0.5	0.5	5	50	4	2
EHBBC200506A	0.25R	0.5	0.5	6	50	4	2
EHBBC200508A	0.25R	0.5	0.5	8	50	4	2
EHBBC200510A	0.25R	0.5	0.5	10	50	4	2
EHBBC200601A	0.30R	0.6	0.6	1	50	4	2
EHBBC200602A	0.30R	0.6	0.6	2	50	4	2
EHBBC200603A	0.30R	0.6	0.6	3	50	4	2
EHBBC200604A	0.30R	0.6	0.6	4	50	4	2
EHBBC200605A	0.30R	0.6	0.6	5	50	4	2
EHBBC200606A	0.30R	0.6	0.6	6	50	4	2
EHBBC200608A	0.30R	0.6	0.6	8	50	4	2
EHBBC200610A	0.30R	0.6	0.6	10	50	4	2
EHBBC200612A	0.30R	0.6	0.6	12	50	4	2
EHBBC200702A	0.35R	0.7	0.7	2	50	4	2
EHBBC200704A	0.35R	0.7	0.7	4	50	4	2
EHBBC200708A	0.35R	0.7	0.7	8	50	4	2
EHBBC200710A	0.35R	0.7	0.7	10	50	4	2
EHBBC200712A	0.35R	0.7	0.7	12	50	4	2
EHBBC200802A	0.40R	0.8	0.8	2	50	4	2
EHBBC200804A	0.40R	0.8	0.8	4	50	4	2
EHBBC200806A	0.40R	0.8	0.8	6	50	4	2
EHBBC200808A	0.40R	0.8	0.8	8	50	4	2
EHBBC200810A	0.40R	0.8	0.8	10	50	4	2
EHBBC200812A	0.40R	0.8	0.8	12	50	4	2
EHBBC200904A	0.45R	0.9	0.9	4	50	4	2
EHBBC201002A	0.50R	1.0	1.0	2	50	4	2
EHBBC201003A	0.50R	1.0	1.0	3	50	4	2
EHBBC201004A	0.50R	1.0	1.0	4	50	4	2
EHBBC201005A	0.50R	1.0	1.0	5	50	4	2
EHBBC201006A	0.50R	1.0	1.0	6	50	4	2
EHBBC201008A	0.50R	1.0	1.0	8	50	4	2
EHBBC201010A	0.50R	1.0	1.0	10	50	4	2
EHBBC201012A	0.50R	1.0	1.0	12	50	4	2
EHBBC201014A	0.50R	1.0	1.0	14	50	4	2
EHBBC201016A	0.50R	1.0	1.0	16	50	4	2
EHBBC201018A	0.50R	1.0	1.0	18	50	4	2
EHBBC201020A	0.50R	1.0	1.0	20	50	4	2
EHBBC201022A	0.50R	1.0	1.0	22	60	4	2
EHBRC201004A	0.50R	1.0	1.0	4	50	6	2
EHBRC201006A	0.50R	1.0	1.0	6	50	6	2

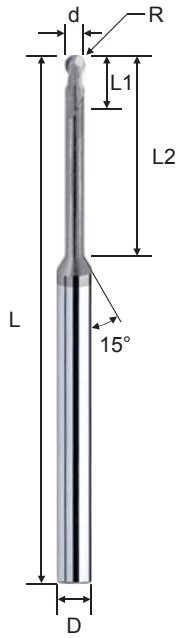
WINSTAR

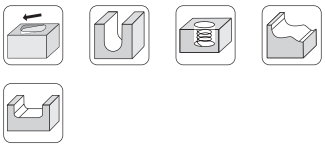
CARBIDE ENDMILLS - Long Neck Ball Nose Type - 2F

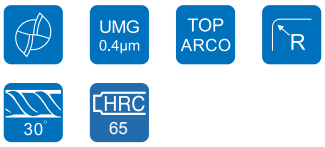
- TOP ARCO coating provides a superior wear and heat resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Suitable for deep cutting due to the long neck design.
- Polish cutting edge provides stronger tip.
- The coating can change to SICO, the prices will differ.

EHBBC2
EHBRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑







d	R Tolerance
Ø	± 0.02

Order No.	Radius (R)	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHBRC201008A	0.50R	1.0	1.0	8	50	6	2
EHBRC201010A	0.50R	1.0	1.0	10	50	6	2
EHBRC201210A	0.50R	1.0	1.0	12	50	6	2
EHBBC201204A	0.60R	1.2	1.2	4	50	4	2
EHBBC201206A	0.60R	1.2	1.2	6	50	4	2
EHBBC201208A	0.60R	1.2	1.2	8	50	4	2
EHBBC201210A	0.60R	1.2	1.2	10	50	4	2
EHBBC201212A	0.60R	1.2	1.2	12	50	4	2
EHBBC201216A	0.60R	1.2	1.2	16	50	4	2
EHBBC201220A	0.60R	1.2	1.2	20	50	4	2
EHBBC201224A	0.60R	1.2	1.2	24	60	4	2
EHBBC201406A	0.70R	1.4	1.4	6	50	4	2
EHBBC201408A	0.70R	1.4	1.4	8	50	4	2
EHBBC201412A	0.70R	1.4	1.4	12	50	4	2
EHBBC201416A	0.70R	1.4	1.4	16	50	4	2
EHBBC201503A	0.75R	1.5	1.5	3	50	4	2
EHBBC201504A	0.75R	1.5	1.5	4	50	4	2
EHBBC201506A	0.75R	1.5	1.5	6	50	4	2
EHBBC201508A	0.75R	1.5	1.5	8	50	4	2
EHBBC201510A	0.75R	1.5	1.5	10	50	4	2
EHBBC201512A	0.75R	1.5	1.5	12	50	4	2
EHBBC201514A	0.75R	1.5	1.5	14	50	4	2
EHBBC201516A	0.75R	1.5	1.5	16	50	4	2
EHBBC201518A	0.75R	1.5	1.5	18	50	4	2
EHBBC201520A	0.75R	1.5	1.5	20	50	4	2
EHBBC201522A	0.75R	1.5	1.5	22	60	4	2
EHBBC201525A	0.75R	1.5	1.5	25	60	4	2
EHBBC201530A	0.75R	1.5	1.5	30	60	4	2
EHBRC201506A	0.75R	1.5	1.5	6	50	6	2
EHBRC201508A	0.75R	1.5	1.5	8	50	6	2
EHBRC201510A	0.75R	1.5	1.5	10	50	6	2
EHBRC201512A	0.75R	1.5	1.5	12	50	6	2
EHBBC201606A	0.80R	1.6	1.6	6	50	4	2
EHBBC201608A	0.80R	1.6	1.6	8	50	4	2
EHBBC201612A	0.80R	1.6	1.6	12	50	4	2
EHBBC201616A	0.80R	1.6	1.6	16	50	4	2
EHBBC201620A	0.80R	1.6	1.6	20	50	4	2
EHBBC201806A	0.90R	1.8	1.8	6	50	4	2
EHBBC201808A	0.90R	1.8	1.8	8	50	4	2
EHBBC201812A	0.90R	1.8	1.8	12	50	4	2
EHBBC201816A	0.90R	1.8	1.8	16	50	4	2
EHBBC201820A	0.90R	1.8	1.8	20	50	4	2
EHBBC202004A	1.00R	2.0	2.0	4	50	4	2
EHBBC202006A	1.00R	2.0	2.0	6	50	4	2
EHBBC202008A	1.00R	2.0	2.0	8	50	4	2
EHBBC202010A	1.00R	2.0	2.0	10	50	4	2
EHBBC202012A	1.00R	2.0	2.0	12	50	4	2
EHBBC202014A	1.00R	2.0	2.0	14	50	4	2
EHBBC202016A	1.00R	2.0	2.0	16	50	4	2
EHBBC202018A	1.00R	2.0	2.0	18	50	4	2
EHBBC202020A	1.00R	2.0	2.0	20	50	4	2
EHBBC202022A	1.00R	2.0	2.0	22	60	4	2
EHBBC202025A	1.00R	2.0	2.0	25	60	4	2

H650 Series

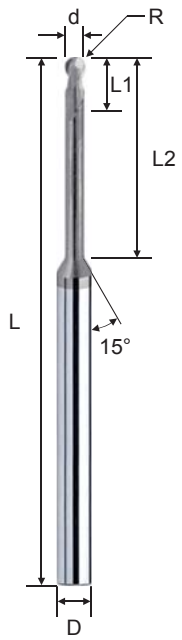
WINSTAR

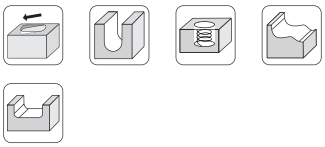
CARBIDE ENDMILLS - Long Neck Ball Nose Type - 2F

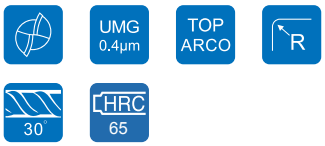
- TOP ARCO coating provides a superior wear and heat resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Suitable for deep cutting due to the long neck design.
- Polish cutting edge provides stronger tip.
- The coating can change to SICO, the prices will differ.

EHBBC2
EHBRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



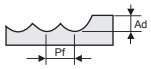




d	R Tolerance
Ø	± 0.02

Order No.	Radius (R)	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHBRC202006A	1.00R	2.0	2.0	6	50	6	2
EHBRC202008A	1.00R	2.0	2.0	8	50	6	2
EHBRC202010A	1.00R	2.0	2.0	10	50	6	2
EHBRC202016A	1.00R	2.0	2.0	16	50	6	2
EHBBC202508A	1.25R	2.5	2.5	8	50	4	2
EHBBC202510A	1.25R	2.5	2.5	10	50	4	2
EHBBC202516A	1.25R	2.5	2.5	16	50	4	2
EHBBC202520A	1.25R	2.5	2.5	20	60	4	2
EHBBC202525A	1.25R	2.5	2.5	25	60	4	2
EHBBC202530A	1.25R	2.5	2.5	30	60	4	2
EHBRC202506A	1.25R	2.5	2.5	6	50	6	2
EHBRC202510A	1.25R	2.5	2.5	10	50	6	2
EHBRC203010A	1.25R	3.0	3.0	10	50	6	2
EHBRC203006A	1.50R	3.0	3.0	6	50	6	2
EHBRC203008A	1.50R	3.0	3.0	8	50	6	2
EHBRC203010A	1.50R	3.0	3.0	10	50	6	2
EHBRC203012A	1.50R	3.0	3.0	12	50	6	2
EHBRC203016A	1.50R	3.0	3.0	16	60	6	2
EHBRC203020A	1.50R	3.0	3.0	20	60	6	2
EHBRC203025A	1.50R	3.0	3.0	25	60	6	2
EHBRC203030A	1.50R	3.0	3.0	30	60	6	2
EHBRC203035A	1.50R	3.0	3.0	35	75	6	2
EHBRC204008A	2.00R	4.0	4.0	8	50	6	2
EHBRC204010A	2.00R	4.0	4.0	10	50	6	2
EHBRC204012A	2.00R	4.0	4.0	12	50	6	2
EHBRC204016A	2.00R	4.0	4.0	16	60	6	2
EHBRC204020A	2.00R	4.0	4.0	20	60	6	2
EHBRC204025A	2.00R	4.0	4.0	25	60	6	2
EHBRC204030A	2.00R	4.0	4.0	30	60	6	2
EHBRC204035A	2.00R	4.0	4.0	35	75	6	2
EHBRC205015A	2.50R	5.0	5.0	15	60	6	2
EHBRC205020A	2.50R	5.0	5.0	20	60	6	2
EHBRC205025A	2.50R	5.0	5.0	25	60	6	2
EHBRC205030A	2.50R	5.0	5.0	30	75	6	2
EHBRC206015A	3.00R	6.0	10.0	15	50	6	2
EHBRC208025A	4.00R	8.0	12.0	25	60	8	2
EHBRC210030A	5.00R	10.0	16.0	30	75	10	2
EHBRC212030A	6.00R	12.0	18.0	30	75	12	2

WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	NAK, STAVAX		SKD		HAP10	
HARDNESS	HRC < 55		HRC 55 ~ 62		HRC 62 ~ 66	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.20R	50,000	480	37,500	400	35,000	220
0.30R	40,000	1,300	30,000	1,400	26,500	950
0.40R	35,000	1,500	27,000	1,500	23,500	950
0.50R	30,000	1,600	24,000	1,800	21,000	1,600
1.00R	28,000	2,700	14,000	2,000	12,250	1,800
1.50R	21,000	2,800	10,500	2,000	9,200	1,700

Milling Amount (mm)	Ad = 0.05D Pf = 0.1D	

Please refer to 3xD table, reduce R.P.M. & Feed while efficient length is increasing.

H650 Series

WINSTAR

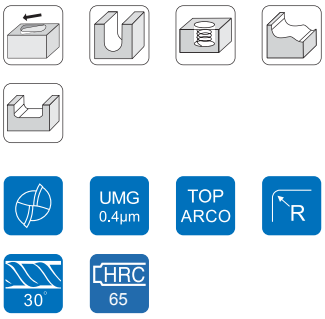
CARBIDE ENDMILLS - Taper Neck Ball Nose Type - 2F

- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- High strength of taper neck, can cut deep grooves without breaking.
- Suitable for cutting groves at hi speed.
- The coating can change to SICO, the prices will differ.

EHBRT2

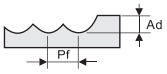
P	M	K	N	S	H
☑	☑	☑	☐	☐	☑

Order No.	Radius (R)	Dia. (d)	θ°	CL (L1)	EFF-L (L2)	NL (d2)	OAL (L)	Shank (D)	Flutes (F)
EHBRT201023AA	0.5R	1	1.5°	2	23	2.20	60	6	2
EHBRT202023AA	1.0R	2	1.5°	4	23	3.00	60	6	2
EHBRT2020423A	1.0R	2	3.0°	4	42	5.98	100	8	2
EHBRT203052AA	1.5R	3	1.5°	6	52	5.40	100	6	2
EHBRT2030473A	1.5R	3	3.0°	6	47	7.29	100	8	2
EHBRT204046AA	2.0R	4	1.5°	8	46	6.00	100	6	2
EHBRT2040383A	2.0R	4	3.0°	8	38	7.14	100	8	2
EHBRT2050283A	2.5R	5	3.0°	10	28	6.88	100	8	2
EHBRT2060383A	3.0R	6	3.0°	12	38	8.72	100	10	2
EHBRT2080383A	4.0R	8	3.0°	16	38	10.30	100	12	2
EHBRT2100573A	5.0R	10	3.0°	20	57	13.88	100	16	2
EHBRT2120383A	6.0R	12	3.0°	24	38	13.47	100	16	2



d	R Tolerance
Ø	± 0.02

WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	SKT, SKD		SKT, SKD		SKT, SKD	
HARDNESS	HRC 35~45		HRC 45~55		HRC 55~60	
Vc	260 M/min		195 M/min		130 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1.0R	41,600	1,920	31,200	1,440	20,800	960
2.0R	20,800	1,920	15,600	1,440	10,335	955
3.0R	13,650	1,890	10,335	1,430	6,890	955
4.0R	10,335	1,910	7,735	1,430	5,200	960
5.0R	8,255	1,905	6,240	1,440	4,160	960
6.0R	6,890	1,910	5,200	1,440	3,445	955
8.0R	5,200	1,920	3,900	1,440	2,600	960
10.0R	4,160	1,920	3,120	1,440	2,080	960

Milling Amount (mm)	Ad = 0.05D Pf = 0.1D	

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

H650 Series

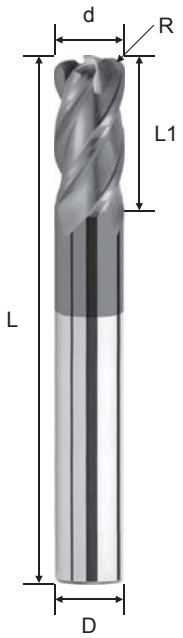
WINSTAR

CARBIDE ENDMILLS - Corner Radius Type - 4F

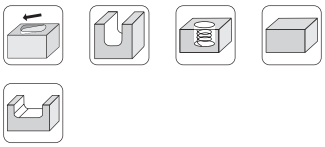
- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Long tool life and wear resistant due to its negative angle with corner radius design.
- The coating can change to SICO, the prices will differ.

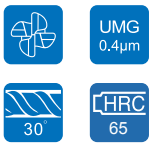
EHCFH4
EHCSH4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EHCFH404003A	4	0.3R	8	50	4	4
EHCFH404005A	4	0.5R	8	50	4	4
EHCFH404010A	4	1.0R	8	50	4	4
EHCSH404003A	4	0.3R	8	50	6	4
EHCSH404005A	4	0.5R	8	50	6	4
EHCSH404010A	4	1.0R	8	50	6	4
EHCSH405005A	5	0.5R	10	50	6	4
EHCSH405010A	5	1.0R	10	50	6	4
EHCSH406003A	6	0.3R	12	50	6	4
EHCSH406005A	6	0.5R	12	50	6	4
EHCSH406010A	6	1.0R	12	50	6	4
EHCSH408005A	8	0.5R	16	60	8	4
EHCSH408010A	8	1.0R	16	60	8	4
EHCSH408015A	8	1.5R	16	60	8	4
EHCSH410005A	10	0.5R	20	75	10	4
EHCSH410010A	10	1.0R	20	75	10	4
EHCSH410015A	10	1.5R	20	75	10	4
EHCSH410020A	10	2.0R	20	75	10	4
EHCSH412005A	12	0.5R	20	75	12	4
EHCSH412010A	12	1.0R	20	75	12	4
EHCSH412015A	12	1.5R	20	75	12	4
EHCSH412020A	12	2.0R	20	75	12	4





WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	SKT, SKD		SKT, SKD		SKT, SKD	
HARDNESS	HRC 35~45		HRC 45~55		HRC 55~60	
Vc	143 M/min		124 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	15,340	1,150	13,000	830	10,920	500
4MM	11,440	1,070	9,880	780	8,190	460
5MM	9,100	990	7,800	730	6,500	420
6MM	7,670	910	6,500	660	5,460	400
8MM	5,720	830	4,940	610	4,160	400
10MM	4,550	830	3,900	610	3,315	400
12MM	3,770	830	3,250	610	2,730	400

d	R Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03
R	± 0.015

Milling Amount (mm)

	aa	ar
D < ø 6	0.9D	0.01D
ø 6 ≦ D	0.9D	0.02D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

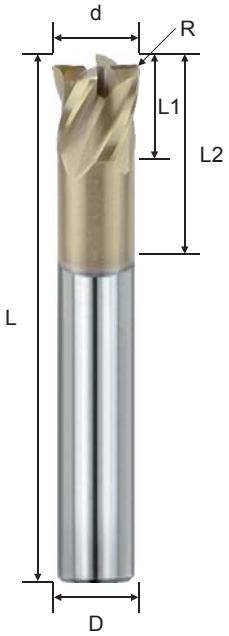
WINSTAR

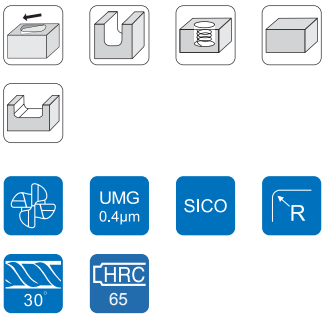
CARBIDE ENDMILLS - Short Flute Corner Radius Type - 4F

- SICO Nano coating provides a superior wear and heat resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Short cutting length with high rigidity is suitable for high speed cutting.
- The coating can change to TOP ARCO, the prices will differ.

EHCUH4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	R Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03
R	± 0.015

Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHCUH403001S	3	0.1R	3	7.5	50	6	4
EHCUH403005S	3	0.5R	3	7.5	50	6	4
EHCUH404002S	4	0.2R	4	10.0	50	6	4
EHCUH404005S	4	0.5R	4	10.0	50	6	4
EHCUH405002S	5	0.2R	5	12.5	50	6	4
EHCUH405005S	5	0.5R	5	12.5	50	6	4
EHCUH406002S	6	0.2R	6	15.0	50	6	4
EHCUH406005S	6	0.5R	6	15.0	50	6	4
EHCUH406010S	6	1.0R	6	15.0	50	6	4
EHCUH408003S	8	0.3R	8	20.0	60	8	4
EHCUH408005S	8	0.5R	8	20.0	60	8	4
EHCUH408010S	8	1.0R	8	20.0	60	8	4
EHCUH408015S	8	1.5R	8	20.0	60	8	4
EHCUH410003S	10	0.3R	10	25.0	75	10	4
EHCUH410005S	10	0.5R	10	25.0	75	10	4
EHCUH410010S	10	1.0R	10	25.0	75	10	4
EHCUH410015S	10	1.5R	10	25.0	75	10	4
EHCUH410020S	10	2.0R	10	25.0	75	10	4
EHCUH412003S	12	0.3R	12	30.0	75	12	4
EHCUH412005S	12	0.5R	12	30.0	75	12	4
EHCUH412010S	12	1.0R	12	30.0	75	12	4
EHCUH412015S	12	1.5R	12	30.0	75	12	4
EHCUH412020S	12	2.0R	12	30.0	75	12	4

WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	SKT, SKD		SKT, SKD		SKT, SKD	
HARDNESS	HRC 35~45		HRC 45~55		HRC 55~60	
Vc	143 M/min		124 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	15,340	1,150	13,000	830	10,920	500
4MM	11,440	1,070	9,880	780	8,190	460
5MM	9,100	990	7,800	730	6,500	420
6MM	7,670	910	6,500	660	5,460	400
8MM	5,720	830	4,940	610	4,160	400
10MM	4,550	830	3,900	610	3,315	400
12MM	3,770	830	3,250	610	2,730	400

Milling Amount (mm)

	aa	ar
D < ø 6	0.9D	0.01D
ø 6 ≦ D	0.9D	0.02D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

H650 Series

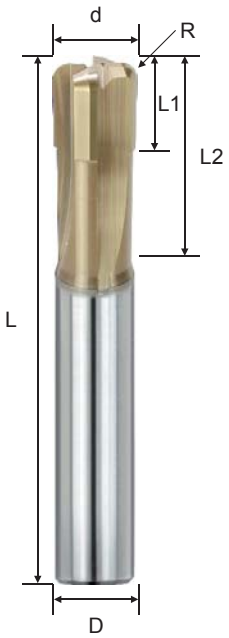
WINSTAR

CARBIDE ENDMILLS - Straight Short Flute Corner Radius Type - 4F

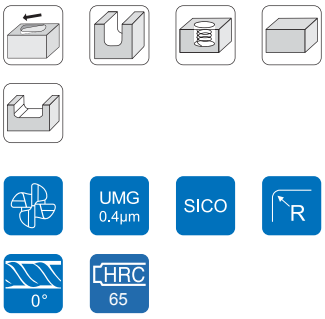
- SICO Nano coating provides a superior wear and heat resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Low helix design with short cutting length design.
- Cutting edges are very strong and wear resistant.
- The coating can change to TOP ARCO, the prices will differ.

EHCPS4
EHCUS4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



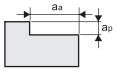
Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHCPS401002S	1	0.20R	1	2.5	50	4	4
EHCPS402002S	2	0.25R	2	6.5	50	4	4
EHCUS403005S	3	0.50R	3	7.5	50	6	4
EHCUS404005S	4	0.50R	4	10.0	50	6	4
EHCUS404010S	4	1.00R	4	10.0	50	6	4
EHCUS405010S	5	1.00R	5	12.5	50	6	4
EHCUS406010S	6	1.00R	6	15.0	50	6	4
EHCUS406015S	6	1.50R	6	15.0	50	6	4
EHCUS408010S	8	1.00R	8	20.0	60	8	4
EHCUS408015S	8	1.50R	8	20.0	60	8	4
EHCUS408020S	8	2.00R	8	20.0	60	8	4
EHCUS410010S	10	1.00R	10	25.0	75	10	4
EHCUS410020S	10	2.00R	10	25.0	75	10	4
EHCUS412010S	12	1.00R	12	30.0	75	12	4
EHCUS412020S	12	2.00R	12	30.0	75	12	4
EHCUS412030S	12	3.00R	12	30.0	75	12	4



WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	SKT, SKD		SKT, SKD		SKT, SKD	
HARDNESS	HRC 45~55		HRC 55~60		HRC 60~70	
Vc	65 M/min		39 M/min		26 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1MM	20,670	2,150	12,350	980	8,281	500
2MM	10,335	2,145	6,175	980	4,134	500
3MM	6,890	2,150	4,160	990	2,756	500
4MM	5,200	2,160	3,120	990	2,067	500
6MM	3,445	2,150	2,080	990	1,378	500
8MM	2,600	2,160	1,560	990	1,034	500
10MM	2,080	2,160	1,242	980	826	500
12MM	1,755	2,190	1,034	980	689	500

d	R Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03
R	± 0.015

Milling Amount (mm)



	aa	ap
R ≦ 2	0.2 x R	0.5D
R > 2	0.4mm	0.5D

	aa	ap
R ≦ 2	0.1 x R	0.5D
R > 2	0.2mm	0.5D

	aa	ap
R ≦ 2	0.1 x R	0.5D
R > 2	0.2mm	0.5D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

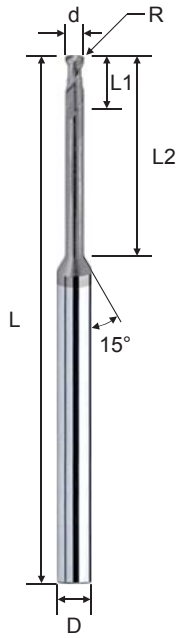
WINSTAR

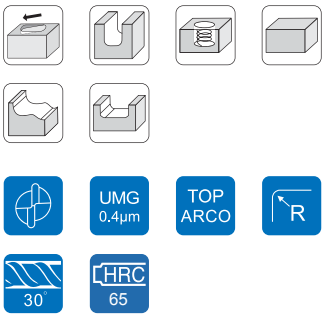
CARBIDE ENDMILLS - Long Neck Corner Radius Type - 2F

- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Available in various effective cutting lengths.
- It is suitable for deep cutting.
- The coating can change to SICO, the prices will differ.

EHCBC2
EHCRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ 0.02

Order No. 訂單編號	Dia. 刃徑 (d)	Corner Radius R 角 (R)	CL 刃長 (L1)	EFF-L 有效長 (L2)	OAL 全長 (L)	Shank 柄徑 (D)	Flutes 刃數 (F)
EHCBC20100104A	1.0	0.1R	1.0	4	50	4	2
EHCBC20100106A	1.0	0.1R	1.0	6	50	4	2
EHCBC20100108A	1.0	0.1R	1.0	8	50	4	2
EHCBC20100110A	1.0	0.1R	1.0	10	50	4	2
EHCBC20100112A	1.0	0.1R	1.0	12	50	4	2
EHCBC20100204A	1.0	0.2R	1.0	4	50	4	2
EHCBC20100206A	1.0	0.2R	1.0	6	50	4	2
EHCBC20100208A	1.0	0.2R	1.0	8	50	4	2
EHCBC20100210A	1.0	0.2R	1.0	10	50	4	2
EHCBC20100212A	1.0	0.2R	1.0	12	50	4	2
EHCBC20100304A	1.0	0.3R	1.0	4	50	4	2
EHCBC20100306A	1.0	0.3R	1.0	6	50	4	2
EHCBC20100308A	1.0	0.3R	1.0	8	50	4	2
EHCBC20100310A	1.0	0.3R	1.0	10	50	4	2
EHCBC20100312A	1.0	0.3R	1.0	12	50	4	2
EHCBC20120104A	1.2	0.1R	1.2	4	50	4	2
EHCBC20120106A	1.2	0.1R	1.2	6	50	4	2
EHCBC20120108A	1.2	0.1R	1.2	8	50	4	2
EHCBC20120110A	1.2	0.1R	1.2	10	50	4	2
EHCBC20120112A	1.2	0.1R	1.2	12	50	4	2
EHCBC20120204A	1.2	0.2R	1.2	4	50	4	2
EHCBC20120206A	1.2	0.2R	1.2	6	50	4	2
EHCBC20120208A	1.2	0.2R	1.2	8	50	4	2
EHCBC20120210A	1.2	0.2R	1.2	10	50	4	2
EHCBC20120212A	1.2	0.2R	1.2	12	50	4	2
EHCBC20120304A	1.2	0.3R	1.2	4	50	4	2
EHCBC20120306A	1.2	0.3R	1.2	6	50	4	2
EHCBC20120308A	1.2	0.3R	1.2	8	50	4	2
EHCBC20120310A	1.2	0.3R	1.2	10	50	4	2
EHCBC20120312A	1.2	0.3R	1.2	12	50	4	2
EHCBC20150106A	1.5	0.1R	1.5	6	50	4	2
EHCBC20150108A	1.5	0.1R	1.5	8	50	4	2
EHCBC20150110A	1.5	0.1R	1.5	10	50	4	2
EHCBC20150112A	1.5	0.1R	1.5	12	50	4	2
EHCBC20150116A	1.5	0.1R	1.5	16	50	4	2
EHCBC20150206A	1.5	0.2R	1.5	6	50	4	2
EHCBC20150208A	1.5	0.2R	1.5	8	50	4	2
EHCBC20150210A	1.5	0.2R	1.5	10	50	4	2
EHCBC20150212A	1.5	0.2R	1.5	12	50	4	2
EHCBC20150216A	1.5	0.2R	1.5	16	50	4	2
EHCBC20150306A	1.5	0.3R	1.5	6	50	4	2
EHCBC20150308A	1.5	0.3R	1.5	8	50	4	2
EHCBC20150310A	1.5	0.3R	1.5	10	50	4	2
EHCBC20150312A	1.5	0.3R	1.5	12	50	4	2
EHCBC20150316A	1.5	0.3R	1.5	16	50	4	2
EHCBC20150506A	1.5	0.5R	1.5	6	50	4	2
EHCBC20150508A	1.5	0.5R	1.5	8	50	4	2
EHCBC20150510A	1.5	0.5R	1.5	10	50	4	2
EHCBC20150512A	1.5	0.5R	1.5	12	50	4	2
EHCBC20150516A	1.5	0.5R	1.5	16	50	4	2
EHCBC20200106A	2.0	0.1R	2.0	6	50	4	2
EHCBC20200108A	2.0	0.1R	2.0	8	50	4	2
EHCBC20200110A	2.0	0.1R	2.0	10	50	4	2

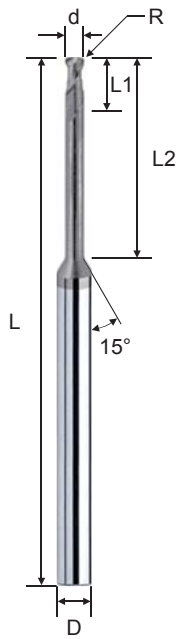
WINSTAR

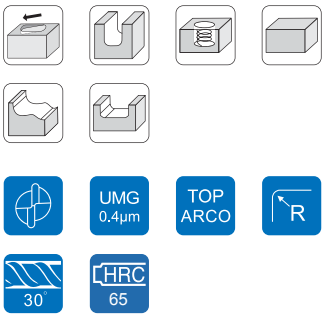
CARBIDE ENDMILLS - Long Neck Corner Radius Type - 2F

- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Available in various effective cutting lengths.
- It is suitable for deep cutting.
- The coating can change to SICO, the prices will differ.

EHCBC2
EHCRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ 0.02

Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHCBC20200112A	2.0	0.1R	2.0	12	50	4	2
EHCBC20200116A	2.0	0.1R	2.0	16	50	4	2
EHCBC20200120A	2.0	0.1R	2.0	20	50	4	2
EHCBC20200125A	2.0	0.1R	2.0	25	60	4	2
EHCBC20200206A	2.0	0.2R	2.0	6	50	4	2
EHCBC20200208A	2.0	0.2R	2.0	8	50	4	2
EHCBC20200210A	2.0	0.2R	2.0	10	50	4	2
EHCBC20200212A	2.0	0.2R	2.0	12	50	4	2
EHCBC20200216A	2.0	0.2R	2.0	16	50	4	2
EHCBC20200220A	2.0	0.2R	2.0	20	50	4	2
EHCBC20200225A	2.0	0.2R	2.0	25	60	4	2
EHCBC20200306A	2.0	0.3R	2.0	6	50	4	2
EHCBC20200308A	2.0	0.3R	2.0	8	50	4	2
EHCBC20200310A	2.0	0.3R	2.0	10	50	4	2
EHCBC20200312A	2.0	0.3R	2.0	12	50	4	2
EHCBC20200316A	2.0	0.3R	2.0	16	50	4	2
EHCBC20200320A	2.0	0.3R	2.0	20	50	4	2
EHCBC20200325A	2.0	0.3R	2.0	25	60	4	2
EHCBC20200506A	2.0	0.5R	2.0	6	50	4	2
EHCBC20200508A	2.0	0.5R	2.0	8	50	4	2
EHCBC20200510A	2.0	0.5R	2.0	10	50	4	2
EHCBC20200512A	2.0	0.5R	2.0	12	50	4	2
EHCBC20200516A	2.0	0.5R	2.0	16	50	4	2
EHCBC20200520A	2.0	0.5R	2.0	20	50	4	2
EHCBC20200525A	2.0	0.5R	2.0	25	60	4	2
EHCRC20200510A	2.0	0.5R	2.0	10	50	6	2
EHCRC20200515A	2.0	0.5R	2.0	15	50	6	2
EHCBC20250110A	2.5	0.1R	2.5	10	50	4	2
EHCBC20250116A	2.5	0.1R	2.5	16	50	4	2
EHCBC20250120A	2.5	0.1R	2.5	20	50	4	2
EHCBC20250125A	2.5	0.1R	2.5	25	60	4	2
EHCBC20250210A	2.5	0.2R	2.5	10	50	4	2
EHCBC20250216A	2.5	0.2R	2.5	16	50	4	2
EHCBC20250220A	2.5	0.2R	2.5	20	50	4	2
EHCBC20250225A	2.5	0.2R	2.5	25	60	4	2
EHCBC20250310A	2.5	0.3R	2.5	10	50	4	2
EHCBC20250316A	2.5	0.3R	2.5	16	50	4	2
EHCBC20250320A	2.5	0.3R	2.5	20	50	4	2
EHCBC20250325A	2.5	0.3R	2.5	25	60	4	2
EHCBC20250510A	2.5	0.5R	2.5	10	50	4	2
EHCBC20250516A	2.5	0.5R	2.5	16	50	4	2
EHCBC20250520A	2.5	0.5R	2.5	20	50	4	2
EHCBC20250525A	2.5	0.5R	2.5	25	60	4	2
EHCRC20300110A	3.0	0.1R	3.0	10	50	6	2
EHCRC20300116A	3.0	0.1R	3.0	16	60	6	2
EHCRC20300120A	3.0	0.1R	3.0	20	60	6	2
EHCRC20300125A	3.0	0.1R	3.0	25	60	6	2
EHCRC20300130A	3.0	0.1R	3.0	30	75	6	2
EHCRC20300135A	3.0	0.1R	3.0	35	75	6	2
EHCRC20300210A	3.0	0.2R	3.0	10	50	6	2
EHCRC20300216A	3.0	0.2R	3.0	16	60	6	2
EHCRC20300220A	3.0	0.2R	3.0	20	60	6	2
EHCRC20300225A	3.0	0.2R	3.0	25	60	6	2
EHCRC20300230A	3.0	0.2R	3.0	30	75	6	2

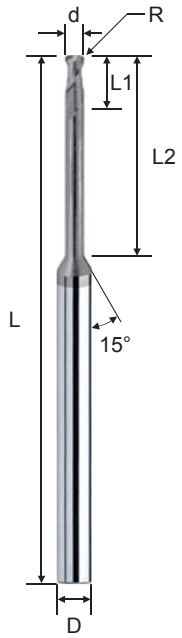
WINSTAR

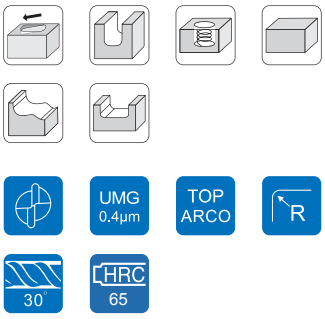
CARBIDE ENDMILLS - Long Neck Corner Radius Type - 2F

- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Available in various effective cutting lengths.
- It is suitable for deep cutting.
- The coating can change to SICO, the prices will differ.

EHCBC2
EHCRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ 0.02

Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHCRC20300235A	3.0	0.2R	3.0	35	75	6	2
EHCRC20300310A	3.0	0.3R	3.0	10	50	6	2
EHCRC20300316A	3.0	0.3R	3.0	16	60	6	2
EHCRC20300320A	3.0	0.3R	3.0	20	60	6	2
EHCRC20300325A	3.0	0.3R	3.0	25	60	6	2
EHCRC20300330A	3.0	0.3R	3.0	30	75	6	2
EHCRC20300335A	3.0	0.3R	3.0	35	75	6	2
EHCRC20300510A	3.0	0.5R	3.0	10	50	6	2
EHCRC20300516A	3.0	0.5R	3.0	16	60	6	2
EHCRC20300520A	3.0	0.5R	3.0	20	60	6	2
EHCRC20300525A	3.0	0.5R	3.0	25	60	6	2
EHCRC20300530A	3.0	0.5R	3.0	30	75	6	2
EHCRC20300535A	3.0	0.5R	3.0	35	75	6	2
EHCRC20301010A	3.0	1.0R	3.0	10	50	6	2
EHCRC20301016A	3.0	1.0R	3.0	16	60	6	2
EHCRC20301020A	3.0	1.0R	3.0	20	60	6	2
EHCRC20301025A	3.0	1.0R	3.0	25	60	6	2
EHCRC20301030A	3.0	1.0R	3.0	30	75	6	2
EHCRC20301035A	3.0	1.0R	3.0	35	75	6	2
EHCRC20400113A	4.0	0.1R	4.0	13	50	6	2
EHCRC20400116A	4.0	0.1R	4.0	16	60	6	2
EHCRC20400120A	4.0	0.1R	4.0	20	60	6	2
EHCRC20400125A	4.0	0.1R	4.0	25	60	6	2
EHCRC20400130A	4.0	0.1R	4.0	30	75	6	2
EHCRC20400135A	4.0	0.1R	4.0	35	75	6	2
EHCRC20400213A	4.0	0.2R	4.0	13	50	6	2
EHCRC20400216A	4.0	0.2R	4.0	16	60	6	2
EHCRC20400220A	4.0	0.2R	4.0	20	60	6	2
EHCRC20400225A	4.0	0.2R	4.0	25	60	6	2
EHCRC20400230A	4.0	0.2R	4.0	30	75	6	2
EHCRC20400235A	4.0	0.2R	4.0	35	75	6	2
EHCRC20400313A	4.0	0.3R	4.0	13	50	6	2
EHCRC20400316A	4.0	0.3R	4.0	16	60	6	2
EHCRC20400320A	4.0	0.3R	4.0	20	60	6	2
EHCRC20400325A	4.0	0.3R	4.0	25	60	6	2
EHCRC20400330A	4.0	0.3R	4.0	30	75	6	2
EHCRC20400335A	4.0	0.3R	4.0	35	75	6	2
EHCRC20400513A	4.0	0.5R	4.0	13	50	6	2
EHCRC20400516A	4.0	0.5R	4.0	16	60	6	2
EHCRC20400520A	4.0	0.5R	4.0	20	60	6	2
EHCRC20400525A	4.0	0.5R	4.0	25	60	6	2
EHCRC20400530A	4.0	0.5R	4.0	30	75	6	2
EHCRC20400535A	4.0	0.5R	4.0	35	75	6	2
EHCRC20401013A	4.0	1.0R	4.0	13	50	6	2
EHCRC20401016A	4.0	1.0R	4.0	16	60	6	2
EHCRC20401020A	4.0	1.0R	4.0	20	60	6	2
EHCRC20401025A	4.0	1.0R	4.0	25	60	6	2
EHCRC20401030A	4.0	1.0R	4.0	30	75	6	2
EHCRC20401035A	4.0	1.0R	4.0	35	75	6	2
EHCRC20500116A	5.0	0.1R	5.0	16	60	6	2
EHCRC20500130A	5.0	0.1R	5.0	30	60	6	2
EHCRC20500216A	5.0	0.2R	5.0	16	60	6	2
EHCRC20500230A	5.0	0.2R	5.0	30	60	6	2

H650 Series

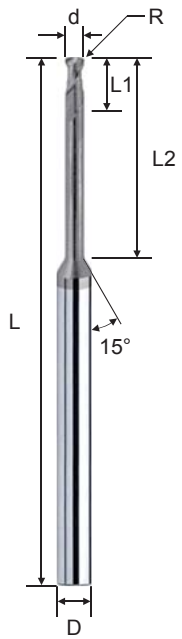
WINSTAR

CARBIDE ENDMILLS - Long Neck Corner Radius Type - 2F

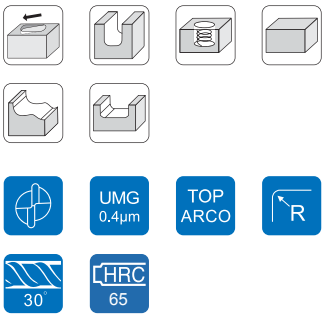
- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Available in various effective cutting lengths.
- It is suitable for deep cutting.
- The coating can change to SICO, the prices will differ.

EHCBC2
EHCRC2

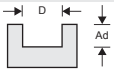
P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHCRC20500316A	5.0	0.3R	5.0	16	60	6	2
EHCRC20500330A	5.0	0.3R	5.0	30	60	6	2
EHCRC20500516A	5.0	0.5R	5.0	16	60	6	2
EHCRC20500530A	5.0	0.5R	5.0	30	60	6	2
EHCRC20501016A	5.0	1.0R	5.0	16	60	6	2
EHCRC20501030A	5.0	1.0R	5.0	30	60	6	2
EHCRC20600120A	6.0	0.1R	7.0	20	60	6	2
EHCRC20600130A	6.0	0.1R	7.0	30	60	6	2
EHCRC20600220A	6.0	0.2R	7.0	20	60	6	2
EHCRC20600230A	6.0	0.2R	7.0	30	60	6	2
EHCRC20600320A	6.0	0.3R	7.0	20	60	6	2
EHCRC20600330A	6.0	0.3R	7.0	30	60	6	2
EHCRC20600520A	6.0	0.5R	7.0	20	60	6	2
EHCRC20600530A	6.0	0.5R	7.0	30	60	6	2
EHCRC20601020A	6.0	1.0R	7.0	20	60	6	2
EHCRC20601030A	6.0	1.0R	7.0	30	60	6	2
EHCRC20601520A	6.0	1.5R	7.0	20	60	6	2
EHCRC20601530A	6.0	1.5R	7.0	30	60	6	2
EHCRC20800522A	8.0	0.5R	9.0	22	60	8	2
EHCRC20801022A	8.0	1.0R	9.0	22	60	8	2
EHCRC20801522A	8.0	1.5R	9.0	22	60	8	2
EHCRC20802022A	8.0	2.0R	9.0	22	60	8	2
EHCRC21000524A	10.0	0.5R	11.0	24	75	10	2
EHCRC21001024A	10.0	1.0R	11.0	24	75	10	2
EHCRC21001524A	10.0	1.5R	11.0	24	75	10	2
EHCRC21002024A	10.0	2.0R	11.0	24	75	10	2
EHCRC21200526A	12.0	0.5R	13.0	26	75	12	2
EHCRC21201026A	12.0	1.0R	13.0	26	75	12	2
EHCRC21201526A	12.0	1.5R	13.0	26	75	12	2
EHCRC21202026A	12.0	2.0R	13.0	26	75	12	2



d	Tolerance
Ø	0 ~ 0.02

WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	NAK, SKD		SKT, SKD		SKT, SKD	
HARDNESS	HRC 30~45		HRC 45~55		HRC 55~65	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
2.0MM	13,200	1,100	12,200	1,020	9,800	590
2.5MM	11,000	1,200	10,200	1,000	8,500	430
3.0MM	11,500	1,800	10,700	1,800	9,100	620
4.0MM	9,500	1,370	7,900	1,330	6,700	740
6.0MM	6,000	1,470	3,500	850	3,000	650
8.0MM	4,800	1,600	2,900	680	2,400	650
10.0MM	3,840	1,750	2,300	540	1,900	460
12.0MM	3,000	1,800	1,800	430	1,600	450
Milling Amount (mm)			Ad = 0.1D (D < 3, Ad ≦ 0.05D)		Ad = 0.5D (D < 3, Ad ≦ 0.25D)	

Please refer to 3xD table, reduce R.P.M. & Feed while efficient length is increasing.

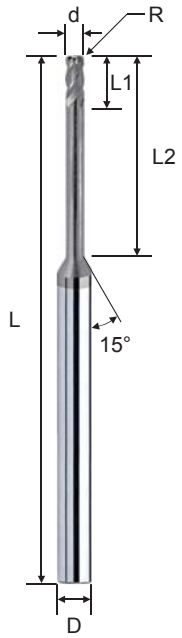
WINSTAR

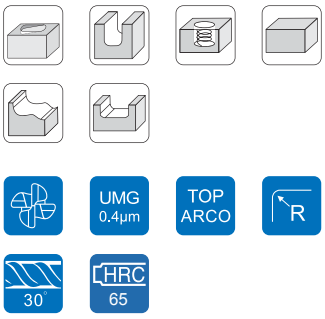
CARBIDE ENDMILLS - Long Neck Corner Radius Type - 4F

- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Available in various effective cutting lengths.
- It is suitable for deep cutting.
- The coating can change to SICO, the prices will differ.

EHCBC4
EHCRC4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ 0.02

Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHCBC40200106A	2.0	0.1R	2.0	6	50	4	4
EHCBC40200108A	2.0	0.1R	2.0	8	50	4	4
EHCBC40200110A	2.0	0.1R	2.0	10	50	4	4
EHCBC40200112A	2.0	0.1R	2.0	12	50	4	4
EHCBC40200116A	2.0	0.1R	2.0	16	50	4	4
EHCBC40200120A	2.0	0.1R	2.0	20	50	4	4
EHCBC40200125A	2.0	0.1R	2.0	25	60	4	4
EHCBC40200206A	2.0	0.2R	2.0	6	50	4	4
EHCBC40200208A	2.0	0.2R	2.0	8	50	4	4
EHCBC40200210A	2.0	0.2R	2.0	10	50	4	4
EHCBC40200212A	2.0	0.2R	2.0	12	50	4	4
EHCBC40200216A	2.0	0.2R	2.0	16	50	4	4
EHCBC40200220A	2.0	0.2R	2.0	20	50	4	4
EHCBC40200225A	2.0	0.2R	2.0	25	60	4	4
EHCBC40200306A	2.0	0.3R	2.0	6	50	4	4
EHCBC40200308A	2.0	0.3R	2.0	8	50	4	4
EHCBC40200310A	2.0	0.3R	2.0	10	50	4	4
EHCBC40200312A	2.0	0.3R	2.0	12	50	4	4
EHCBC40200316A	2.0	0.3R	2.0	16	50	4	4
EHCBC40200320A	2.0	0.3R	2.0	20	50	4	4
EHCBC40200325A	2.0	0.3R	2.0	25	60	4	4
EHCBC40200506A	2.0	0.5R	2.0	6	50	4	4
EHCBC40200508A	2.0	0.5R	2.0	8	50	4	4
EHCBC40200510A	2.0	0.5R	2.0	10	50	4	4
EHCBC40200512A	2.0	0.5R	2.0	12	50	4	4
EHCBC40200516A	2.0	0.5R	2.0	16	50	4	4
EHCBC40200520A	2.0	0.5R	2.0	20	50	4	4
EHCBC40200525A	2.0	0.5R	2.0	25	60	4	4
EHCRC40200510A	2.0	0.5R	2.0	10	50	6	4
EHCRC40200515A	2.0	0.5R	2.0	15	50	6	4
EHCBC40250110A	2.5	0.1R	2.5	10	50	4	4
EHCBC40250116A	2.5	0.1R	2.5	16	50	4	4
EHCBC40250120A	2.5	0.1R	2.5	20	50	4	4
EHCBC40250125A	2.5	0.1R	2.5	25	60	4	4
EHCBC40250210A	2.5	0.2R	2.5	10	50	4	4
EHCBC40250216A	2.5	0.2R	2.5	16	50	4	4
EHCBC40250220A	2.5	0.2R	2.5	20	50	4	4
EHCBC40250225A	2.5	0.2R	2.5	25	60	4	4
EHCBC40250310A	2.5	0.3R	2.5	10	50	4	4
EHCBC40250316A	2.5	0.3R	2.5	16	50	4	4
EHCBC40250320A	2.5	0.3R	2.5	20	50	4	4
EHCBC40250325A	2.5	0.3R	2.5	25	60	4	4
EHCBC40250510A	2.5	0.5R	2.5	10	50	4	4
EHCBC40250516A	2.5	0.5R	2.5	16	50	4	4
EHCBC40250520A	2.5	0.5R	2.5	20	50	4	4
EHCBC40250525A	2.5	0.5R	2.5	25	60	4	4
EHCRC40300110A	3.0	0.1R	3.0	10	50	6	4
EHCRC40300116A	3.0	0.1R	3.0	16	60	6	4
EHCRC40300120A	3.0	0.1R	3.0	20	60	6	4
EHCRC40300125A	3.0	0.1R	3.0	25	60	6	4
EHCRC40300130A	3.0	0.1R	3.0	30	75	6	4
EHCRC40300135A	3.0	0.1R	3.0	35	75	6	4
EHCRC40300210A	3.0	0.2R	3.0	10	50	6	4

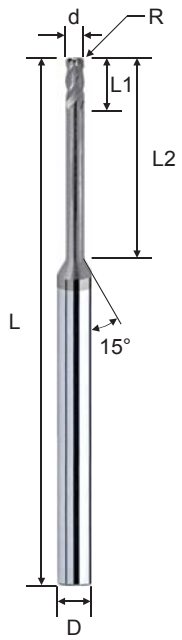
WINSTAR

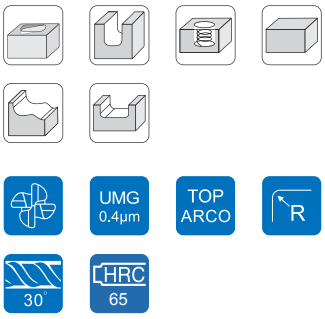
CARBIDE ENDMILLS - Long Neck Corner Radius Type - 4F

- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Available in various effective cutting lengths.
- It is suitable for deep cutting.
- The coating can change to SICO, the prices will differ.

EHCBC4
EHCRC4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ 0.02

Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHCRC40300216A	3.0	0.2R	3.0	16	60	6	4
EHCRC40300220A	3.0	0.2R	3.0	20	60	6	4
EHCRC40300225A	3.0	0.2R	3.0	25	60	6	4
EHCRC40300230A	3.0	0.2R	3.0	30	75	6	4
EHCRC40300235A	3.0	0.2R	3.0	35	75	6	4
EHCRC40300310A	3.0	0.3R	3.0	10	50	6	4
EHCRC40300316A	3.0	0.3R	3.0	16	60	6	4
EHCRC40300320A	3.0	0.3R	3.0	20	60	6	4
EHCRC40300325A	3.0	0.3R	3.0	25	60	6	4
EHCRC40300330A	3.0	0.3R	3.0	30	75	6	4
EHCRC40300335A	3.0	0.3R	3.0	35	75	6	4
EHCRC40300510A	3.0	0.5R	3.0	10	50	6	4
EHCRC40300516A	3.0	0.5R	3.0	16	60	6	4
EHCRC40300520A	3.0	0.5R	3.0	20	60	6	4
EHCRC40300525A	3.0	0.5R	3.0	25	60	6	4
EHCRC40300530A	3.0	0.5R	3.0	30	75	6	4
EHCRC40300535A	3.0	0.5R	3.0	35	75	6	4
EHCRC40301010A	3.0	1.0R	3.0	10	50	6	4
EHCRC40301016A	3.0	1.0R	3.0	16	60	6	4
EHCRC40301020A	3.0	1.0R	3.0	20	60	6	4
EHCRC40301025A	3.0	1.0R	3.0	25	60	6	4
EHCRC40301030A	3.0	1.0R	3.0	30	75	6	4
EHCRC40301035A	3.0	1.0R	3.0	35	75	6	4
EHCRC40400113A	4.0	0.1R	4.0	13	50	6	4
EHCRC40400116A	4.0	0.1R	4.0	16	60	6	4
EHCRC40400120A	4.0	0.1R	4.0	20	60	6	4
EHCRC40400125A	4.0	0.1R	4.0	25	60	6	4
EHCRC40400130A	4.0	0.1R	4.0	30	75	6	4
EHCRC40400135A	4.0	0.1R	4.0	35	75	6	4
EHCRC40400213A	4.0	0.2R	4.0	13	50	6	4
EHCRC40400216A	4.0	0.2R	4.0	16	60	6	4
EHCRC40400220A	4.0	0.2R	4.0	20	60	6	4
EHCRC40400225A	4.0	0.2R	4.0	25	60	6	4
EHCRC40400230A	4.0	0.2R	4.0	30	75	6	4
EHCRC40400235A	4.0	0.2R	4.0	35	75	6	4
EHCRC40400313A	4.0	0.3R	4.0	13	50	6	4
EHCRC40400316A	4.0	0.3R	4.0	16	60	6	4
EHCRC40400320A	4.0	0.3R	4.0	20	60	6	4
EHCRC40400325A	4.0	0.3R	4.0	25	60	6	4
EHCRC40400330A	4.0	0.3R	4.0	30	75	6	4
EHCRC40400335A	4.0	0.3R	4.0	35	75	6	4
EHCRC40400513A	4.0	0.5R	4.0	13	50	6	4
EHCRC40400516A	4.0	0.5R	4.0	16	60	6	4
EHCRC40400520A	4.0	0.5R	4.0	20	60	6	4
EHCRC40400525A	4.0	0.5R	4.0	25	60	6	4
EHCRC40400530A	4.0	0.5R	4.0	30	75	6	4
EHCRC40400535A	4.0	0.5R	4.0	35	75	6	4
EHCRC40401013A	4.0	1.0R	4.0	13	50	6	4
EHCRC40401016A	4.0	1.0R	4.0	16	60	6	4
EHCRC40401020A	4.0	1.0R	4.0	20	60	6	4
EHCRC40401025A	4.0	1.0R	4.0	25	60	6	4
EHCRC40401030A	4.0	1.0R	4.0	30	75	6	4
EHCRC40401035A	4.0	1.0R	4.0	35	75	6	4
EHCRC40500116A	5.0	0.1R	5.0	16	60	6	4

H650 Series

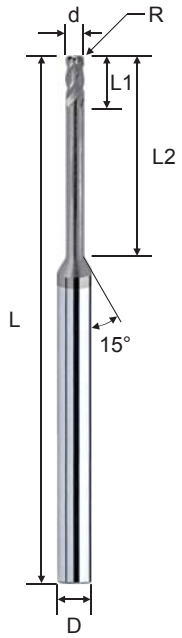
WINSTAR

CARBIDE ENDMILLS - Corner Radius & Long Neck Type - 4F

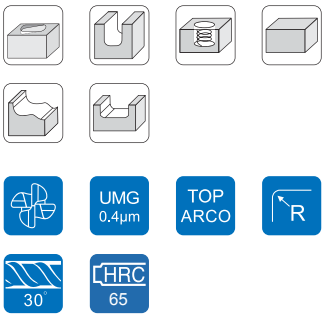
- TOP ARCO coating provides a superior wear resistance.
- Suitable for HRC 50 and over HRC 50 Hardened Steel, also maximum up to HRC 65.
- Available in various effective cutting lengths.
- It is suitable for deep cutting.
- The coating can change to SICO, the prices will differ.

EHCBC4
EHCRC4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHCRC40500130A	5.0	0.1R	5.0	30	60	6	4
EHCRC40500216A	5.0	0.2R	5.0	16	60	6	4
EHCRC40500230A	5.0	0.2R	5.0	30	60	6	4
EHCRC40500316A	5.0	0.3R	5.0	16	60	6	4
EHCRC40500330A	5.0	0.3R	5.0	30	60	6	4
EHCRC40500516A	5.0	0.5R	5.0	16	60	6	4
EHCRC40500530A	5.0	0.5R	5.0	30	60	6	4
EHCRC40501016A	5.0	1.0R	5.0	16	60	6	4
EHCRC40501030A	5.0	1.0R	5.0	30	60	6	4
EHCRC40600120A	6.0	0.1R	7.0	20	60	6	4
EHCRC40600130A	6.0	0.1R	7.0	30	60	6	4
EHCRC40600220A	6.0	0.2R	7.0	20	60	6	4
EHCRC40600230A	6.0	0.2R	7.0	30	60	6	4
EHCRC40600320A	6.0	0.3R	7.0	20	60	6	4
EHCRC40600330A	6.0	0.3R	7.0	30	60	6	4
EHCRC40600520A	6.0	0.5R	7.0	20	60	6	4
EHCRC40600530A	6.0	0.5R	7.0	30	60	6	4
EHCRC40601020A	6.0	1.0R	7.0	20	60	6	4
EHCRC40601030A	6.0	1.0R	7.0	30	60	6	4
EHCRC40601520A	6.0	1.5R	7.0	20	60	6	4
EHCRC40601530A	6.0	1.5R	7.0	30	60	6	4
EHCRC40800522A	8.0	0.5R	9.0	22	60	8	4
EHCRC40801022A	8.0	1.0R	9.0	22	60	8	4
EHCRC40801522A	8.0	1.5R	9.0	22	60	8	4
EHCRC40802022A	8.0	2.0R	9.0	22	60	8	4
EHCRC41000524A	10.0	0.5R	11.0	24	75	10	4
EHCRC41001024A	10.0	1.0R	11.0	24	75	10	4
EHCRC41001524A	10.0	1.5R	11.0	24	75	10	4
EHCRC41002024A	10.0	2.0R	11.0	24	75	10	4
EHCRC41200526A	12.0	0.5R	13.0	26	75	12	4
EHCRC41201026A	12.0	1.0R	13.0	26	75	12	4
EHCRC41201526A	12.0	1.5R	13.0	26	75	12	4
EHCRC41202026A	12.0	2.0R	13.0	26	75	12	4



d	Tolerance
Ø	0 ~ 0.02

WORKING MATERIAL	HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	NAK, SKD		SKT, SKD		SKT, SKD	
HARDNESS	HRC 30~45		HRC 45~55		HRC 55~65	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
2.0MM	13,200	1,100	12,200	1,020	9,800	590
2.5MM	11,000	1,200	10,200	1,000	8,500	430
3.0MM	11,500	1,800	10,700	1,800	9,100	620
4.0MM	9,500	1,370	7,900	1,330	6,700	740
6.0MM	6,000	1,470	3,500	850	3,000	650
8.0MM	4,800	1,600	2,900	680	2,400	650
10.0MM	3,840	1,750	2,300	540	1,900	460
12.0MM	3,000	1,800	1,800	430	1,600	450

Milling Amount (mm)

Please refer to 3xD table, reduce R.P.M. & Feed while efficient length is increasing.

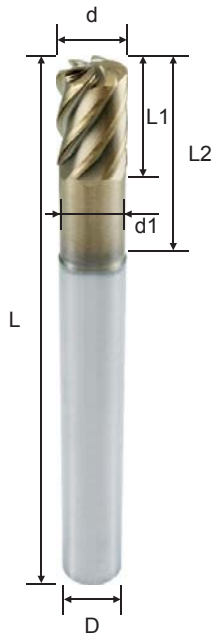
CARBIDE ENDMILLS - Double Corner High Feed EndMill - 6F

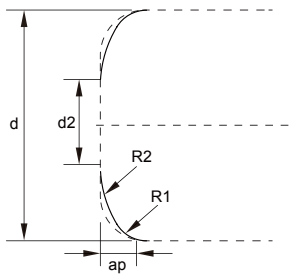
- SICO Nano coating provides a superior wear and heat resistance.
- Duotec design and multi-flute geometry design.
- High feed and high metal removal rate in surface milling.
- UMG Carbide substrate possess high TRS and good wear resistance.

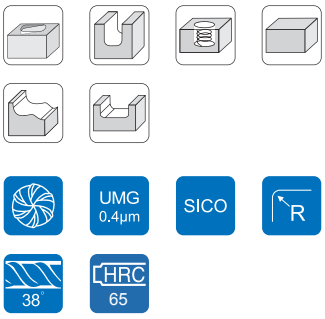
EHWSA4
EHWSA6

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑

Order No.	Dia. (d)	ND (d1)	(d2)	(ap)	(R1)	(R2)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EHWSA406000S	6	5.6	1.5	0.35	0.6	5.0	9	18	60	6	4
EHWSA608000S	8	7.6	3.2	0.40	0.8	4.5	12	24	75	8	6
EHWSA601000S	10	9.4	4.0	0.55	1.0	5.5	15	30	75	10	6
EHWSA601200S	12	11.4	4.8	0.70	1.2	6.5	18	36	75	12	6



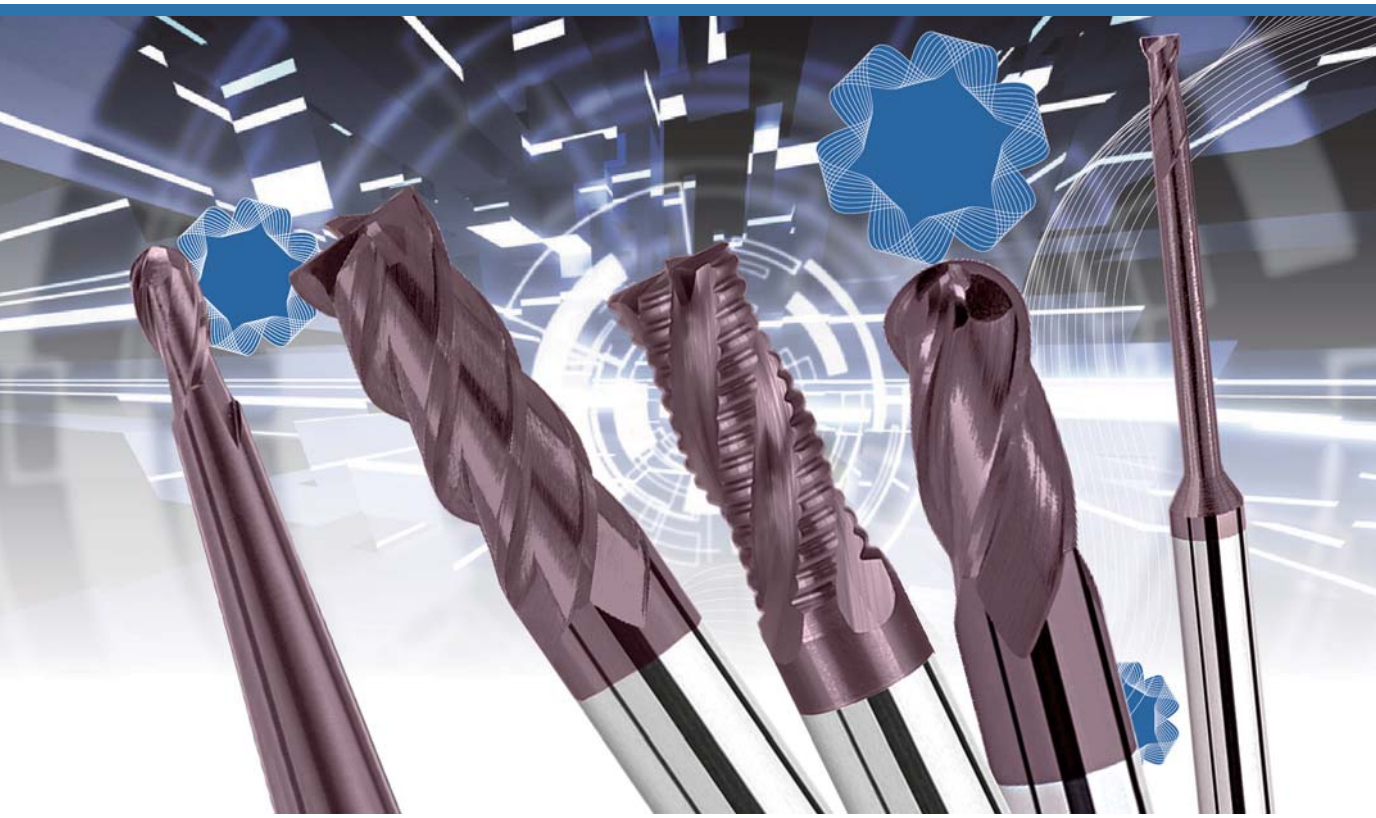




d	Tolerance
Ø	0 ~ 0.02

G550 series

up to HRC 55



- Our UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Small negative angle provides excellent cutting ability of cutting edges.
- Hi rigidity, geometry suitable for hi speed cutting and hi precision cutting.

G550 Series

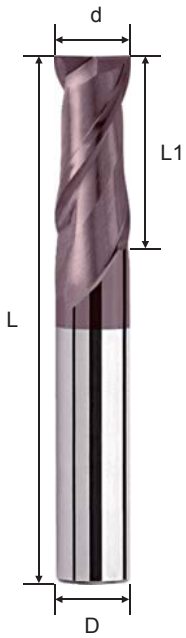
WINSTAR

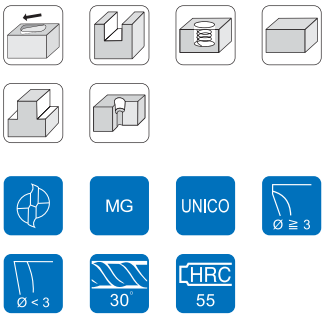
CARBIDE ENDMILLS - Square Type - 2F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel,etc.
- Strong geometry design has excellent cutting ability of cutting edges.
- High precision cutting for side milling.

EPSFC2
EPSSC2

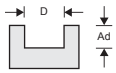
P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø < 3	0 ~ -0.02
3 ≦ Ø ≦ 10	0 ~ -0.03
Ø > 10	0 ~ -0.04

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPSFC200200U	0.2	0.4	50	4	2
EPSFC200300U	0.3	0.6	50	4	2
EPSFC200400U	0.4	0.8	50	4	2
EPSFC200500U	0.5	1.0	50	4	2
EPSFC200600U	0.6	1.5	50	4	2
EPSFC200700U	0.7	2.0	50	4	2
EPSFC200800U	0.8	2.0	50	4	2
EPSFC200900U	0.9	2.0	50	4	2
EPSFC201000U	1.0	3.0	50	4	2
EPSFC201500U	1.5	4.0	50	4	2
EPSFC202000U	2.0	5.0	50	4	2
EPSFC202500U	2.5	6.0	50	4	2
EPSFC203000U	3.0	8.0	50	4	2
EPSFC203500U	3.5	9.0	50	4	2
EPSFC204000U	4.0	10.0	50	4	2
EPSSC201000U	1.0	3.0	50	6	2
EPSSC202000U	2.0	5.0	50	6	2
EPSSC203000U	3.0	8.0	50	6	2
EPSSC203500U	3.5	9.0	50	6	2
EPSSC204000U	4.0	10.0	50	6	2
EPSSC204500U	4.5	11.0	50	6	2
EPSSC205000U	5.0	13.0	50	6	2
EPSSC205500U	5.5	14.0	50	6	2
EPSSC206000U	6.0	15.0	50	6	2
EPSSC206500U	6.5	16.0	60	8	2
EPSSC207000U	7.0	18.0	60	8	2
EPSSC208000U	8.0	20.0	60	8	2
EPSSC209000U	9.0	22.0	75	10	2
EPSSC210000U	10.0	25.0	75	10	2
EPSSC211000U	11.0	25.0	75	12	2
EPSSC212000U	12.0	30.0	75	12	2
EPSSC214000U	14.0	30.0	75	14	2
EPSSC216000U	16.0	35.0	100	16	2
EPSSC218000U	18.0	40.0	100	20	2
EPSSC220000U	20.0	45.0	100	20	2
EPSSC225000U	25.0	45.0	100	25	2

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
2MM	14,040	235	11,232	160	9,360	110	5,616	45	11,232	185	16,380	270
4MM	7,020	260	5,616	175	4,680	120	2,808	50	5,616	205	8,424	310
6MM	4,680	260	3,744	175	3,042	120	1,872	50	3,744	205	5,616	310
8MM	3,510	260	2,808	175	2,340	120	1,404	50	2,808	205	4,212	310
10MM	2,808	260	2,223	175	1,872	120	1,131	50	2,223	205	3,276	300
12MM	2,340	260	1,872	175	1,560	120	936	50	1,872	205	2,808	310
Milling Amount (mm)							Ad = 0.1D (D < 3, Ad ≦ 0.05D)		Ad = 0.5D (D < 3, Ad ≦ 0.25D)			

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G550 Series

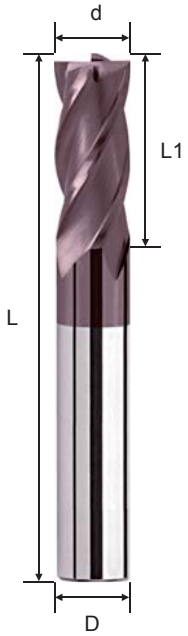
WINSTAR

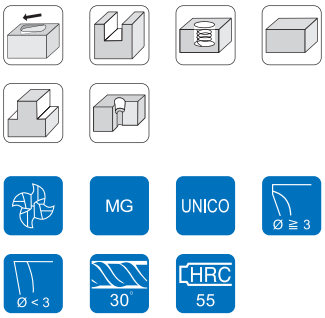
CARBIDE ENDMILLS - Square Type - 4F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, Copper, FRP, etc.
- Strong geometry design has excellent cutting ability of cutting edges.
- High precision cutting for side milling.

EPSFC4
EPSSC4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑

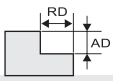




d	Tolerance
Ø < 3	0 ~ -0.02
3 ≦ Ø ≦ 10	0 ~ -0.03
Ø > 10	0 ~ -0.04

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPSTC401000U	1.0	3	50	3	4
EPSTC401500U	1.5	4	50	3	4
EPSTC402000U	2.0	5	50	3	4
EPSTC403000U	3.0	8	50	3	4
EPSFC401000U	1.0	3	50	4	4
EPSFC401500U	1.5	4	50	4	4
EPSFC402000U	2.0	5	50	4	4
EPSFC402500U	2.5	6	50	4	4
EPSFC403000U	3.0	8	50	4	4
EPSFC403500U	3.5	9	50	4	4
EPSFC404000U	4.0	10	50	4	4
EPSSC403000U	3.0	8	50	6	4
EPSSC403500U	3.5	9	50	6	4
EPSSC404000U	4.0	10	50	6	4
EPSSC404500U	4.5	11	50	6	4
EPSSC405000U	5.0	13	50	6	4
EPSSC405500U	5.5	14	50	6	4
EPSSC406000U	6.0	15	50	6	4
EPSSC406500U	6.5	16	60	8	4
EPSSC407000U	7.0	18	60	8	4
EPSSC408000U	8.0	20	60	8	4
EPSSC409000U	9.0	22	75	10	4
EPSSC410000U	10.0	25	75	10	4
EPSSC411000U	11.0	25	75	12	4
EPSSC412000U	12.0	30	75	12	4
EPSSC414000U	14.0	30	75	14	4
EPSSC416000U	16.0	35	100	16	4
EPSSC418000U	18.0	40	100	20	4
EPSSC420000U	20.0	45	100	20	4
EPSSC425000U	25.0	45	100	25	4

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	9,828	455	7,488	295	6,084	195	3,900	90	7,488	345	11,232	520
4MM	7,020	430	5,616	295	4,680	200	2,808	85	5,616	345	8,424	520
5MM	5,850	450	4,446	290	3,744	200	2,340	90	4,446	345	6,552	505
6MM	4,680	430	3,744	295	3,042	195	1,872	85	3,744	345	5,616	520
8MM	3,510	430	2,808	295	2,340	200	1,404	85	2,808	345	4,212	520
10MM	2,808	430	2,223	290	1,872	200	1,118	85	2,223	340	3,276	505
12MM	2,340	430	1,872	295	1,560	200	936	85	1,872	345	2,808	520
14MM	2,340	500	1,768	325	1,482	225	936	100	1,768	380	2,600	560
16MM	2,028	500	1,560	325	1,300	225	806	100	1,560	385	2,340	575
18MM	1,820	455	1,378	290	1,144	200	728	90	1,378	345	2,080	520
20MM	1,560	430	1,248	295	1,040	200	624	65	1,248	345	1,820	505

Milling Amount (mm)		Ad = 1.5D RD ≦ 0.05D	Ad = 1.5D RD ≦ 0.1D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G550 Series

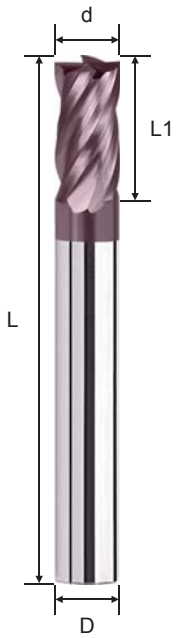
WINSTAR

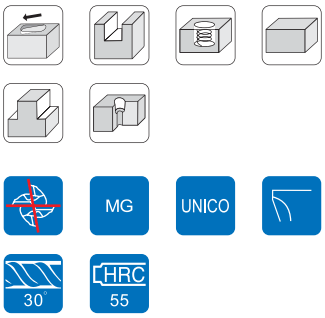
CARBIDE ENDMILLS - Anti-Vibration Square Type - 4F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Unequal axis and sophisticated geometry design provides outstanding Anti-vibrations capabilities.

EPSSD4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPSSD405000U	5	13	50	6	4
EPSSD406000U	6	13	50	6	4
EPSSD408000U	8	16	60	8	4
EPSSD410000U	10	20	75	10	4
EPSSD412000U	12	24	75	12	4
EPSSD416000U	16	30	100	16	4

WORKING MATERIAL	STAINLESS 304		Moderately difficults SUS		STAINLESS 316 L		TITANIUM (ALLOYS)		SOFT STEEL		SG CAST IRON		High Temperature ALLOYS	
Vc	72~90 M/min		56~70 M/min		48~60 M/min		40~56 M/min		120~160 M/min		96~120 M/min		20~25 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
4MM	5,732	573	4,459	357	3,822	229	3,185	153	9,554	955	7,643	764	1,592	70
5MM	4,586	550	3,567	357	3,057	306	2,548	153	7,643	917	6,115	734	1,274	56
6MM	3,822	611	2,972	416	2,548	306	2,123	170	6,369	1,019	5,096	815	1,062	72
8MM	2,866	573	2,229	401	1,911	306	1,592	191	4,777	1,146	3,822	917	796	86
10MM	2,293	550	1,783	357	1,529	275	1,274	155	3,822	917	3,057	734	637	69
12MM	1,911	497	1,486	327	1,274	255	1,062	170	3,185	892	2,548	713	531	81
14MM	1,638	439	1,274	290	1,092	231	910	157	2,730	797	2,184	638	455	82
16MM	1,433	401	1,115	268	955	210	796	143	2,389	717	1,911	573	398	78

Milling Amount (mm)	a_a = 1.0D a_r = 0.5D	a_a = 1.0D a_r = 0.2D
	a_d = 1.0D	a_d = 0.3D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

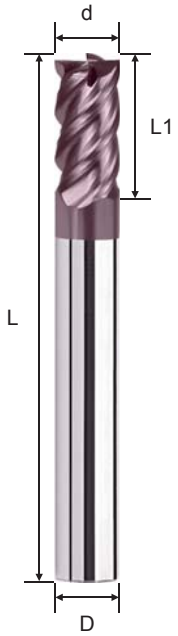
WINSTAR

CARBIDE ENDMILLS - High Helix & Anti-Vibration Square Type - 4F

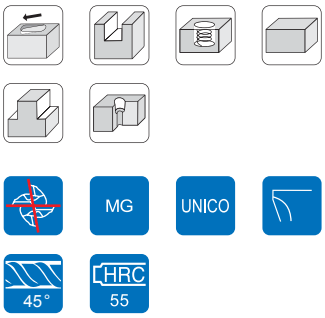
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Unequal axis and sophisticated geometry design provides outstanding Anti-vibrations capabilities.
- High helix is excellent for side milling.

EPSSF4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPSSF405000U	5	13	50	6	4
EPSSF406000U	6	13	50	6	4
EPSSF408000U	8	16	60	8	4
EPSSF410000U	10	20	75	10	4
EPSSF412000U	12	24	75	12	4
EPSSF416000U	16	30	100	16	4



d	Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03

WORKING MATERIAL	STAINLESS 304		Moderately difficults SUS		STAINLESS 316 L		TITANIUM (ALLOYS)		SOFT STEEL		SG CAST IRON		High Temperature ALLOYS	
Vc	72~90 M/min		56~70 M/min		48~60 M/min		40~56 M/min		120~160 M/min		96~120 M/min		20~25 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
4MM	5,732	573	4,459	357	3,822	229	3,185	153	9,554	955	7,643	764	1,592	70
5MM	4,586	550	3,567	357	3,057	306	2,548	153	7,643	917	6,115	734	1,274	56
6MM	3,822	611	2,972	416	2,548	306	2,123	170	6,369	1,019	5,096	815	1,062	72
8MM	2,866	573	2,229	401	1,911	306	1,592	191	4,777	1,146	3,822	917	796	86
10MM	2,293	550	1,783	357	1,529	275	1,274	155	3,822	917	3,057	734	637	69
12MM	1,911	497	1,486	327	1,274	255	1,062	170	3,185	892	2,548	713	531	81
14MM	1,638	439	1,274	290	1,092	231	910	157	2,730	797	2,184	638	455	82
16MM	1,433	401	1,115	268	955	210	796	143	2,389	717	1,911	573	398	78

Milling Amount (mm)	a_a = 1.0D a_r = 0.5D	a_a = 1.0D a_r = 0.2D
	a_d = 1.0D	a_d = 0.3D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G550 Series

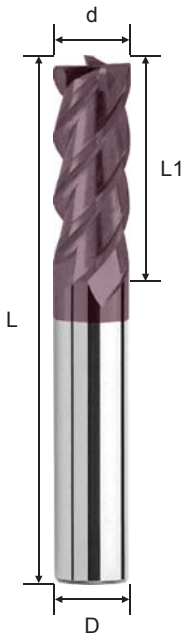
WINSTAR

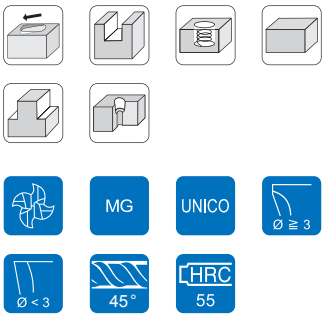
CARBIDE ENDMILLS - High Helix Square Type - 4F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, FRP, etc.
- Greater shearing action results in increased speeds and feeds and faster stock removal.
- Strong helix design provides hi speed milling capabilities.

EPSFH4
EPSSH4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑

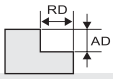




d	Tolerance
Ø < 3	0 ~ -0.02
3 ≦ Ø ≦ 10	0 ~ -0.03
Ø > 10	0 ~ -0.04

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPSFH403000U	3.0	8	50	4	4
EPSFH404000U	4.0	10	50	4	4
EPSSH405000U	5.0	13	50	6	4
EPSSH406000U	6.0	15	50	6	4
EPSSH407000U	7.0	18	60	8	4
EPSSH408000U	8.0	20	60	8	4
EPSSH409000U	9.0	22	75	10	4
EPSSH410000U	10.0	25	75	10	4
EPSSH411000U	11.0	25	75	12	4
EPSSH412000U	12.0	30	75	12	4
EPSSH414000U	14.0	30	75	14	4
EPSSH416000U	16.0	35	100	16	4

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	9,828	455	7,488	295	6,084	195	3,926	90	7,488	345	11,232	520
4MM	7,020	430	5,616	295	4,680	200	2,808	85	5,616	345	8,424	520
5MM	5,850	450	4,446	290	3,744	200	2,340	90	4,446	345	6,552	505
6MM	4,680	430	3,744	295	3,042	195	1,872	85	3,744	345	5,616	520
8MM	3,510	430	2,808	295	2,340	200	1,404	85	2,808	345	4,212	520
10MM	2,808	430	2,223	290	1,872	200	1,118	85	2,223	340	3,276	505
12MM	2,340	430	1,872	295	1,560	200	936	85	1,872	345	2,808	520
14MM	2,340	500	1,768	325	1,482	225	936	100	1,768	380	2,600	560
16MM	2,028	500	1,560	325	1,300	225	806	100	1,560	385	2,340	575
18MM	1,820	455	1,378	290	1,144	200	728	90	1,378	345	2,080	520
20MM	1,560	430	1,248	295	1,040	200	624	85	1,248	345	1,820	505

Milling Amount (mm)		Ad = 1.5D RD ≦ 0.05D	Ad = 1.5D RD ≦ 0.1D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

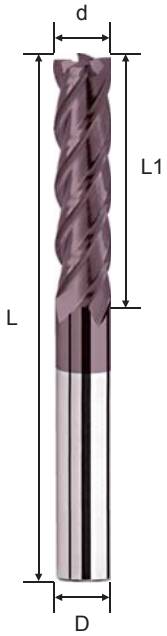
WINSTAR

CARBIDE ENDMILLS - Long Flute Square Type - 4F

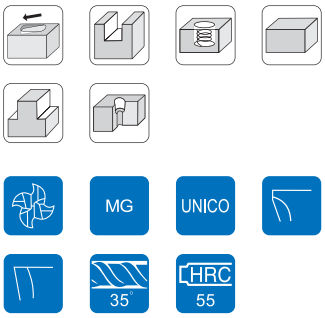
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Available in various length of cut and overall length end mills.
- Long cutting length is suitable for deep side milling.

EPSCC4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑

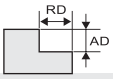


Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPSCC403000U	3.0	15	60	6	4
EPSCC404000U	4.0	20	60	6	4
EPSCC405000U	5.0	25	75	6	4
EPSCC406000U	6.0	30	75	6	4
EPSCC408000U	8.0	35	100	8	4
EPSCC410000U	10.0	45	100	10	4
EPSCC412000U	12.0	45	100	12	4
EPSCC414000U	14.0	70	150	14	4
EPSCC416000U	16.0	70	150	16	4
EPSCC420000U	20.0	75	150	20	4
EPSCC425000U	25.0	75	150	25	4



d	Tolerance
Ø < 3	0 ~ -0.03
3 ≦ Ø ≦ 10	0 ~ -0.04
Ø > 10	0 ~ -0.05

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	9,828	455	7,488	295	6,084	195	3,926	90	7,488	345	11,232	520
4MM	7,020	430	5,616	295	4,680	200	2,808	85	5,616	345	8,424	520
5MM	5,850	450	4,446	290	3,744	200	2,340	90	4,446	345	6,552	505
6MM	4,680	430	3,744	295	3,042	195	1,872	85	3,744	345	5,616	520
8MM	3,510	430	2,808	295	2,340	200	1,404	85	2,808	345	4,212	520
10MM	2,808	430	2,223	290	1,872	200	1,118	85	2,223	340	3,276	505
12MM	2,340	430	1,872	295	1,560	200	936	85	1,872	345	2,808	520
14MM	2,340	500	1,768	325	1,482	225	936	100	1,768	380	2,600	560
16MM	2,028	500	1,560	325	1,300	225	806	100	1,560	385	2,340	575
18MM	1,820	455	1,378	290	1,144	200	728	90	1,378	345	2,080	520
20MM	1,560	430	1,248	295	1,040	200	624	85	1,248	345	1,820	505

Milling Amount (mm)	Ad = 1.5D, RD ≦ 0.1D		Ad = 1.5D RD ≦ 0.05D	Ad = 1.5D RD ≦ 0.1D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G550 Series

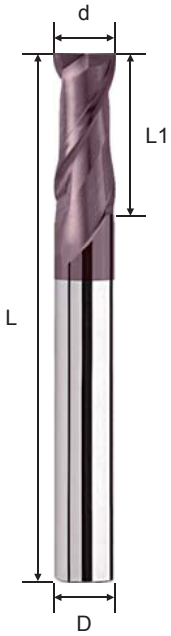
WINSTAR

CARBIDE ENDMILLS - Long Shank Square Type - 2F

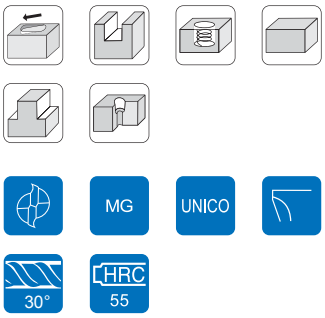
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Available in various length of cut and overall length end mills.
- Flat design to avoid chipping of the cutting tip.

EPSEC2
EPSKC2
EPSLC2
EPSNC2

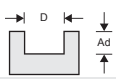
P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPSEC204000U	4.0	10	75	4	2
EPSKC204000U	4.0	10	100	4	2
EPSLC204000U	4.0	10	75	6	2
EPSNC204000U	4.0	10	100	6	2
EPSLC205000U	5.0	13	75	6	2
EPSNC205000U	5.0	13	100	6	2
EPSLC206000U	6.0	15	75	6	2
EPSNC206000U	6.0	15	100	6	2
EPSMC208000U	8.0	20	75	8	2
EPSLC208000U	8.0	20	100	8	2
EPSNC208000U	8.0	20	150	8	2
EPSLC210000U	10.0	25	100	10	2
EPSNC210000U	10.0	25	150	10	2
EPSLC212000U	12.0	30	100	12	2
EPSNC212000U	12.0	30	150	12	2
EPSLC216000U	16.0	40	150	16	2



d	Tolerance
Ø < 3	0 ~ -0.03
3 ≦ Ø ≦ 10	0 ~ -0.04
Ø > 10	0 ~ -0.05

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1MM	26,000	190	22,230	140	18,720	100	10,400	40	22,230	165	32,760	240
2MM	14,040	235	11,232	160	9,360	110	5,616	45	11,232	185	16,380	270
3MM	9,828	270	7,488	175	6,084	120	3,900	55	7,488	205	11,232	310
4MM	7,020	260	5,616	175	4,680	120	2,808	50	5,616	205	8,424	310
5MM	5,850	270	4,446	175	3,744	120	2,340	55	4,446	205	6,552	300
6MM	4,680	260	3,744	175	3,042	120	1,872	50	3,744	205	5,616	310
8MM	3,510	260	2,808	175	2,340	120	1,404	50	2,808	205	4,212	310
10MM	2,808	260	2,223	175	1,872	120	1,131	50	2,223	205	3,276	300
12MM	2,340	260	1,872	175	1,560	120	936	50	1,872	205	2,808	310
14MM	2,340	300	1,768	195	1,482	135	936	60	1,768	230	2,600	335
16MM	2,028	300	2,730	345	1,300	135	819	60	2,730	400	2,340	345
18MM	2,028	305	1,378	175	1,144	120	819	60	1,378	205	2,080	310
20MM	1,560	260	1,248	175	1,040	120	624	50	1,248	205	1,820	300
Milling Amount (mm)							Ad = 0.1D (D < 3, Ad ≦ 0.05D)		Ad = 0.5D (D < 3, Ad ≦ 0.25D)			

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G550 Series

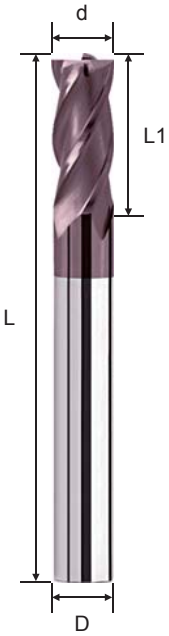
WINSTAR

CARBIDE ENDMILLS - Long Shank Square Type - 4F

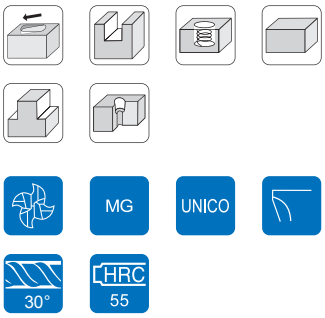
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Available in various length of cut and overall length end mills.
- Flat design to avoid chipping of the cutting tip.

EPSEC4
EPSKC4
EPSLC4
EPSNC4

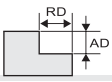
P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPSEC404000U	4.0	10	75	4	4
EPSKC404000U	4.0	10	100	4	4
EPSLC404000U	4.0	10	75	6	4
EPSNC404000U	4.0	10	100	6	4
EPSLC405000U	5.0	13	75	6	4
EPSNC405000U	5.0	13	100	6	4
EPSLC406000U	6.0	15	75	6	4
EPSNC406000U	6.0	15	100	6	4
EPSMC408000U	8.0	20	75	8	4
EPSLC408000U	8.0	20	100	8	4
EPSNC408000U	8.0	20	150	8	4
EPSLC410000U	10.0	25	100	10	4
EPSNC410000U	10.0	25	150	10	4
EPSLC412000U	12.0	30	100	12	4
EPSNC412000U	12.0	30	150	12	4
EPSLC416000U	16.0	40	150	16	4
EPSLC420000U	20.0	40	150	20	4



WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	9,828	455	7,488	295	6,084	195	3,926	90	7,488	345	11,232	520
4MM	7,020	430	5,616	295	4,680	200	2,808	85	5,616	345	8,424	520
5MM	5,850	450	4,446	290	3,744	200	2,340	90	4,446	345	6,552	505
6MM	4,680	430	3,744	295	3,042	195	1,872	85	3,744	345	5,616	520
8MM	3,510	430	2,808	295	2,340	200	1,404	85	2,808	345	4,212	520
10MM	2,808	430	2,223	290	1,872	200	1,118	85	2,223	340	3,276	505
12MM	2,340	430	1,872	295	1,560	200	936	85	1,872	345	2,808	520
14MM	2,340	500	1,768	325	1,482	225	936	100	1,768	380	2,600	560
16MM	2,028	500	1,560	325	1,300	225	806	100	1,560	385	2,340	575
18MM	1,820	455	1,378	290	1,144	200	728	90	1,378	345	2,080	520
20MM	1,560	430	1,248	295	1,040	200	624	85	1,248	345	1,820	505

Milling Amount (mm)	Ad = 1.5D, RD ≦ 0.1D		Ad = 1.5D RD ≦ 0.05D	Ad = 1.5D RD ≦ 0.1D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

d	Tolerance
Ø < 3	0 ~ -0.03
3 ≦ Ø ≦ 10	0 ~ -0.04
Ø > 10	0 ~ -0.05

G550 Series

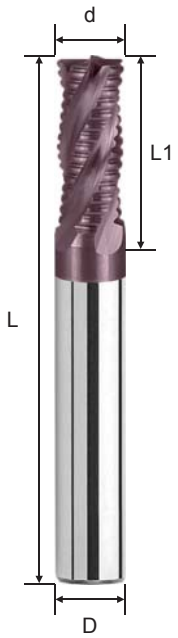
WINSTAR

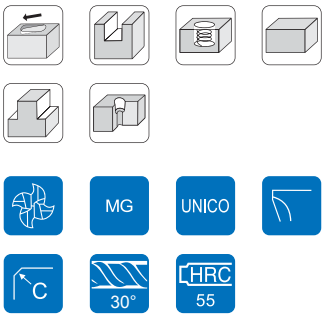
CARBIDE ENDMILLS - Roughing Square Type - 4F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Suitable for rough and high remove rate cutting environment.
- Chamfering design provides a stronger cutting edge.
- Middle coarse pitch provides hi performance and avoids tip fracture.

EPSRR4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑

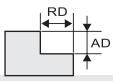




d	Tolerance
Ø < 3	0 ~ -0.02
3 ≦ Ø ≦ 10	0 ~ -0.03
Ø > 10	0 ~ -0.04

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPSRR406000U	6	15	50	6	4
EPSRR408000U	8	20	60	8	4
EPSRR410000U	10	25	75	10	4
EPSRR412000U	12	30	75	12	4
EPSRR416000U	16	40	100	16	4
EPSRR420000U	20	45	100	20	4

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	68 M/min		54 M/min		45 M/min		27 M/min		54 M/min		79 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	7,560	455	5,760	295	4,680	195	3,020	90	5,760	345	8,640	520
4MM	5,400	430	4,320	295	3,600	200	2,160	85	4,320	345	6,480	520
5MM	4,500	450	3,420	290	2,880	200	1,800	90	3,420	345	5,040	505
6MM	3,600	430	2,880	295	2,340	195	1,440	85	2,880	345	4,320	520
8MM	2,700	430	2,160	295	1,800	200	1,080	85	2,160	345	3,240	520
10MM	2,160	430	1,710	290	1,440	200	860	85	1,710	340	2,520	505
12MM	1,800	430	1,440	295	1,200	200	720	85	1,440	345	2,160	520
14MM	1,800	500	1,360	325	1,140	225	720	100	1,360	380	2,000	560
16MM	1,560	500	1,200	325	1,000	225	620	100	1,200	385	1,800	575
18MM	1,400	455	1,060	290	880	200	560	90	1,060	345	1,600	520
20MM	1,200	430	960	295	800	200	480	85	960	345	1,400	505

Milling Amount (mm)		Ad = 1.5D RD ≦ 0.05D	Ad = 1.5D RD ≦ 0.1D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

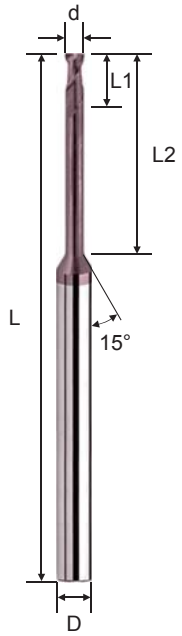
WINSTAR

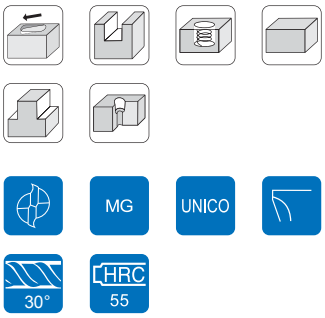
CARBIDE ENDMILLS - Long Neck Square Type - 2F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Toughness and reduction of vibration.
- Available in various cut lengths.
- Suitable for deep cutting application.

EPSBC2
EPSRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ -0.02

Order No.	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EPSBC200201U	0.2	0.3	1	50	4	2
EPSBC200202U	0.2	0.3	2	50	4	2
EPSBC200301U	0.3	0.4	1	50	4	2
EPSBC200302U	0.3	0.4	2	50	4	2
EPSBC200303U	0.3	0.4	3	50	4	2
EPSBC200304U	0.3	0.4	4	50	4	2
EPSBC200305U	0.3	0.4	5	50	4	2
EPSBC200401U	0.4	0.5	1	50	4	2
EPSBC200402U	0.4	0.5	2	50	4	2
EPSBC200403U	0.4	0.5	3	50	4	2
EPSBC200404U	0.4	0.5	4	50	4	2
EPSBC200405U	0.4	0.5	5	50	4	2
EPSBC200406U	0.4	0.5	6	50	4	2
EPSBC200408U	0.4	0.5	8	50	4	2
EPSBC200410U	0.4	0.5	10	50	4	2
EPSBC200502U	0.5	0.6	2	50	4	2
EPSBC200503U	0.5	0.6	3	50	4	2
EPSBC200504U	0.5	0.6	4	50	4	2
EPSBC200505U	0.5	0.6	5	50	4	2
EPSBC200506U	0.5	0.6	6	50	4	2
EPSBC200508U	0.5	0.6	8	50	4	2
EPSBC200510U	0.5	0.6	10	50	4	2
EPSBC200512U	0.5	0.6	12	50	4	2
EPSBC200514U	0.5	0.6	14	50	4	2
EPSBC200602U	0.6	0.7	2	50	4	2
EPSBC200603U	0.6	0.7	3	50	4	2
EPSBC200604U	0.6	0.7	4	50	4	2
EPSBC200605U	0.6	0.7	5	50	4	2
EPSBC200606U	0.6	0.7	6	50	4	2
EPSBC200608U	0.6	0.7	8	50	4	2
EPSBC200610U	0.6	0.7	10	50	4	2
EPSBC200612U	0.6	0.7	12	50	4	2
EPSBC200614U	0.6	0.7	14	50	4	2
EPSBC200616U	0.6	0.7	16	50	4	2
EPSBC200702U	0.7	0.8	2	50	4	2
EPSBC200704U	0.7	0.8	4	50	4	2
EPSBC200706U	0.7	0.8	6	50	4	2
EPSBC200708U	0.7	0.8	8	50	4	2
EPSBC200710U	0.7	0.8	10	50	4	2
EPSBC200712U	0.7	0.8	12	50	4	2
EPSBC200802U	0.8	1.0	2	50	4	2
EPSBC200804U	0.8	1.0	4	50	4	2
EPSBC200806U	0.8	1.0	6	50	4	2
EPSBC200808U	0.8	1.0	8	50	4	2
EPSBC200810U	0.8	1.0	10	50	4	2
EPSBC200812U	0.8	1.0	12	50	4	2
EPSBC200814U	0.8	1.0	14	50	4	2
EPSBC200906U	0.9	1.1	6	50	4	2
EPSBC200908U	0.9	1.1	8	50	4	2
EPSBC200910U	0.9	1.1	10	50	4	2
EPSBC201002U	1.0	1.2	2	50	4	2
EPSBC201003U	1.0	1.2	3	50	4	2
EPSBC201004U	1.0	1.2	4	50	4	2
EPSBC201005U	1.0	1.2	5	50	4	2

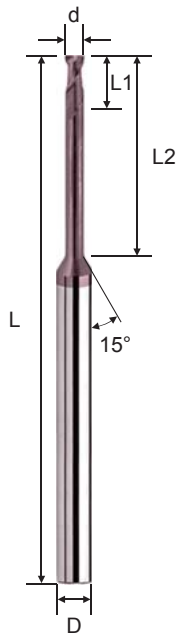
WINSTAR

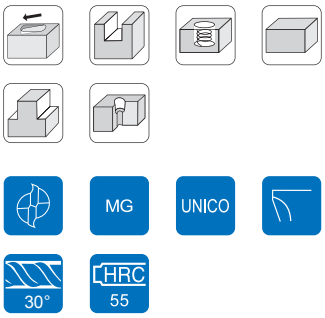
CARBIDE ENDMILLS - Long Neck Square Type - 2F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Toughness and reduction of vibration.
- Available in various cut lengths.
- Suitable for deep cutting application.

EPSBC2
EPSRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ -0.02

Order No.	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EPSBC201006U	1.0	1.2	6	50	4	2
EPSBC201008U	1.0	1.2	8	50	4	2
EPSBC201010U	1.0	1.2	10	50	4	2
EPSBC201012U	1.0	1.2	12	50	4	2
EPSBC201014U	1.0	1.2	14	50	4	2
EPSBC201016U	1.0	1.2	16	50	4	2
EPSBC201018U	1.0	1.2	18	50	4	2
EPSBC201020U	1.0	1.2	20	50	4	2
EPSBC201204U	1.2	1.5	4	50	4	2
EPSBC201206U	1.2	1.5	6	50	4	2
EPSBC201208U	1.2	1.5	8	50	4	2
EPSBC201210U	1.2	1.5	10	50	4	2
EPSBC201212U	1.2	1.5	12	50	4	2
EPSBC201216U	1.2	1.5	16	50	4	2
EPSBC201220U	1.2	1.5	20	50	4	2
EPSBC201406U	1.4	1.8	6	50	4	2
EPSBC201408U	1.4	1.8	8	50	4	2
EPSBC201410U	1.4	1.8	10	50	4	2
EPSBC201414U	1.4	1.8	14	50	4	2
EPSBC201416U	1.4	1.8	16	50	4	2
EPSBC201420U	1.4	1.8	20	50	4	2
EPSBC201504U	1.5	1.8	4	50	4	2
EPSBC201506U	1.5	1.8	6	50	4	2
EPSBC201508U	1.5	1.8	8	50	4	2
EPSBC201510U	1.5	1.8	10	50	4	2
EPSBC201512U	1.5	1.8	12	50	4	2
EPSBC201514U	1.5	1.8	14	50	4	2
EPSBC201516U	1.5	1.8	16	50	4	2
EPSBC201518U	1.5	1.8	18	50	4	2
EPSBC201520U	1.5	1.8	20	50	4	2
EPSBC201610U	1.6	1.9	10	50	4	2
EPSBC201614U	1.6	1.9	14	50	4	2
EPSBC201618U	1.6	1.9	18	50	4	2
EPSBC201810U	1.8	2.0	10	50	4	2
EPSBC201814U	1.8	2.0	14	50	4	2
EPSBC201818U	1.8	2.0	18	50	4	2
EPSBC202004U	2.0	2.5	4	50	4	2
EPSBC202006U	2.0	2.5	6	50	4	2
EPSBC202008U	2.0	2.5	8	50	4	2
EPSBC202010U	2.0	2.5	10	50	4	2
EPSBC202012U	2.0	2.5	12	50	4	2
EPSBC202014U	2.0	2.5	14	50	4	2
EPSBC202016U	2.0	2.5	16	50	4	2
EPSBC202018U	2.0	2.5	18	50	4	2
EPSBC202020U	2.0	2.5	20	50	4	2
EPSBC202022U	2.0	2.5	22	60	4	2
EPSBC202025U	2.0	2.5	25	60	4	2
EPSBC202030U	2.0	2.5	30	60	4	2
EPSBC202035U	2.0	2.5	35	60	4	2
EPSBC202508U	2.5	3.0	8	50	4	2
EPSBC202510U	2.5	3.0	10	50	4	2
EPSBC202512U	2.5	3.0	12	50	4	2
EPSBC202516U	2.5	3.0	16	50	4	2

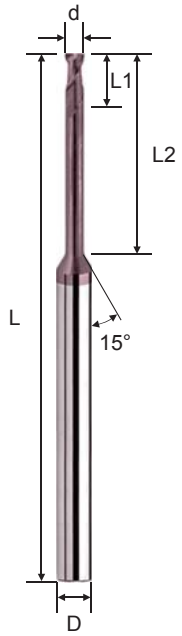
WINSTAR

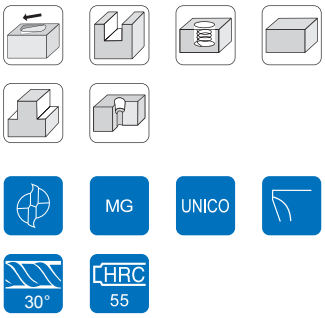
CARBIDE ENDMILLS - Long Neck Square Type - 2F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Toughness and reduction of vibration.
- Available in various cut lengths.
- Suitable for deep cutting application.

EPSBC2
EPSRC2

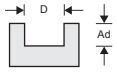
P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ -0.02

Order No.	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EPSBC202520U	2.5	3.0	20	50	4	2
EPSBC202525U	2.5	3.0	25	60	4	2
EPSBC202530U	2.5	3.0	30	60	4	2
EPSBC202535U	2.5	3.0	35	60	4	2
EPSRC203006U	3.0	3.5	6	50	6	2
EPSRC203010U	3.0	3.5	10	50	6	2
EPSRC203012U	3.0	3.5	12	50	6	2
EPSRC203016U	3.0	3.5	16	50	6	2
EPSRC203020U	3.0	3.5	20	60	6	2
EPSRC203025U	3.0	3.5	25	60	6	2
EPSRC203030U	3.0	3.5	30	60	6	2
EPSRC203035U	3.0	3.5	35	75	6	2
EPSRC204008U	4.0	4.5	8	50	6	2
EPSRC204010U	4.0	4.5	10	50	6	2
EPSRC204012U	4.0	4.5	12	50	6	2
EPSRC204016U	4.0	4.5	16	50	6	2
EPSRC204020U	4.0	4.5	20	60	6	2
EPSRC204025U	4.0	4.5	25	60	6	2
EPSRC204030U	4.0	4.5	30	60	6	2
EPSRC204035U	4.0	4.5	35	75	6	2
EPSRC205016U	5.0	7.0	16	50	6	2
EPSRC205020U	5.0	7.0	20	60	6	2
EPSRC205025U	5.0	7.0	25	60	6	2
EPSRC205030U	5.0	7.0	30	60	6	2
EPSRC205035U	5.0	7.0	35	75	6	2
EPSRC206020U	6.0	10.0	20	60	6	2
EPSRC206030U	6.0	10.0	30	75	6	2
EPSRC208020U	8.0	15.0	20	60	8	2
EPSRC208030U	8.0	15.0	30	75	8	2
EPSRC208040U	8.0	15.0	40	100	8	2
EPSRC210025U	10.0	20.0	25	75	10	2
EPSRC210035U	10.0	20.0	35	75	10	2
EPSRC210045U	10.0	20.0	45	100	10	2
EPSRC212030U	12.0	25.0	30	75	12	2
EPSRC212040U	12.0	25.0	40	100	12	2
EPSRC212050U	12.0	25.0	50	100	12	2

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT,SKD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 40 ~ 50	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.2MM	52,000	310	52,000	290	52,000	250	40,800	160
0.4MM	52,000	610	52,000	580	44,600	420	35,700	280
0.8MM	34,100	830	28,100	650	21,100	450	17,300	300
1.0MM	30,100	1,070	24,400	770	19,500	480	15,200	370
2.0MM	18,500	1,250	16,400	930	11,500	550	9,000	400
3.0MM	10,600	1,150	8,700	850	6,200	560	5,000	400
4.0MM	8,500	1,280	7,100	950	5,100	600	4,100	410
5.0MM	5,800	1,040	4,800	760	3,300	460	2,600	330
6.0MM	3,900	890	3,600	680	2,400	440	1,900	310
Milling Amount (mm)								

Please refer to 3xD table, reduce R.P.M. & Feed while efficient length is increasing.

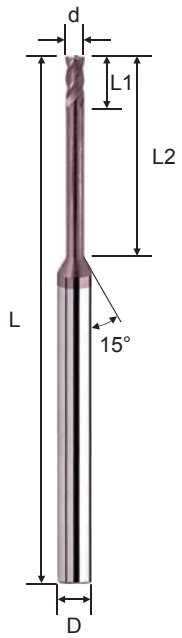
WINSTAR

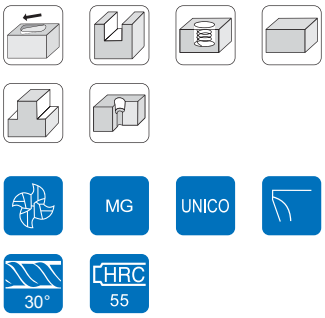
CARBIDE ENDMILLS - Long Neck Square Type - 4F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, Copper, FRP, etc.
- Toughness and reduction of vibration.
- Available in various cut lengths.
- Suitable for deep cutting application.

EPSBC4
EPSRC4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ -0.02

Order No.	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EPSBC401003U	1.0	1.0	3	50	4	4
EPSBC401004U	1.0	1.0	4	50	4	4
EPSBC401006U	1.0	1.0	6	50	4	4
EPSBC401008U	1.0	1.0	8	50	4	4
EPSBC401010U	1.0	1.0	10	50	4	4
EPSBC401012U	1.0	1.0	12	50	4	4
EPSBC401016U	1.0	1.0	16	50	4	4
EPSBC401020U	1.0	1.0	20	50	4	4
EPSBC401025U	1.0	1.0	25	60	4	4
EPSRC401004U	1.0	1.0	4	50	6	4
EPSRC401006U	1.0	1.0	6	50	6	4
EPSRC401008U	1.0	1.0	8	50	6	4
EPSRC401010U	1.0	1.0	10	50	6	4
EPSRC401010U	1.0	1.0	12	50	6	4
EPSBC401506U	1.5	1.5	6	50	4	4
EPSBC401508U	1.5	1.5	8	50	4	4
EPSBC401510U	1.5	1.5	10	50	4	4
EPSBC401512U	1.5	1.5	12	50	4	4
EPSBC401516U	1.5	1.5	16	50	4	4
EPSBC401520U	1.5	1.5	20	50	4	4
EPSBC401525U	1.5	1.5	25	60	4	4
EPSRC401506U	1.5	1.5	6	50	6	4
EPSRC401508U	1.5	1.5	8	50	6	4
EPSRC401510U	1.5	1.5	10	50	6	4
EPSRC401512U	1.5	1.5	12	50	6	4
EPSBC402006U	2.0	2.0	6	50	4	4
EPSBC402008U	2.0	2.0	8	50	4	4
EPSBC402010U	2.0	2.0	10	50	4	4
EPSBC402012U	2.0	2.0	12	50	4	4
EPSBC402016U	2.0	2.0	16	50	4	4
EPSBC402020U	2.0	2.0	20	50	4	4
EPSBC402025U	2.0	2.0	25	60	4	4
EPSBC402030U	2.0	2.0	30	60	4	4
EPSRC402006U	2.0	2.0	6	50	6	4
EPSRC402008U	2.0	2.0	8	50	6	4
EPSRC402010U	2.0	2.0	10	50	6	4
EPSRC402016U	2.0	2.0	16	50	6	4
EPSBC402510U	2.5	2.5	10	50	4	4
EPSBC402512U	2.5	2.5	12	50	4	4
EPSBC402516U	2.5	2.5	16	50	4	4
EPSBC402520U	2.5	2.5	20	50	4	4
EPSBC402525U	2.5	2.5	25	60	4	4
EPSBC402530U	2.5	2.5	30	60	4	4
EPSRC402506U	2.5	2.5	6	50	6	4
EPSRC402510U	2.5	2.5	10	50	6	4

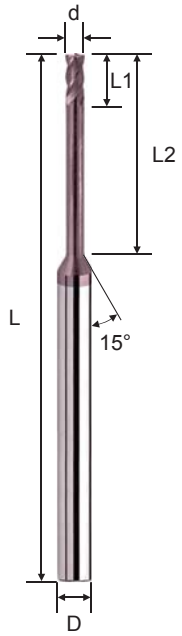
WINSTAR

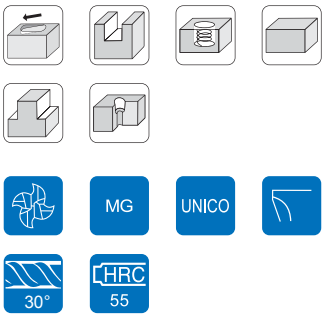
CARBIDE ENDMILLS - Long Neck Square Type - 4F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, Copper, FRP, etc.
- Toughness and reduction of vibration.
- Available in various cut lengths.
- Suitable for deep cutting application.

EPSBC4
EPSRC4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ -0.02

Order No.	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EPSRC403010U	3.0	3.0	10	50	6	4
EPSRC403012U	3.0	3.0	12	50	6	4
EPSRC403016U	3.0	3.0	16	50	6	4
EPSRC403020U	3.0	3.0	20	60	6	4
EPSRC403025U	3.0	3.0	25	60	6	4
EPSRC403030U	3.0	3.0	30	60	6	4
EPSRC403035U	3.0	3.0	35	75	6	4
EPSRC404010U	4.0	4.0	10	50	6	4
EPSRC404012U	4.0	4.0	12	50	6	4
EPSRC404016U	4.0	4.0	16	50	6	4
EPSRC404020U	4.0	4.0	20	60	6	4
EPSRC404025U	4.0	4.0	25	60	6	4
EPSRC404030U	4.0	4.0	30	60	6	4
EPSRC405016U	5.0	5.0	16	50	6	4
EPSRC405020U	5.0	5.0	20	60	6	4
EPSRC405025U	5.0	5.0	25	60	6	4
EPSRC405030U	5.0	5.0	30	60	6	4
EPSRC406020U	6.0	6.0	20	60	6	4
EPSRC406030U	6.0	6.0	30	75	6	4
EPSRC408020U	8.0	15.0	20	60	8	4
EPSRC408030U	8.0	15.0	30	75	8	4
EPSRC408040U	8.0	15.0	40	100	8	4
EPSRC410025U	10.0	20.0	25	75	10	4
EPSRC410035U	10.0	20.0	35	100	10	4
EPSRC410045U	10.0	20.0	45	100	10	4
EPSRC412030U	12.0	25.0	30	75	12	4
EPSRC412040U	12.0	25.0	40	100	12	4
EPSRC412050U	12.0	25.0	50	100	12	4

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL	
CODE	45C, S50C, SCM		SCM, SKT, SKD		SKT, SKD	
HARDNESS	HRC < 30		HRC 20 ~ 30		HRC 40 ~ 50	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.8MM	21,000	950	21,500	640	17,200	450
1.0MM	19,800	900	20,500	620	16,200	440
1.2MM	17,200	1,000	15,200	700	12,000	500
1.5MM	14,800	1,100	13,300	740	10,400	570
2.0MM	14,300	1,500	11,900	1,000	9,500	760
2.5MM	10,000	800	7,600	680	6,000	480
3.0MM	8,600	820	6,800	710	5,200	500
4.0MM	7,000	940	4,700	720	3,900	500
5.0MM	5,000	850	3,900	650	3,100	460
6.0MM	3,700	760	3, 100	680	2,400	480
8.0MM	3,500	800	2,900	690	2,400	490
10.0MM	2,700	820	2,500	700	2,100	490
12.0MM	2,300	790	2, 100	730	1,700	490

Milling Amount (mm)

Please refer to 3xD table, reduce R.P.M. & Feed while efficient length is increasing.

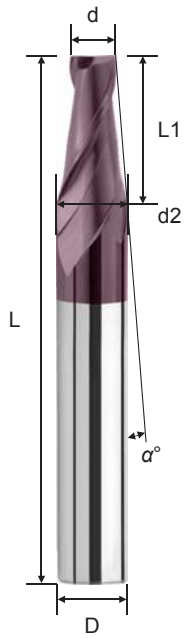
WINSTAR

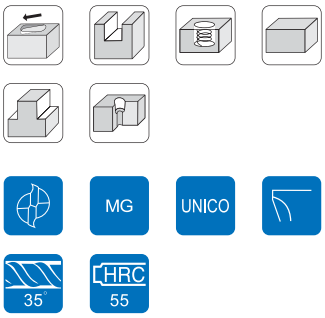
CARBIDE ENDMILLS - Taper Square Type - 2F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- High strength of taper cutting length, can cut deep grooves without breaking.
- Convenient for Tap cutting in 3 axis machine.

EPSFT2
EPSST2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ 0.05

Order No.	Dia. (d1)	α°	CL (L1)	NL (d2)	OAL (L)	Shank (D)	Flutes (F)
EPSFT201005U	1.0	0.5°	4.0	1.07	50	4	2
EPSFT201010U	1.0	1.0°	4.0	1.14	50	4	2
EPSFT201015U	1.0	1.5°	4.0	1.21	50	4	2
EPSFT201020U	1.0	2.0°	4.0	1.28	50	4	2
EPSFT201025U	1.0	2.5°	4.0	1.35	50	4	2
EPSFT201030U	1.0	3.0°	4.0	1.42	50	4	2
EPSFT201050U	1.0	5.0°	4.0	1.70	50	4	2
EPSFT201070U	1.0	7.0°	4.0	1.98	50	4	2
EPSFT2010A0U	1.0	10.0°	4.0	2.41	50	4	2
EPSFT2010A5U	1.0	15.0°	4.0	3.14	50	4	2
EPSFT201505U	1.5	0.5°	5.0	1.59	50	4	2
EPSFT201510U	1.5	1.0°	5.0	1.68	50	4	2
EPSFT201515U	1.5	1.5°	5.0	1.76	50	4	2
EPSFT201520U	1.5	2.0°	5.0	1.85	50	4	2
EPSFT201525U	1.5	2.5°	5.0	1.93	50	4	2
EPSFT201530U	1.5	3.0°	5.0	2.02	50	4	2
EPSFT201535U	1.5	5.0°	5.0	2.37	50	4	2
EPSFT202005U	2.0	0.5°	6.0	2.10	50	4	2
EPSFT202010U	2.0	1.0°	6.0	2.21	50	4	2
EPSFT202015U	2.0	1.5°	6.0	2.31	50	4	2
EPSFT202020U	2.0	2.0°	6.0	2.41	50	4	2
EPSFT202025U	2.0	2.5°	6.0	2.52	50	4	2
EPSFT202030U	2.0	3.0°	6.0	2.62	50	4	2
EPSFT202050U	2.0	5.0°	6.0	3.05	50	4	2
EPSFT202070U	2.0	7.0°	6.0	3.47	50	4	2
EPSST2020A0U	2.0	10.0°	6.0	4.11	50	6	2
EPSST2020A5U	2.0	15.0°	6.0	5.22	50	6	2
EPSFT202505U	2.5	0.5°	8.0	2.64	50	4	2
EPSFT202510U	2.5	1.0°	8.0	2.78	50	4	2
EPSFT202515U	2.5	1.5°	8.0	2.91	50	4	2
EPSFT202520U	2.5	2.0°	8.0	3.05	50	4	2
EPSFT202525U	2.5	2.5°	8.0	3.20	50	4	2
EPSFT202530U	2.5	3.0°	8.0	3.33	50	4	2
EPSFT202550U	2.5	5.0°	8.0	3.90	50	4	2
EPSST203005U	3.0	0.5°	10.0	3.17	50	6	2
EPSST203010U	3.0	1.0°	10.0	3.35	50	6	2
EPSST203015U	3.0	1.5°	10.0	3.52	50	6	2
EPSST203020U	3.0	2.0°	10.0	3.69	50	6	2
EPSST203025U	3.0	2.5°	10.0	3.87	50	6	2
EPSST203030U	3.0	3.0°	10.0	4.05	50	6	2
EPSST203050U	3.0	5.0°	10.0	4.75	50	6	2
EPSST203070U	3.0	7.0°	12.0	6.00	50	6	2
EPSST2030A0U	3.0	10.0°	12.0	7.22	60	8	2
EPSST2030A5U	3.0	15.0°	12.0	9.40	75	10	2
EPSST204005U	4.0	0.5°	15.0	4.26	50	6	2
EPSST204010U	4.0	1.0°	15.0	4.52	50	6	2
EPSST204015U	4.0	1.5°	15.0	4.79	50	6	2
EPSST204020U	4.0	2.0°	15.0	5.04	50	6	2
EPSST204025U	4.0	2.5°	15.0	5.31	50	6	2
EPSST204030U	4.0	3.0°	15.0	5.57	50	6	2
EPSST204050U	4.0	5.0°	15.0	6.62	60	8	2
EPSST204070U	4.0	7.0°	16.0	8.00	60	8	2
EPSST2040A0U	4.0	10.0°	17.0	10.00	75	10	2
EPSST2040A5U	4.0	15.0°	14.9	12.00	75	12	2

G550 Series

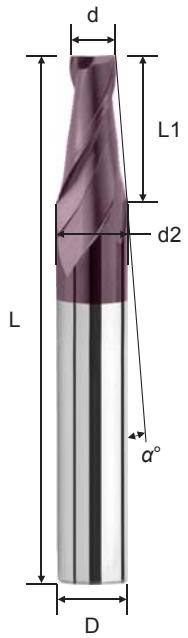
WINSTAR

CARBIDE ENDMILLS - Taper Square Type - 2F

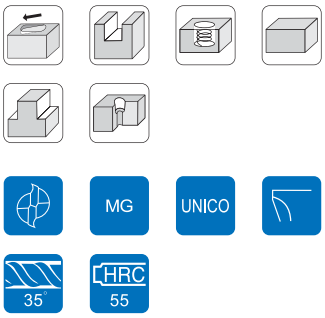
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- High strength of taper cutting length, can cut deep grooves without breaking.
- Convenient for Tap cutting in 3 axis machine.

EPSFT2
EPSST2

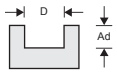
P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



Order No.	Dia. (d1)	α°	CL (L1)	NL (d2)	OAL (L)	Shank (D)	Flutes (F)
EPSST205005U	5	0.5°	20.0	5.34	60	6	2
EPSST205010U	5	1.0°	20.0	5.70	60	6	2
EPSST205015U	5	1.5°	19.6	6.00	60	6	2
EPSST205020U	5	2.0°	20.0	6.39	60	8	2
EPSST205025U	5	2.5°	20.0	6.74	60	8	2
EPSST205030U	5	3.0°	20.0	7.10	60	8	2
EPSST205050U	5	5.0°	20.0	8.50	75	10	2
EPSST205070U	5	7.0°	20.0	10.00	75	10	2
EPSST2050A0U	5	10.0°	20.0	12.00	75	12	2
EPSST206005U	6	0.5°	20.0	6.35	60	8	2
EPSST206010U	6	1.0°	20.0	6.70	60	8	2
EPSST206015U	6	1.5°	20.0	7.05	60	8	2
EPSST206020U	6	2.0°	20.0	7.40	60	8	2
EPSST206025U	6	2.5°	20.0	7.75	60	8	2
EPSST206030U	6	3.0°	20.0	8.10	75	10	2
EPSST206050U	6	5.0°	20.0	9.50	75	10	2
EPSST206070U	6	7.0°	24.0	12.00	75	12	2
EPSST2060A0U	6	10.0°	22.0	14.00	75	14	2
EPSST208005U	8	0.5°	25.0	8.44	75	10	2
EPSST208010U	8	1.0°	25.0	8.87	75	10	2
EPSST208015U	8	1.5°	25.0	9.31	75	10	2
EPSST208020U	8	2.0°	25.0	9.75	75	10	2
EPSST208030U	8	3.0°	25.0	10.62	75	12	2
EPSST208050U	8	5.0°	25.0	12.37	75	14	2
EPSST208070U	8	7.0°	32.0	16.00	100	16	2
EPSST2080A0U	8	10.0°	28.0	18.00	100	18	2
EPSST201005U	10	0.5°	35.0	10.61	75	12	2
EPSST201010U	10	1.0°	35.0	11.22	75	12	2
EPSST201015U	10	1.5°	35.0	11.83	75	12	2
EPSST201020U	10	2.0°	35.0	12.44	75	14	2
EPSST201030U	10	3.0°	35.0	13.67	75	14	2
EPSST201050U	10	5.0°	34.2	16.00	100	16	2



d	Tolerance
Ø	0 ~ 0.05

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1MM	26,000	190	22,230	140	18,720	100	10,400	40	22,230	165	32,760	240
2MM	14,040	235	11,232	160	9,360	110	5,616	45	11,232	185	16,380	270
3MM	9,828	270	7,488	175	6,084	120	3,900	55	7,488	205	11,232	310
4MM	7,020	260	5,616	175	4,680	120	2,808	50	5,616	205	8,424	310
5MM	5,850	270	4,446	175	3,744	120	2,340	55	4,446	205	6,552	300
6MM	4,680	260	3,744	175	3,042	120	1,872	50	3,744	205	5,616	310
8MM	3,510	260	2,808	175	2,340	120	1,404	50	2,808	205	4,212	310
10MM	2,808	260	2,223	175	1,872	120	1,131	50	2,223	205	3,276	300
Milling Amount (mm)							Ad = 0.1D (D < 3, Ad ≦ 0.05D)		Ad = 0.5D (D < 3, Ad ≦ 0.25D)			

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G550 Series

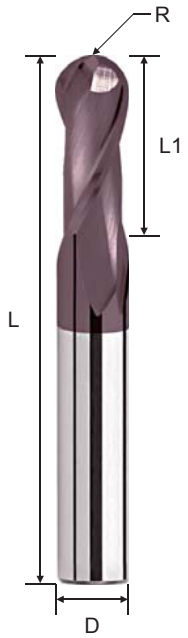
WINSTAR

CARBIDE ENDMILLS - Ball Nose Type - 2F

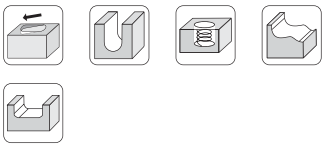
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- It provides an excellent surface due to better surface grindings.
- New tool geometry increases wear resistance and cutting force is decreased.
- Suitable for high speed profile surface milling.

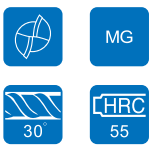
EPBFC2
EPBSC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



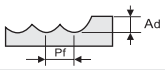
Order No.	Radius (R)	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPBFC200200U	0.10R	0.2	0.4	50	4	2
EPBFC200300U	0.15R	0.3	0.6	50	4	2
EPBFC200400U	0.20R	0.4	0.8	50	4	2
EPBFC200500U	0.25R	0.5	1.0	50	4	2
EPBFC200600U	0.30R	0.6	1.2	50	4	2
EPBFC200700U	0.35R	0.7	1.4	50	4	2
EPBFC200800U	0.40R	0.8	1.6	50	4	2
EPBFC200900U	0.45R	0.9	1.8	50	4	2
EPBFC201000U	0.50R	1.0	2.0	50	4	2
EPBFC201500U	0.75R	1.5	3.0	50	4	2
EPBFC202000U	1.00R	2.0	4.0	50	4	2
EPBFC203000U	1.50R	3.0	6.0	50	4	2
EPBFC204000U	2.00R	4.0	8.0	50	4	2
EPBSC203000U	1.50R	3.0	6.0	50	6	2
EPBSC204000U	2.00R	4.0	8.0	50	6	2
EPBSC205000U	2.50R	5.0	10.0	50	6	2
EPBSC206000U	3.00R	6.0	12.0	50	6	2
EPBSC207000U	3.50R	7.0	14.0	60	8	2
EPBSC208000U	4.00R	8.0	16.0	60	8	2
EPBSC210000U	5.00R	10.0	20.0	75	10	2
EPBSC212000U	6.00R	12.0	24.0	75	12	2
EPBSC216000U	8.00R	16.0	32.0	100	16	2
EPBSC220000U	10.00R	20.0	40.0	100	20	2





d	R Tolerance
Ø	± 0.02

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	94 M/min		71 M/min		44 M/min		38 M/min		71 M/min		94 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.5R	46,800	380	42,120	290	28,080	160	18,720	75	42,120	340	58,500	475
1.0R	26,676	485	21,060	325	15,210	195	10,660	95	21,060	385	29,718	545
2.0R	14,976	610	11,232	385	8,190	230	5,980	120	11,232	455	14,976	610
3.0R	9,828	600	7,488	385	4,914	210	3,926	120	7,488	455	9,828	600
4.0R	7,488	610	5,616	385	3,744	210	2,990	120	5,616	455	7,488	610
5.0R	5,967	605	4,446	385	2,808	200	2,379	120	4,446	450	5,967	605
6.0R	4,914	600	3,744	385	3,640	200	1,976	120	3,744	455	4,914	600
8.0R	4,160	675	3,120	430	2,028	210	1,664	135	3,120	505	4,160	675
10.0R	3,380	615	2,496	430	1,690	215	1,352	135	2,496	455	3,380	615

Milling Amount (mm)	Ad = 0.05D Pf = 0.1D	

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G550 Series

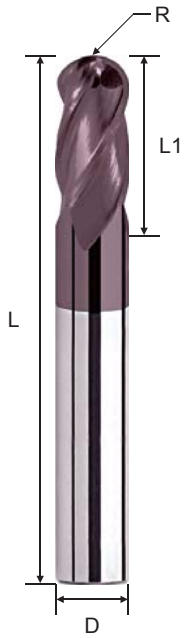
WINSTAR

CARBIDE ENDMILLS - Ball Nose Type - 4F

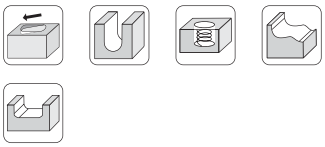
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, Copper, FRP, etc.
- It provides an excellent surface due to better surface grindings.
- New tool geometry increases wear resistance and cutting force is decreased.
- Multiple flutes design improves the cutting surface.

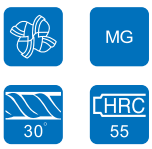
EPBFC4
EPBSC4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



Order No.	Radius (R)	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPBFC402000U	1.0R	2.0	4	50	4	4
EPBFC403000U	1.5R	3.0	6	50	4	4
EPBFC404000U	2.0R	4.0	8	50	4	4
EPBSC404000U	2.0R	4.0	8	50	6	4
EPBSC405000U	2.5R	5.0	10	50	6	4
EPBSC406000U	3.0R	6.0	12	50	6	4
EPBSC408000U	4.0R	8.0	16	60	8	4
EPBSC410000U	5.0R	10.0	20	75	10	4
EPBSC412000U	6.0R	12.0	24	75	12	4
EPBSC416000U	8.0R	16.0	32	100	16	4
EPBSC420000U	10.0R	20.0	40	100	20	4

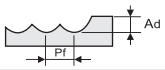




WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	94 M/min		71 M/min		44 M/min		38 M/min		71 M/min		94 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.5R	46,800	545	42,120	420	28,080	230	18,720	110	42,120	490	58,500	685
1.0R	26,676	700	21,060	470	15,210	280	10,660	140	21,060	555	29,718	780
2.0R	14,976	875	11,232	560	8,190	335	5,980	175	11,232	655	14,976	875
3.0R	9,828	860	7,488	560	4,914	300	3,926	170	7,488	655	9,828	860
4.0R	7,488	875	5,616	560	3,744	305	2,990	175	5,616	655	7,488	875
5.0R	5,967	870	4,446	550	2,808	285	2,379	175	4,446	650	5,967	870
6.0R	4,914	860	3,744	560	3,640	285	1,976	175	3,744	655	4,914	860
8.0R	4,160	970	3,120	620	2,028	330	1,664	195	3,120	730	4,160	970
10.0R	3,380	890	2,496	560	1,690	310	1,352	175	2,496	655	3,380	890

d	R Tolerance
Ø	± 0.02

Milling Amount (mm)	Ad = 0.05D Pf = 0.1D



The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G550 Series

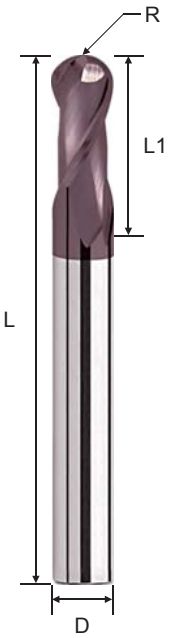
WINSTAR

CARBIDE ENDMILLS - Long Shank Ball Nose Type - 2F

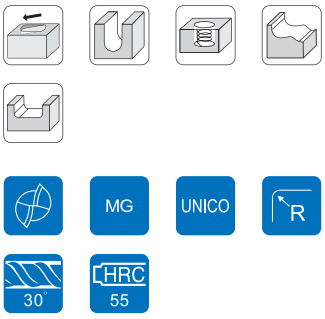
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- It provides an excellent surface due to better surface grindings.
- New tool geometry increases wear resistance and cutting force is decreased.
- Suitable for high speed profile surface milling.

EPBEC2
EPBKC2
EPBLC2
EPBNC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



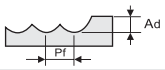
Order No.	Radius (R)	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPBEC204000U	2R	4.0	8	75	4	2
EPBKC204000U	2R	4.0	8	100	4	2
EPBLC204000U	2R	4.0	8	75	6	2
EPBNC204000U	2R	4.0	8	100	6	2
EPBLC206000U	3R	6.0	12	75	6	2
EPBNC206000U	3R	6.0	12	100	6	2
EPBMC208000U	4R	8.0	16	75	8	2
EPBLC208000U	4R	8.0	16	100	8	2
EPBNC208000U	4R	8.0	16	150	8	2
EPBLC210000U	5R	10.0	20	100	10	2
EPBNC210000U	5R	10.0	20	150	10	2
EPBLC212000U	6R	12.0	24	100	12	2
EPBNC212000U	6R	12.0	24	150	12	2
EPBLC216000U	8R	16.0	32	150	16	2



WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	94 M/min		71 M/min		44 M/min		38 M/min		71 M/min		94 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.5R	46,800	545	42,120	420	28,080	230	18,720	110	42,120	490	58,500	685
1.0R	26,676	700	21,060	470	15,210	280	10,660	140	21,060	555	29,718	780
2.0R	14,976	875	11,232	560	8,190	335	5,980	175	11,232	655	14,976	875
3.0R	9,828	860	7,488	560	4,914	300	3,926	170	7,488	655	9,828	860
4.0R	7,488	875	5,616	560	3,744	305	2,990	175	5,616	655	7,488	875
5.0R	5,967	870	4,446	550	2,808	285	2,379	175	4,446	650	5,967	870
6.0R	4,914	860	3,744	560	3,640	285	1,976	175	3,744	655	4,914	860
8.0R	4,160	970	3,120	620	2,028	330	1,664	195	3,120	730	4,160	970
10.0R	3,380	890	2,496	560	1,690	310	1,352	175	2,496	655	3,380	890

d	R Tolerance
Ø	± 0.02

Milling Amount (mm)	Ad = 0.05D Pf = 0.1D



The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G550 Series

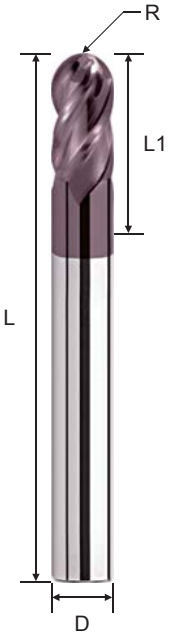
WINSTAR

CARBIDE ENDMILLS - Long Shank Ball Nose Type - 4F

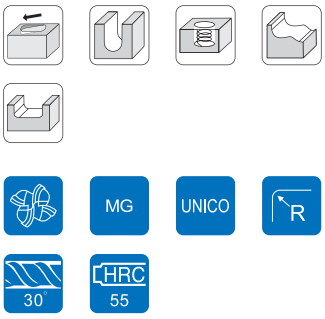
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- It provides an excellent surface due to better surface grindings.
- New tool geometry increases wear resistance and cutting force is decreased.
- Multiple flutes design and long shank design makes possible deep surface cutting.

EPBEC4
EPBKC4
EPBLC4
EPBNC4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



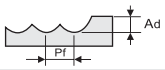
Order No.	Radius (R)	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPBEC404000U	2R	4.0	8	75	4	4
EPBKC404000U	2R	4.0	8	100	4	4
EPBLC404000U	2R	4.0	8	75	6	4
EPBNC404000U	2R	4.0	8	100	6	4
EPBLC406000U	3R	6.0	12	75	6	4
EPBNC406000U	3R	6.0	12	100	6	4
EPBMC408000U	4R	8.0	16	75	8	4
EPBLC408000U	4R	8.0	16	100	8	4
EPBNC408000U	4R	8.0	16	150	8	4
EPBLC410000U	5R	10.0	20	100	10	4
EPBNC410000U	5R	10.0	20	150	10	4
EPBLC412000U	6R	12.0	24	100	12	4
EPBNC412000U	6R	12.0	24	150	12	4
EPBLC416000U	8R	16.0	32	150	16	4



WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	94 M/min		71 M/min		44 M/min		38 M/min		71 M/min		94 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.5R	46,800	545	42,120	420	28,080	230	18,720	110	42,120	490	58,500	685
1.0R	26,676	700	21,060	470	15,210	280	10,660	140	21,060	555	29,718	780
2.0R	14,976	875	11,232	560	8,190	335	5,980	175	11,232	655	14,976	875
3.0R	9,828	860	7,488	560	4,914	300	3,926	170	7,488	655	9,828	860
4.0R	7,488	875	5,616	560	3,744	305	2,990	175	5,616	655	7,488	875
5.0R	5,967	870	4,446	550	2,808	285	2,379	175	4,446	650	5,967	870
6.0R	4,914	860	3,744	560	3,640	285	1,976	175	3,744	655	4,914	860
8.0R	4,160	970	3,120	620	2,028	330	1,664	195	3,120	730	4,160	970
10.0R	3,380	890	2,496	560	1,690	310	1,352	175	2,496	655	3,380	890

d	R Tolerance
Ø	± 0.02

Milling Amount (mm)	Ad = 0.05D Pf = 0.1D



The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

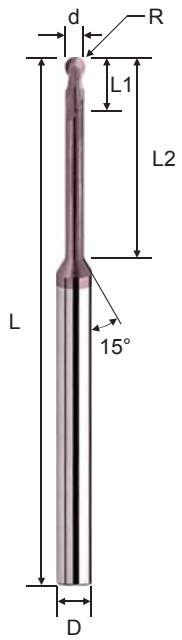
WINSTAR

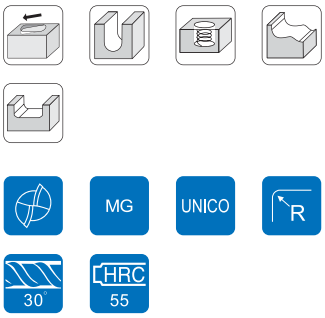
CARBIDE ENDMILLS - Long Neck Ball Nose Type - 2F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, Copper, FRP, etc.
- Reduce vibration and more toughness.
- It provides an excellent surface due to better surface grindings.
- Long neck design is suitable for rid cutting.

EPBBC2
EPBRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	R Tolerance
Ø	± 0.02

Order No.	Radius (R)	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EPBBC200301U	0.15R	0.3	0.3	1	50	4	2
EPBBC200302U	0.15R	0.3	0.3	2	50	4	2
EPBBC200303U	0.15R	0.3	0.3	3	50	4	2
EPBBC200401U	0.20R	0.4	0.4	1	50	4	2
EPBBC200402U	0.20R	0.4	0.4	2	50	4	2
EPBBC200403U	0.20R	0.4	0.4	3	50	4	2
EPBBC200404U	0.20R	0.4	0.4	4	50	4	2
EPBBC200405U	0.20R	0.4	0.4	5	50	4	2
EPBBC200406U	0.20R	0.4	0.4	6	50	4	2
EPBBC200408U	0.20R	0.4	0.4	8	50	4	2
EPBBC200501U	1.00R	0.5	0.5	1	50	4	2
EPBBC200502U	0.25R	0.5	0.5	2	50	4	2
EPBBC200503U	0.25R	0.5	0.5	3	50	4	2
EPBBC200504U	0.25R	0.5	0.5	4	50	4	2
EPBBC200505U	0.25R	0.5	0.5	5	50	4	2
EPBBC200506U	0.25R	0.5	0.5	6	50	4	2
EPBBC200508U	0.25R	0.5	0.5	8	50	4	2
EPBBC200510U	0.25R	0.5	0.5	10	50	4	2
EPBBC200601U	0.30R	0.6	0.6	1	50	4	2
EPBBC200602U	0.30R	0.6	0.6	2	50	4	2
EPBBC200603U	0.30R	0.6	0.6	3	50	4	2
EPBBC200604U	0.30R	0.6	0.6	4	50	4	2
EPBBC200605U	0.30R	0.6	0.6	5	50	4	2
EPBBC200606U	0.30R	0.6	0.6	6	50	4	2
EPBBC200608U	0.30R	0.6	0.6	8	50	4	2
EPBBC200610U	0.30R	0.6	0.6	10	50	4	2
EPBBC200612U	0.30R	0.6	0.6	12	50	4	2
EPBBC200702U	0.35R	0.7	0.7	2	50	4	2
EPBBC200704U	0.35R	0.7	0.7	4	50	4	2
EPBBC200708U	0.35R	0.7	0.7	8	50	4	2
EPBBC200710U	0.35R	0.7	0.7	10	50	4	2
EPBBC200712U	0.35R	0.7	0.7	12	50	4	2
EPBBC200802U	0.40R	0.8	0.8	2	50	4	2
EPBBC200804U	0.40R	0.8	0.8	4	50	4	2
EPBBC200806U	0.40R	0.8	0.8	6	50	4	2
EPBBC200808U	0.40R	0.8	0.8	8	50	4	2
EPBBC200810U	0.40R	0.8	0.8	10	50	4	2
EPBBC200812U	0.40R	0.8	0.8	12	50	4	2
EPBBC200904U	0.45R	0.9	0.9	4	50	4	2
EPBBC201002U	0.50R	1.0	1.0	2	50	4	2
EPBBC201003U	0.50R	1.0	1.0	3	50	4	2
EPBBC201004U	0.50R	1.0	1.0	4	50	4	2
EPBBC201005U	0.50R	1.0	1.0	5	50	4	2
EPBBC201006U	0.50R	1.0	1.0	6	50	4	2
EPBBC201008U	0.50R	1.0	1.0	8	50	4	2
EPBBC201010U	0.50R	1.0	1.0	10	50	4	2
EPBBC201012U	0.50R	1.0	1.0	12	50	4	2
EPBBC201014U	0.50R	1.0	1.0	14	50	4	2
EPBBC201016U	0.50R	1.0	1.0	16	50	4	2
EPBBC201018U	0.50R	1.0	1.0	18	50	4	2
EPBBC201020U	0.50R	1.0	1.0	20	50	4	2
EPBBC201022U	0.50R	1.0	1.0	22	60	4	2
EPBRC201004U	0.50R	1.0	1.0	4	50	6	2
EPBRC201006U	0.50R	1.0	1.0	6	50	6	2

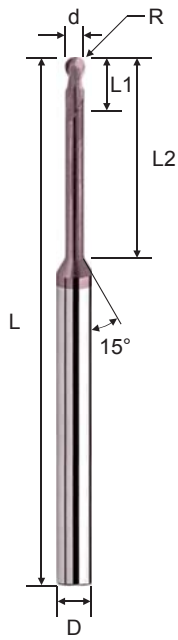
WINSTAR

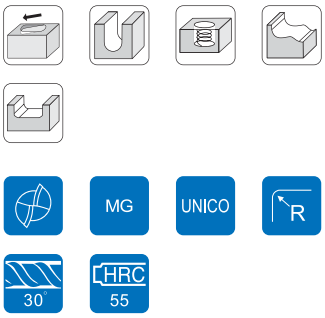
CARBIDE ENDMILLS - Long Neck Ball Nose Type - 2F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, Copper, FRP, etc.
- Reduce vibration and more toughness.
- It provides an excellent surface due to better surface grindings.
- Long neck design is suitable for rid cutting.

EPBBC2
EPBRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	R Tolerance
Ø	± 0.02

Order No.	Radius (R)	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EPBRC201008U	0.50R	1.0	1.0	8	50	6	2
EPBRC201010U	0.50R	1.0	1.0	10	50	6	2
EPBRC201210U	0.50R	1.0	1.0	12	50	6	2
EPBBC201204U	0.60R	1.2	1.2	4	50	4	2
EPBBC201206U	0.60R	1.2	1.2	6	50	4	2
EPBBC201208U	0.60R	1.2	1.2	8	50	4	2
EPBBC201210U	0.60R	1.2	1.2	10	50	4	2
EPBBC201212U	0.60R	1.2	1.2	12	50	4	2
EPBBC201216U	0.60R	1.2	1.2	16	50	4	2
EPBBC201220U	0.60R	1.2	1.2	20	50	4	2
EPBBC201224U	0.60R	1.2	1.2	24	60	4	2
EPBBC201406U	0.70R	1.4	1.4	6	50	4	2
EPBBC201408U	0.70R	1.4	1.4	8	50	4	2
EPBBC201412U	0.70R	1.4	1.4	12	50	4	2
EPBBC201416U	0.70R	1.4	1.4	16	50	4	2
EPBBC201503U	0.75R	1.5	1.5	3	50	4	2
EPBBC201504U	0.75R	1.5	1.5	4	50	4	2
EPBBC201506U	0.75R	1.5	1.5	6	50	4	2
EPBBC201508U	0.75R	1.5	1.5	8	50	4	2
EPBBC201510U	0.75R	1.5	1.5	10	50	4	2
EPBBC201512U	0.75R	1.5	1.5	12	50	4	2
EPBBC201514U	0.75R	1.5	1.5	14	50	4	2
EPBBC201516U	0.75R	1.5	1.5	16	50	4	2
EPBBC201518U	0.75R	1.5	1.5	18	50	4	2
EPBBC201520U	0.75R	1.5	1.5	20	50	4	2
EPBBC201522U	0.75R	1.5	1.5	22	60	4	2
EPBBC201525U	0.75R	1.5	1.5	25	60	4	2
EPBBC201530U	0.75R	1.5	1.5	30	60	4	2
EPBRC201506U	0.75R	1.5	1.5	6	50	6	2
EPBRC201508U	0.75R	1.5	1.5	8	50	6	2
EPBRC201510U	0.75R	1.5	1.5	10	50	6	2
EPBRC201512U	0.75R	1.5	1.5	12	50	6	2
EPBBC201606U	0.80R	1.6	1.6	6	50	4	2
EPBBC201608U	0.80R	1.6	1.6	8	50	4	2
EPBBC201612U	0.80R	1.6	1.6	12	50	4	2
EPBBC201616U	0.80R	1.6	1.6	16	50	4	2
EPBBC201620U	0.80R	1.6	1.6	20	50	4	2
EPBBC201806U	0.90R	1.8	1.8	6	50	4	2
EPBBC201808U	0.90R	1.8	1.8	8	50	4	2
EPBBC201812U	0.90R	1.8	1.8	12	50	4	2
EPBBC201816U	0.90R	1.8	1.8	16	50	4	2
EPBBC201820U	0.90R	1.8	1.8	20	50	4	2
EPBBC202004U	1.00R	2.0	2.0	4	50	4	2
EPBBC202006U	1.00R	2.0	2.0	6	50	4	2
EPBBC202008U	1.00R	2.0	2.0	8	50	4	2
EPBBC202010U	1.00R	2.0	2.0	10	50	4	2
EPBBC202012U	1.00R	2.0	2.0	12	50	4	2
EPBBC202014U	1.00R	2.0	2.0	14	50	4	2
EPBBC202016U	1.00R	2.0	2.0	16	50	4	2
EPBBC202018U	1.00R	2.0	2.0	18	50	4	2
EPBBC202020U	1.00R	2.0	2.0	20	50	4	2
EPBBC202022U	1.00R	2.0	2.0	22	60	4	2
EPBBC202025U	1.00R	2.0	2.0	25	60	4	2

G550 Series

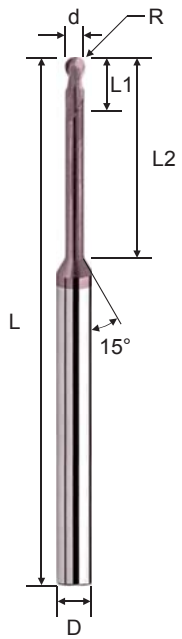
WINSTAR

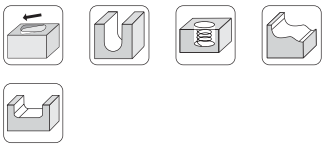
CARBIDE ENDMILLS - Long Neck Ball Nose Type - 2F

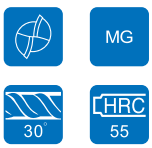
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, Copper, FRP, etc.
- Reduce vibration and more toughness.
- It provides an excellent surface due to better surface grindings.
- Long neck design is suitable for rid cutting.

EPBBC2
EPBRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑

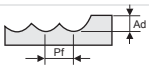






d	R Tolerance
Ø	± 0.02

Order No.	Radius (R)	Dia. (d)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EPBRC202006U	1.00R	2.0	2.0	6	50	6	2
EPBRC202008U	1.00R	2.0	2.0	8	50	6	2
EPBRC202010U	1.00R	2.0	2.0	10	50	6	2
EPBRC202016U	1.00R	2.0	2.0	16	50	6	2
EPBBC202508U	1.25R	2.5	2.5	8	50	4	2
EPBBC202510U	1.25R	2.5	2.5	10	50	4	2
EPBBC202516U	1.25R	2.5	2.5	16	50	4	2
EPBBC202520U	1.25R	2.5	2.5	20	60	4	2
EPBBC202525U	1.25R	2.5	2.5	25	60	4	2
EPBBC202530U	1.25R	2.5	2.5	30	60	4	2
EPBRC202506U	1.25R	2.5	2.5	6	50	6	2
EPBRC202510U	1.25R	2.5	2.5	10	50	6	2
EPBRC203010U	1.25R	3.0	3.0	10	50	6	2
EPBRC203006U	1.50R	3.0	3.0	6	50	6	2
EPBRC203008U	1.50R	3.0	3.0	8	50	6	2
EPBRC203010U	1.50R	3.0	3.0	10	50	6	2
EPBRC203012U	1.50R	3.0	3.0	12	50	6	2
EPBRC203016U	1.50R	3.0	3.0	16	60	6	2
EPBRC203020U	1.50R	3.0	3.0	20	60	6	2
EPBRC203025U	1.50R	3.0	3.0	25	60	6	2
EPBRC203030U	1.50R	3.0	3.0	30	60	6	2
EPBRC203035U	1.50R	3.0	3.0	35	75	6	2
EPBRC204008U	2.00R	4.0	4.0	8	50	6	2
EPBRC204010U	2.00R	4.0	4.0	10	50	6	2
EPBRC204012U	2.00R	4.0	4.0	12	50	6	2
EPBRC204016U	2.00R	4.0	4.0	16	60	6	2
EPBRC204020U	2.00R	4.0	4.0	20	60	6	2
EPBRC204025U	2.00R	4.0	4.0	25	60	6	2
EPBRC204030U	2.00R	4.0	4.0	30	60	6	2
EPBRC204035U	2.00R	4.0	4.0	35	75	6	2
EPBRC205015U	2.50R	5.0	5.0	15	60	6	2
EPBRC205020U	2.50R	5.0	5.0	20	60	6	2
EPBRC205025U	2.50R	5.0	5.0	25	60	6	2
EPBRC205030U	2.50R	5.0	5.0	30	75	6	2
EPBRC206015U	3.00R	6.0	10.0	15	50	6	2
EPBRC208025U	4.00R	8.0	12.0	25	60	8	2
EPBRC210030U	5.00R	10.0	16.0	30	75	10	2
EPBRC212030U	6.00R	12.0	18.0	30	75	12	2

WORKING MATERIAL	COPPER		ALLOY STEEL / TOOL STEEL		HARDENED STEEL	
CODE	–		SCM, SKD		SKT, SKD	
HARDNESS	–		HRC 30 ~ 40		HRC 40 ~ 50	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.20R	51,000	850	45,000	640	33,000	430
0.30R	53,000	1,630	33,000	800	23,000	500
0.40R	51,000	1,900	29,000	680	23,000	460
0.50R	42,000	1,800	28,000	750	18,000	450
1.00R	22,000	1,880	17,500	1,020	12,200	810
1.50R	14,000	2,700	12,000	1,520	8,200	1,100
Milling Amount (mm)	Ad = 0.05D Pf = 0.1D					

Please refer to 3xD table, reduce R.P.M. & Feed while efficient length is increasing.

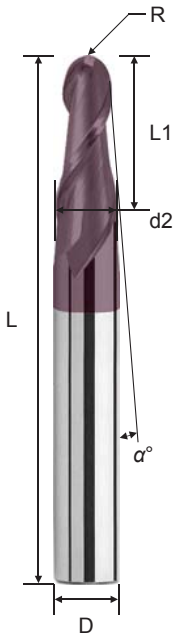
WINSTAR

CARBIDE ENDMILLS - Taper Ball Nose Type - 2F

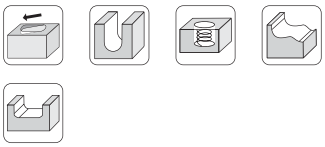
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Tape cutting length is convenient for high performance 3D milling.
- Stronger geometry design gives good wear resistance.

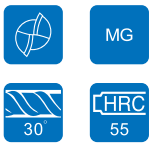
EPBFT2
EPBST2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



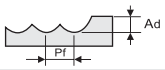
Order No.	Radius (R)	α°	CL (L1)	NL (d2)	OAL (L)	Shank (D)	Flutes (F)
EPBFT202010U	1.00R	1°	8	2.24	50	4	2
EPBFT202030U	1.00R	3°	8	2.74	50	4	2
EPBFT202050U	1.00R	5°	8	3.23	50	4	2
EPBFT202510U	1.25R	1°	10	2.81	50	4	2
EPBFT202530U	1.25R	3°	10	3.42	50	4	2
EPBST202550U	1.25R	5°	10	4.04	50	6	2
EPBFT203010U	1.50R	1°	12	3.37	50	4	2
EPBST203030U	1.50R	3°	12	4.10	50	6	2
EPBST203050U	1.50R	5°	12	4.85	50	6	2
EPBST204010U	2.00R	1°	16	4.49	60	6	2
EPBST204030U	2.00R	3°	16	5.47	60	6	2
EPBST204050U	2.00R	5°	16	6.46	60	8	2
EPBST206010U	3.00R	1°	24	6.73	75	8	2
EPBST206030U	3.00R	3°	24	8.20	75	10	2
EPBST206050U	3.00R	5°	24	9.67	75	10	2





d	R Tolerance
Ø	± 0.02

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	94 M/min		71 M/min		34 M/min		38 M/min		71 M/min		94 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1.0R	26,676	700	21,060	470	15,210	280	10,660	140	21,060	555	29,718	780
2.0R	14,976	875	11,232	560	8,190	335	5,980	175	11,232	655	14,976	875
3.0R	9,828	860	7,488	560	4,914	300	3,926	170	7,488	655	9,828	860

Milling Amount (mm)	Ad = 0.05D Pf = 0.1D	

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G550 Series

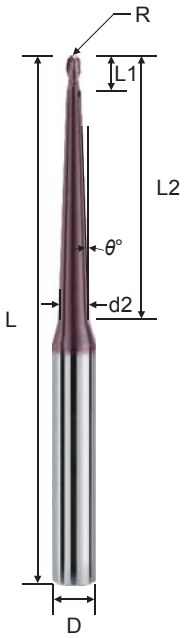
WINSTAR

CARBIDE ENDMILLS - Taper Neck Ball Nose Type - 2F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Suitable for high performance profile milling.
- High strength of taper neck, can cut deep grooves without breaking.

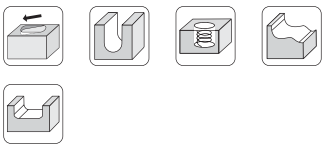
EPBRT2

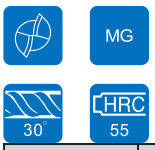
P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



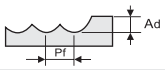
Order No.	Radius (R)	Dia. (d)	θ°	CL (L1)	EFF-L (L2)	NL (d2)	OAL (L)	Shank (D)	Flutes (F)
EPBRT201023AU	0.5R	1	1.5°	2	23	2.20	60	6	2
EPBRT2010235U	0.5R	1	5.0°	2	23	4.67	60	6	2
EPBRT2010423U	0.5R	1	3.0°	2	42	5.19	75	6	2
EPBRT202023AU	1.0R	2	1.5°	4	23	3.00	60	6	2
EPBRT2020235U	1.0R	2	5.0°	4	23	5.32	60	6	2
EPBRT2020413U	1.0R	2	3.0°	4	41	5.88	75	6	2
EPBRT203052AU	1.5R	3	1.5°	6	52	5.40	100	6	2
EPBRT2030323U	1.5R	3	3.0°	6	32	5.73	75	6	2
EPBRT204046AU	2.0R	4	1.5°	8	46	6.00	100	6	2
EPBRT2040273U	2.0R	4	3.0°	8	27	6.00	75	6	2

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	94 M/min		71 M/min		34 M/min		38 M/min		71 M/min		94 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1.0R	26,676	700	21,060	470	15,210	280	10,660	140	21,060	555	29,718	780
2.0R	14,976	875	11,232	560	8,190	335	5,980	175	11,232	655	14,976	875
3.0R	9,828	860	7,488	560	4,914	300	3,926	170	7,488	655	9,828	860





d	R Tolerance
Ø	± 0.02

Milling Amount (mm)	Ad = 0.05D Pf = 0.1D	

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G550 Series

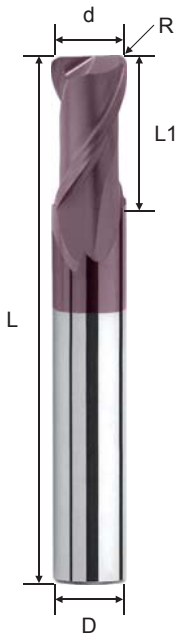
WINSTAR

CARBIDE ENDMILLS - Corner Radius Type - 2F

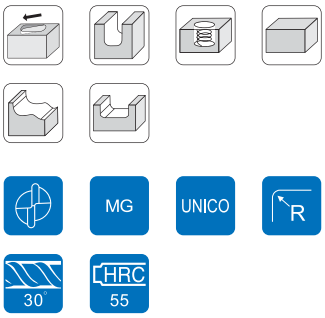
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Corner radius design is suitable for high speed surface milling and profiling.

EPCSC2

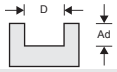
P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPCSC204003U	4.0	0.3R	8	50	6	2
EPCSC204005U	4.0	0.5R	8	50	6	2
EPCSC204010U	4.0	1.0R	8	50	6	2
EPCSC20S005U	5.0	0.5R	10	50	6	2
EPCSC20S010U	5.0	1.0R	10	50	6	2
EPCSC206003U	6.0	0.3R	12	50	6	2
EPCSC206005U	6.0	0.5R	12	50	6	2
EPCSC206010U	6.0	1.0R	12	50	6	2
EPCSC208005U	8.0	0.5R	16	60	8	2
EPCSC208010U	8.0	1.0R	16	60	8	2
EPCSC208015U	8.0	1.5R	16	60	8	2
EPCSC210005U	10.0	0.5R	20	75	10	2
EPCSC210010U	10.0	1.0R	20	75	10	2
EPCSC210015U	10.0	1.5R	20	75	10	2
EPCSC210020U	10.0	2.0R	20	75	10	2
EPCSC212005U	12.0	0.5R	24	75	12	2
EPCSC212010U	12.0	1.0R	24	75	12	2
EPCSC212015U	12.0	1.5R	24	75	12	2
EPCSC212020U	12.0	2.0R	24	75	12	2
EPCSC216010U	16.0	1.0R	32	100	16	2
EPCSC216020U	16.0	2.0R	32	100	16	2
EPCSC216030U	16.0	3.0R	32	100	16	2



d	R Tolerance
Ø < 3	0 ~ -0.03
3 ≦ Ø ≦ 10	0 ~ -0.04
Ø > 10	0 ~ -0.05
R	± 0.02

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1MM	26,000	190	22,230	140	18,720	100	10,400	40	22,230	165	32,760	240
2MM	14,040	235	11,232	160	9,360	110	5,616	45	11,232	185	16,380	270
3MM	9,828	270	7,098	175	6,084	120	3,900	55	7,488	205	11,232	310
4MM	7,020	260	5,616	175	4,680	120	2,808	50	5,616	205	8,424	310
5MM	5,850	270	4,446	175	3,744	120	2,340	55	4,446	205	6,552	300
6MM	4,680	260	3,744	175	3,042	120	1,872	50	3,744	205	5,616	310
8MM	3,510	260	2,808	175	2,340	120	1,404	50	2,808	205	4,212	310
10MM	2,808	260	2,223	175	1,872	120	1,131	50	2,223	205	3,276	300
12MM	2,340	260	1,872	175	1,560	120	936	50	1,872	205	2,808	310
14MM	2,340	300	1,768	195	1,482	135	936	60	1,768	230	2,600	335
16MM	2,028	300	2,730	345	1,300	135	819	60	2,730	400	2,340	345
18MM	2,028	305	1,378	175	1,144	120	819	60	1,378	205	2,080	310
20MM	1,560	260	1,248	175	1,144	120	624	50	1,248	205	1,820	300
Milling Amount (mm)							Ad = 0.1D (D < 3, Ad ≦ 0.05D)		Ad = 0.5D (D < 3, Ad ≦ 0.25D)			

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G550 Series

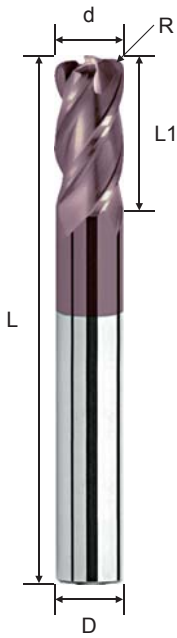
WINSTAR

CARBIDE ENDMILLS - Corner Radius Type - 4F

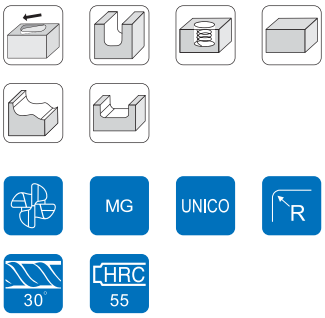
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Corner radius with multiple design increases the finish milling surface.

EPCSC4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑

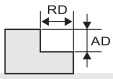


Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPCSC403003U	3.0	0.3R	6	50	6	4
EPCSC403005U	3.0	0.5R	6	50	6	4
EPCSC403010U	3.0	1.0R	6	50	6	4
EPCSC404003U	4.0	0.3R	8	50	6	4
EPCSC404005U	4.0	0.5R	8	50	6	4
EPCSC404010U	4.0	1.0R	8	50	6	4
EPCSC40S005U	5.0	0.5R	10	50	6	4
EPCSC40S010U	5.0	1.0R	10	50	6	4
EPCSC406003U	6.0	0.3R	12	50	6	4
EPCSC406005U	6.0	0.5R	12	50	6	4
EPCSC406010U	6.0	1.0R	12	50	6	4
EPCSC408005U	8.0	0.5R	16	60	8	4
EPCSC408010U	8.0	1.0R	16	60	8	4
EPCSC408015U	8.0	1.5R	16	60	8	4
EPCSC410005U	10.0	0.5R	20	75	10	4
EPCSC410010U	10.0	1.0R	20	75	10	4
EPCSC410015U	10.0	1.5R	20	75	10	4
EPCSC410020U	10.0	2.0R	20	75	10	4
EPCSC412005U	12.0	0.5R	24	75	12	4
EPCSC412010U	12.0	1.0R	24	75	12	4
EPCSC412015U	12.0	1.5R	24	75	12	4
EPCSC412020U	12.0	2.0R	24	75	12	4
EPCSC412030U	12.0	3.0R	24	75	12	4
EPCSC416010U	16.0	1.0R	32	100	16	4
EPCSC416020U	16.0	2.0R	32	100	16	4
EPCSC416030U	16.0	3.0R	32	100	16	4



d	R Tolerance
Ø < 3	0 ~ -0.03
3 ≦ Ø ≦ 10	0 ~ -0.04
Ø > 10	0 ~ -0.05
R	± 0.02

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	9,828	455	7,098	295	6,084	195	3,900	90	7,488	345	11,232	520
4MM	7,020	430	5,616	295	4,680	200	2,808	85	5,616	345	8,424	520
5MM	5,850	450	4,446	290	3,744	200	2,340	90	4,446	345	6,552	505
6MM	4,680	430	3,744	295	3,042	195	1,872	85	3,744	345	5,616	520
8MM	3,510	430	2,808	295	2,340	200	1,404	85	2,808	345	4,212	520
10MM	2,808	430	2,223	290	1,872	200	1,131	85	2,223	340	3,276	505
12MM	2,340	430	1,872	295	1,560	200	936	85	1,872	345	2,808	520
14MM	2,340	500	1,768	325	1,482	225	936	100	1,768	380	2,600	560
16MM	2,028	500	2,730	325	1,300	225	819	100	2,730	385	2,340	575
18MM	2,028	455	1,378	290	1,144	200	819	90	1,378	345	2,080	520
20MM	1,560	430	1,248	295	1,144	200	624	85	1,248	345	1,820	505

Milling Amount (mm)		Ad = 1.5D RD ≦ 0.05D	Ad = 1.5D RD ≦ 0.1D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G550 Series

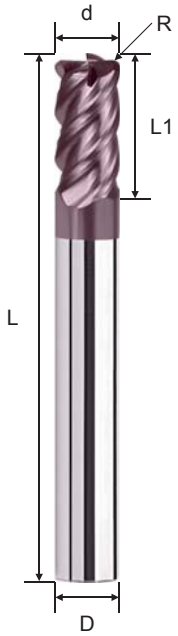
WINSTAR

CARBIDE ENDMILLS - High Helix Corner Radius Type - 4F

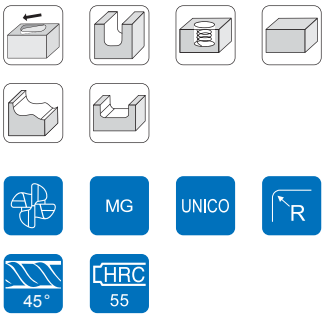
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Corner radius with high helix angle improves the side milling quality.

EPCSH4

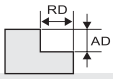
P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPCFH403005U	3.0	0.5R	6	50	4	4
EPCFH404005U	4.0	0.5R	8	50	4	4
EPCSH405005U	5.0	0.5R	10	50	6	4
EPCSH405010U	5.0	1.0R	10	50	6	4
EPCSH406005U	6.0	0.5R	12	50	6	4
EPCSH406010U	6.0	1.0R	12	50	6	4
EPCSH408005U	8.0	0.5R	16	60	8	4
EPCSH408010U	8.0	1.0R	16	60	8	4
EPCSH410005U	10.0	0.5R	20	75	10	4
EPCSH410010U	10.0	1.0R	20	75	10	4
EPCSH410015U	10.0	1.5R	20	75	10	4
EPCSH410020U	10.0	2.0R	20	75	10	4
EPCSH412010U	12.0	1.0R	24	75	12	4
EPCSH412020U	12.0	2.0R	24	75	12	4
EPCSH412030U	12.0	3.0R	24	75	12	4



WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	9,828	455	7,098	295	6,084	195	3,900	90	7,488	345	11,232	520
4MM	7,020	430	5,616	295	4,680	200	2,808	85	5,616	345	8,424	520
5MM	5,850	450	4,446	290	3,744	200	2,340	90	4,446	345	6,552	505
6MM	4,680	430	3,744	295	3,042	195	1,872	85	3,744	345	5,616	520
8MM	3,510	430	2,808	295	2,340	200	1,404	85	2,808	345	4,212	520
10MM	2,808	430	2,223	290	1,872	200	1,131	85	2,223	340	3,276	505
12MM	2,340	430	1,872	295	1,560	200	936	85	1,872	345	2,808	520
14MM	2,340	500	1,768	325	1,482	225	936	100	1,768	380	2,600	560
16MM	2,028	500	2,730	325	1,300	225	819	100	2,730	385	2,340	575
18MM	2,028	455	1,378	290	1,144	200	819	90	1,378	345	2,080	520
20MM	1,560	430	1,248	295	1,144	200	624	85	1,248	345	1,820	505

Milling Amount (mm)		Ad = 1.5D RD ≦ 0.05D	Ad = 1.5D RD ≦ 0.1D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

d	R Tolerance
Ø < 3	0 ~ -0.03
3 ≦ Ø ≦ 10	0 ~ -0.04
Ø > 10	0 ~ -0.05
R	± 0.02

G550 Series

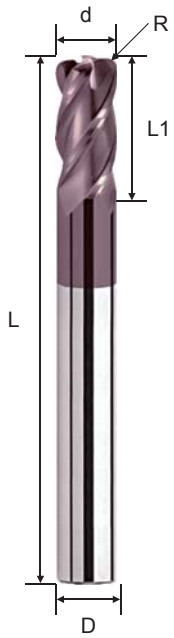
WINSTAR

CARBIDE ENDMILLS - Long Shank Corner Radius Type - 4F

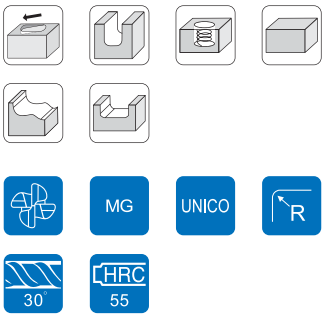
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Corner radius with multiple flutes is suitable for general cutting and 3D milling.

EPCLC4

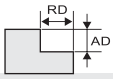
P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPCLC403005U	3.0	0.5R	6	75	6	4
EPCLC403010U	3.0	1.0R	6	75	6	4
EPCLC404005U	4.0	0.5R	8	75	6	4
EPCLC404010U	4.0	1.0R	8	75	6	4
EPCLC405005U	5.0	0.5R	10	75	6	4
EPCLC405010U	5.0	1.0R	10	75	6	4
EPCLC406005U	6.0	0.5R	12	75	6	4
EPCLC406010U	6.0	1.0R	12	75	6	4
EPCLC408005U	8.0	0.5R	16	100	8	4
EPCLC408010U	8.0	1.0R	16	100	8	4
EPCLC408015U	8.0	1.5R	16	100	8	4
EPCLC410005U	10.0	0.5R	20	100	10	4
EPCLC410010U	10.0	1.0R	20	100	10	4
EPCLC410015U	10.0	1.5R	20	100	10	4
EPCLC410020U	10.0	2.0R	20	100	10	4
EPCLC412005U	12.0	0.5R	24	100	12	4
EPCLC412010U	12.0	1.0R	24	100	12	4
EPCLC412015U	12.0	1.5R	24	100	12	4
EPCLC412020U	12.0	2.0R	24	100	12	4
EPCLC416010U	16.0	1.0R	32	150	16	4
EPCLC416020U	16.0	2.0R	32	150	16	4
EPCLC416030U	16.0	3.0R	32	150	16	4



WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	9,828	455	7,098	295	6,084	195	3,900	90	7,488	345	11,232	520
4MM	7,020	430	5,616	295	4,680	200	2,808	85	5,616	345	8,424	520
5MM	5,850	450	4,446	290	3,744	200	2,340	90	4,446	345	6,552	505
6MM	4,680	430	3,744	295	3,042	195	1,872	85	3,744	345	5,616	520
8MM	3,510	430	2,808	295	2,340	200	1,404	85	2,808	345	4,212	520
10MM	2,808	430	2,223	290	1,872	200	1,131	85	2,223	340	3,276	505
12MM	2,340	430	1,872	295	1,560	200	936	85	1,872	345	2,808	520
14MM	2,340	500	1,768	325	1,482	225	936	100	1,768	380	2,600	560
16MM	2,028	500	2,730	325	1,300	225	819	100	2,730	385	2,340	575
18MM	2,028	455	1,378	290	1,144	200	819	90	1,378	345	2,080	520
20MM	1,560	430	1,248	295	1,144	200	624	85	1,248	345	1,820	505

Milling Amount (mm)		Ad = 1.5D RD ≦ 0.05D	Ad = 1.5D RD ≦ 0.1D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

d	R Tolerance
Ø < 3	0 ~ -0.03
3 ≦ Ø ≦ 10	0 ~ -0.04
Ø > 10	0 ~ -0.05
R	± 0.02

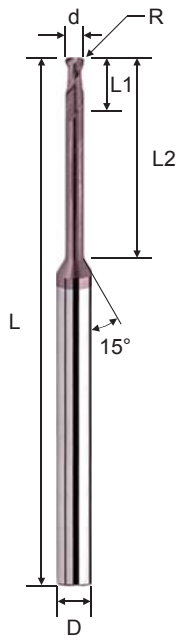
WINSTAR

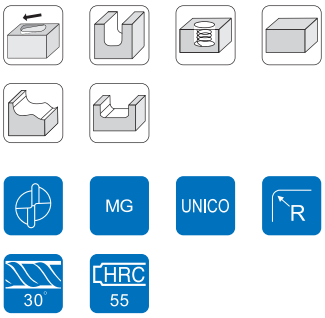
CARBIDE ENDMILLS - Long Neck Corner Radius Type - 2F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Available in various cut lengths.
- Corner radius with long neck are suitable for deep general cutting and 3D milling.

EPCBC2
EPCRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ 0.02

Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EPCBC20100104U	1.0	0.1R	1.0	4	50	4	2
EPCBC20100106U	1.0	0.1R	1.0	6	50	4	2
EPCBC20100108U	1.0	0.1R	1.0	8	50	4	2
EPCBC20100110U	1.0	0.1R	1.0	10	50	4	2
EPCBC20100112U	1.0	0.1R	1.0	12	50	4	2
EPCBC20100204U	1.0	0.2R	1.0	4	50	4	2
EPCBC20100206U	1.0	0.2R	1.0	6	50	4	2
EPCBC20100208U	1.0	0.2R	1.0	8	50	4	2
EPCBC20100210U	1.0	0.2R	1.0	10	50	4	2
EPCBC20100212U	1.0	0.2R	1.0	12	50	4	2
EPCBC20100304U	1.0	0.3R	1.0	4	50	4	2
EPCBC20100306U	1.0	0.3R	1.0	6	50	4	2
EPCBC20100308U	1.0	0.3R	1.0	8	50	4	2
EPCBC20100310U	1.0	0.3R	1.0	10	50	4	2
EPCBC20100312U	1.0	0.3R	1.0	12	50	4	2
EPCBC20120104U	1.2	0.1R	1.2	4	50	4	2
EPCBC20120106U	1.2	0.1R	1.2	6	50	4	2
EPCBC20120108U	1.2	0.1R	1.2	8	50	4	2
EPCBC20120110U	1.2	0.1R	1.2	10	50	4	2
EPCBC20120112U	1.2	0.1R	1.2	12	50	4	2
EPCBC20120204U	1.2	0.2R	1.2	4	50	4	2
EPCBC20120206U	1.2	0.2R	1.2	6	50	4	2
EPCBC20120208U	1.2	0.2R	1.2	8	50	4	2
EPCBC20120210U	1.2	0.2R	1.2	10	50	4	2
EPCBC20120212U	1.2	0.2R	1.2	12	50	4	2
EPCBC20120304U	1.2	0.3R	1.2	4	50	4	2
EPCBC20120306U	1.2	0.3R	1.2	6	50	4	2
EPCBC20120308U	1.2	0.3R	1.2	8	50	4	2
EPCBC20120310U	1.2	0.3R	1.2	10	50	4	2
EPCBC20120312U	1.2	0.3R	1.2	12	50	4	2
EPCBC20150106U	1.5	0.1R	1.5	6	50	4	2
EPCBC20150108U	1.5	0.1R	1.5	8	50	4	2
EPCBC20150110U	1.5	0.1R	1.5	10	50	4	2
EPCBC20150112U	1.5	0.1R	1.5	12	50	4	2
EPCBC20150116U	1.5	0.1R	1.5	16	50	4	2
EPCBC20150206U	1.5	0.2R	1.5	6	50	4	2
EPCBC20150208U	1.5	0.2R	1.5	8	50	4	2
EPCBC20150210U	1.5	0.2R	1.5	10	50	4	2
EPCBC20150212U	1.5	0.2R	1.5	12	50	4	2
EPCBC20150216U	1.5	0.2R	1.5	16	50	4	2
EPCBC20150306U	1.5	0.3R	1.5	6	50	4	2
EPCBC20150308U	1.5	0.3R	1.5	8	50	4	2
EPCBC20150310U	1.5	0.3R	1.5	10	50	4	2
EPCBC20150312U	1.5	0.3R	1.5	12	50	4	2
EPCBC20150316U	1.5	0.3R	1.5	16	50	4	2
EPCBC20150506U	1.5	0.5R	1.5	6	50	4	2
EPCBC20150508U	1.5	0.5R	1.5	8	50	4	2
EPCBC20150510U	1.5	0.5R	1.5	10	50	4	2
EPCBC20150512U	1.5	0.5R	1.5	12	50	4	2
EPCBC20150516U	1.5	0.5R	1.5	16	50	4	2
EPCBC20200106U	2.0	0.1R	2.0	6	50	4	2
EPCBC20200108U	2.0	0.1R	2.0	8	50	4	2
EPCBC20200110U	2.0	0.1R	2.0	10	50	4	2

G550 Series

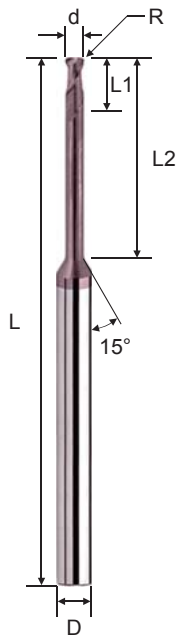
WINSTAR

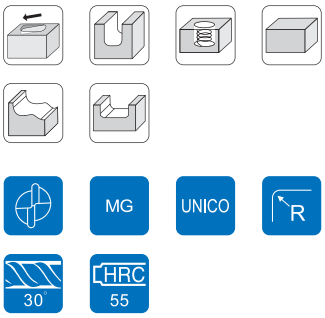
CARBIDE ENDMILLS - Long Neck Corner Radius Type - 2F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Available in various cut lengths.
- Corner radius with long neck are suitable for deep general cutting and 3D milling.

EPCBC2
EPCRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ 0.02

Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EPCBC20200112U	2.0	0.1R	2.0	12	50	4	2
EPCBC20200116U	2.0	0.1R	2.0	16	50	4	2
EPCBC20200120U	2.0	0.1R	2.0	20	50	4	2
EPCBC20200125U	2.0	0.1R	2.0	25	60	4	2
EPCBC20200206U	2.0	0.2R	2.0	6	50	4	2
EPCBC20200208U	2.0	0.2R	2.0	8	50	4	2
EPCBC20200210U	2.0	0.2R	2.0	10	50	4	2
EPCBC20200212U	2.0	0.2R	2.0	12	50	4	2
EPCBC20200216U	2.0	0.2R	2.0	16	50	4	2
EPCBC20200220U	2.0	0.2R	2.0	20	50	4	2
EPCBC20200225U	2.0	0.2R	2.0	25	60	4	2
EPCBC20200306U	2.0	0.3R	2.0	6	50	4	2
EPCBC20200308U	2.0	0.3R	2.0	8	50	4	2
EPCBC20200310U	2.0	0.3R	2.0	10	50	4	2
EPCBC20200312U	2.0	0.3R	2.0	12	50	4	2
EPCBC20200316U	2.0	0.3R	2.0	16	50	4	2
EPCBC20200320U	2.0	0.3R	2.0	20	50	4	2
EPCBC20200325U	2.0	0.3R	2.0	25	60	4	2
EPCBC20200506U	2.0	0.5R	2.0	6	50	4	2
EPCBC20200508U	2.0	0.5R	2.0	8	50	4	2
EPCBC20200510U	2.0	0.5R	2.0	10	50	4	2
EPCBC20200512U	2.0	0.5R	2.0	12	50	4	2
EPCBC20200516U	2.0	0.5R	2.0	16	50	4	2
EPCBC20200520U	2.0	0.5R	2.0	20	50	4	2
EPCBC20200525U	2.0	0.5R	2.0	25	60	4	2
EPCRC20200510U	2.0	0.5R	2.0	10	50	6	2
EPCRC20200515U	2.0	0.5R	2.0	15	50	6	2
EPCBC20250110U	2.5	0.1R	2.5	10	50	4	2
EPCBC20250116U	2.5	0.1R	2.5	16	50	4	2
EPCBC20250120U	2.5	0.1R	2.5	20	50	4	2
EPCBC20250125U	2.5	0.1R	2.5	25	60	4	2
EPCBC20250210U	2.5	0.2R	2.5	10	50	4	2
EPCBC20250216U	2.5	0.2R	2.5	16	50	4	2
EPCBC20250220U	2.5	0.2R	2.5	20	50	4	2
EPCBC20250225U	2.5	0.2R	2.5	25	60	4	2
EPCBC20250310U	2.5	0.3R	2.5	10	50	4	2
EPCBC20250316U	2.5	0.3R	2.5	16	50	4	2
EPCBC20250320U	2.5	0.3R	2.5	20	50	4	2
EPCBC20250325U	2.5	0.3R	2.5	25	60	4	2
EPCBC20250510U	2.5	0.5R	2.5	10	50	4	2
EPCBC20250516U	2.5	0.5R	2.5	16	50	4	2
EPCBC20250520U	2.5	0.5R	2.5	20	50	4	2
EPCBC20250525U	2.5	0.5R	2.5	25	60	4	2
EPCRC20300110U	3.0	0.1R	3.0	10	50	6	2
EPCRC20300116U	3.0	0.1R	3.0	16	60	6	2
EPCRC20300120U	3.0	0.1R	3.0	20	60	6	2
EPCRC20300125U	3.0	0.1R	3.0	25	60	6	2
EPCRC20300130U	3.0	0.1R	3.0	30	75	6	2
EPCRC20300135U	3.0	0.1R	3.0	35	75	6	2
EPCRC20300210U	3.0	0.2R	3.0	10	50	6	2
EPCRC20300216U	3.0	0.2R	3.0	16	60	6	2
EPCRC20300220U	3.0	0.2R	3.0	20	60	6	2
EPCRC20300225U	3.0	0.2R	3.0	25	60	6	2
EPCRC20300230U	3.0	0.2R	3.0	30	75	6	2

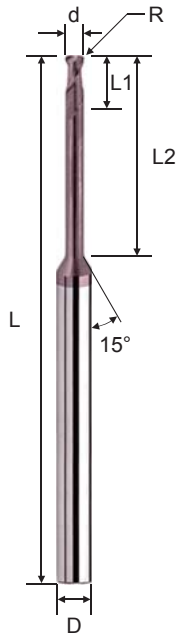
WINSTAR

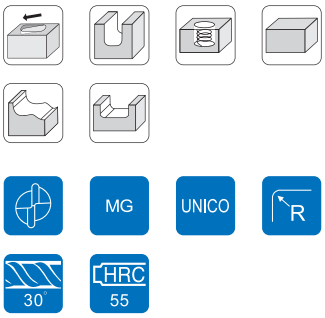
CARBIDE ENDMILLS - Long Neck Corner Radius Type - 2F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Available in various cut lengths.
- Corner radius with long neck are suitable for deep general cutting and 3D milling.

EPCBC2
EPCRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ 0.02

Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EPCRC20300235U	3.0	0.2R	3.0	35	75	6	2
EPCRC20300310U	3.0	0.3R	3.0	10	50	6	2
EPCRC20300316U	3.0	0.3R	3.0	16	60	6	2
EPCRC20300320U	3.0	0.3R	3.0	20	60	6	2
EPCRC20300325U	3.0	0.3R	3.0	25	60	6	2
EPCRC20300330U	3.0	0.3R	3.0	30	75	6	2
EPCRC20300335U	3.0	0.3R	3.0	35	75	6	2
EPCRC20300510U	3.0	0.5R	3.0	10	50	6	2
EPCRC20300516U	3.0	0.5R	3.0	16	60	6	2
EPCRC20300520U	3.0	0.5R	3.0	20	60	6	2
EPCRC20300525U	3.0	0.5R	3.0	25	60	6	2
EPCRC20300530U	3.0	0.5R	3.0	30	75	6	2
EPCRC20300535U	3.0	0.5R	3.0	35	75	6	2
EPCRC20301010U	3.0	1.0R	3.0	10	50	6	2
EPCRC20301016U	3.0	1.0R	3.0	16	60	6	2
EPCRC20301020U	3.0	1.0R	3.0	20	60	6	2
EPCRC20301025U	3.0	1.0R	3.0	25	60	6	2
EPCRC20301030U	3.0	1.0R	3.0	30	75	6	2
EPCRC20301035U	3.0	1.0R	3.0	35	75	6	2
EPCRC20400113U	4.0	0.1R	4.0	13	50	6	2
EPCRC20400116U	4.0	0.1R	4.0	16	60	6	2
EPCRC20400120U	4.0	0.1R	4.0	20	60	6	2
EPCRC20400125U	4.0	0.1R	4.0	25	60	6	2
EPCRC20400130U	4.0	0.1R	4.0	30	75	6	2
EPCRC20400135U	4.0	0.1R	4.0	35	75	6	2
EPCRC20400213U	4.0	0.2R	4.0	13	50	6	2
EPCRC20400216U	4.0	0.2R	4.0	16	60	6	2
EPCRC20400220U	4.0	0.2R	4.0	20	60	6	2
EPCRC20400225U	4.0	0.2R	4.0	25	60	6	2
EPCRC20400230U	4.0	0.2R	4.0	30	75	6	2
EPCRC20400235U	4.0	0.2R	4.0	35	75	6	2
EPCRC20400313U	4.0	0.3R	4.0	13	50	6	2
EPCRC20400316U	4.0	0.3R	4.0	16	60	6	2
EPCRC20400320U	4.0	0.3R	4.0	20	60	6	2
EPCRC20400325U	4.0	0.3R	4.0	25	60	6	2
EPCRC20400330U	4.0	0.3R	4.0	30	75	6	2
EPCRC20400335U	4.0	0.3R	4.0	35	75	6	2
EPCRC20400513U	4.0	0.5R	4.0	13	50	6	2
EPCRC20400516U	4.0	0.5R	4.0	16	60	6	2
EPCRC20400520U	4.0	0.5R	4.0	20	60	6	2
EPCRC20400525U	4.0	0.5R	4.0	25	60	6	2
EPCRC20400530U	4.0	0.5R	4.0	30	75	6	2
EPCRC20400535U	4.0	0.5R	4.0	35	75	6	2
EPCRC20401013U	4.0	1.0R	4.0	13	50	6	2
EPCRC20401016U	4.0	1.0R	4.0	16	60	6	2
EPCRC20401020U	4.0	1.0R	4.0	20	60	6	2
EPCRC20401025U	4.0	1.0R	4.0	25	60	6	2
EPCRC20401030U	4.0	1.0R	4.0	30	75	6	2
EPCRC20401035U	4.0	1.0R	4.0	35	75	6	2
EPCRC20500116U	5.0	0.1R	5.0	16	60	6	2
EPCRC20500130U	5.0	0.1R	5.0	30	60	6	2
EPCRC20500216U	5.0	0.2R	5.0	16	60	6	2
EPCRC20500230U	5.0	0.2R	5.0	30	60	6	2

G550 Series

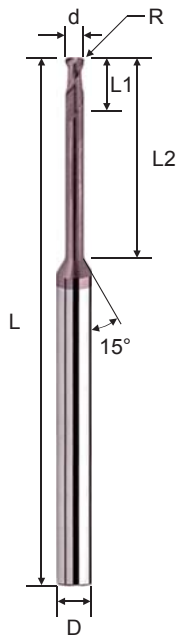
WINSTAR

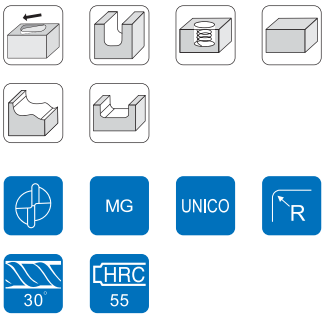
CARBIDE ENDMILLS - Long Neck Corner Radius Type - 2F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Available in various cut lengths.
- Corner radius with long neck are suitable for deep general cutting and 3D milling.

EPCBC2
EPCRC2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



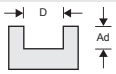


d	Tolerance
Ø	0 ~ 0.02

Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EPCRC20500316U	5.0	0.3R	5.0	16	60	6	2
EPCRC20500330U	5.0	0.3R	5.0	30	60	6	2
EPCRC20500516U	5.0	0.5R	5.0	16	60	6	2
EPCRC20500530U	5.0	0.5R	5.0	30	60	6	2
EPCRC20501016U	5.0	1.0R	5.0	16	60	6	2
EPCRC20501030U	5.0	1.0R	5.0	30	60	6	2
EPCRC20600120U	6.0	0.1R	7.0	20	60	6	2
EPCRC20600130U	6.0	0.1R	7.0	30	60	6	2
EPCRC20600220U	6.0	0.2R	7.0	20	60	6	2
EPCRC20600230U	6.0	0.2R	7.0	30	60	6	2
EPCRC20600320U	6.0	0.3R	7.0	20	60	6	2
EPCRC20600330U	6.0	0.3R	7.0	30	60	6	2
EPCRC20600520U	6.0	0.5R	7.0	20	60	6	2
EPCRC20600530U	6.0	0.5R	7.0	30	60	6	2
EPCRC20601020U	6.0	1.0R	7.0	20	60	6	2
EPCRC20601030U	6.0	1.0R	7.0	30	60	6	2
EPCRC20601520U	6.0	1.5R	7.0	20	60	6	2
EPCRC20601530U	6.0	1.5R	7.0	30	60	6	2
EPCRC20800522U	8.0	0.5R	9.0	22	60	8	2
EPCRC20801022U	8.0	1.0R	9.0	22	60	8	2
EPCRC20801522U	8.0	1.5R	9.0	22	60	8	2
EPCRC20802022U	8.0	2.0R	9.0	22	60	8	2
EPCRC21000524U	10.0	0.5R	11.0	24	75	10	2
EPCRC21001024U	10.0	1.0R	11.0	24	75	10	2
EPCRC21001524U	10.0	1.5R	11.0	24	75	10	2
EPCRC21002024U	10.0	2.0R	11.0	24	75	10	2
EPCRC21200526U	12.0	0.5R	13.0	26	75	12	2
EPCRC21201026U	12.0	1.0R	13.0	26	75	12	2
EPCRC21201526U	12.0	1.5R	13.0	26	75	12	2
EPCRC21202026U	12.0	2.0R	13.0	26	75	12	2

WORKING MATERIAL	COPPER		ALLOY STEEL / TOOL STEEL		HARDENED STEEL	
CODE	–		SCM, SKT, SKD		SKT, SKD	
HARDNESS	–		HRC 30 ~ 45		HRC 45 ~ 55	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
2.0MM	10,900	1,030	10,900	870	10,200	790
2.5MM	9,000	1,030	9,000	870	8,500	820
3.0MM	9,000	1,360	9,000	980	8,500	760
4.0MM	7,600	1,100	7,600	920	6,400	800
5.0MM	6,700	1,780	6,700	1,480	4,800	990
6.0MM	5,200	1,200	5,200	1,060	3,100	900
8.0MM	4,800	1,100	4,800	940	2,800	790
10.0MM	4,000	900	3,900	800	2,400	670
12.0MM	3,300	760	3,300	670	2,000	560

Milling Amount (mm)



Please refer to 3xD table, reduce R.P.M. & Feed while efficient length is increasing.

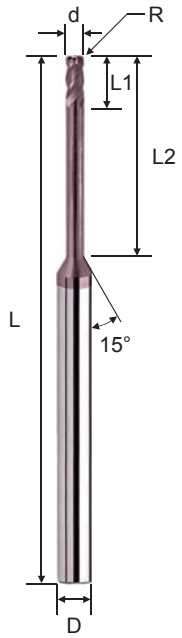
WINSTAR

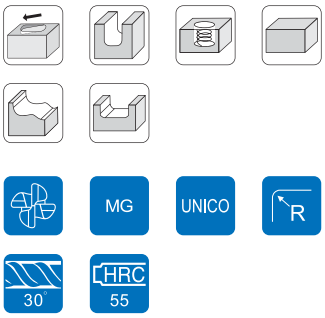
CARBIDE ENDMILLS - Long Neck Corner Radius Type - 4F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Multiple flutes and ling neck design provides better surface in deep cutting.
- Available in various cut lengths.

EPCBC4
EPCRC4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ 0.02

Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EPCBC40200106U	2.0	0.1R	2.0	6	50	4	4
EPCBC40200108U	2.0	0.1R	2.0	8	50	4	4
EPCBC40200110U	2.0	0.1R	2.0	10	50	4	4
EPCBC40200112U	2.0	0.1R	2.0	12	50	4	4
EPCBC40200116U	2.0	0.1R	2.0	16	50	4	4
EPCBC40200120U	2.0	0.1R	2.0	20	50	4	4
EPCBC40200125U	2.0	0.1R	2.0	25	60	4	4
EPCBC40200206U	2.0	0.2R	2.0	6	50	4	4
EPCBC40200208U	2.0	0.2R	2.0	8	50	4	4
EPCBC40200210U	2.0	0.2R	2.0	10	50	4	4
EPCBC40200212U	2.0	0.2R	2.0	12	50	4	4
EPCBC40200216U	2.0	0.2R	2.0	16	50	4	4
EPCBC40200220U	2.0	0.2R	2.0	20	50	4	4
EPCBC40200225U	2.0	0.2R	2.0	25	60	4	4
EPCBC40200306U	2.0	0.3R	2.0	6	50	4	4
EPCBC40200308U	2.0	0.3R	2.0	8	50	4	4
EPCBC40200310U	2.0	0.3R	2.0	10	50	4	4
EPCBC40200312U	2.0	0.3R	2.0	12	50	4	4
EPCBC40200316U	2.0	0.3R	2.0	16	50	4	4
EPCBC40200320U	2.0	0.3R	2.0	20	50	4	4
EPCBC40200325U	2.0	0.3R	2.0	25	60	4	4
EPCBC40200506U	2.0	0.5R	2.0	6	50	4	4
EPCBC40200508U	2.0	0.5R	2.0	8	50	4	4
EPCBC40200510U	2.0	0.5R	2.0	10	50	4	4
EPCBC40200512U	2.0	0.5R	2.0	12	50	4	4
EPCBC40200516U	2.0	0.5R	2.0	16	50	4	4
EPCBC40200520U	2.0	0.5R	2.0	20	50	4	4
EPCBC40200525U	2.0	0.5R	2.0	25	60	4	4
EPCRC40200510U	2.0	0.5R	2.0	10	50	6	4
EPCRC40200515U	2.0	0.5R	2.0	15	50	6	4
EPCBC40250110U	2.5	0.1R	2.5	10	50	4	4
EPCBC40250116U	2.5	0.1R	2.5	16	50	4	4
EPCBC40250120U	2.5	0.1R	2.5	20	50	4	4
EPCBC40250125U	2.5	0.1R	2.5	25	60	4	4
EPCBC40250210U	2.5	0.2R	2.5	10	50	4	4
EPCBC40250216U	2.5	0.2R	2.5	16	50	4	4
EPCBC40250220U	2.5	0.2R	2.5	20	50	4	4
EPCBC40250225U	2.5	0.2R	2.5	25	60	4	4
EPCBC40250310U	2.5	0.3R	2.5	10	50	4	4
EPCBC40250316U	2.5	0.3R	2.5	16	50	4	4
EPCBC40250320U	2.5	0.3R	2.5	20	50	4	4
EPCBC40250325U	2.5	0.3R	2.5	25	60	4	4
EPCBC40250510U	2.5	0.5R	2.5	10	50	4	4
EPCBC40250516U	2.5	0.5R	2.5	16	50	4	4
EPCBC40250520U	2.5	0.5R	2.5	20	50	4	4
EPCBC40250525U	2.5	0.5R	2.5	25	60	4	4
EPCRC40300110U	3.0	0.1R	3.0	10	50	6	4
EPCRC40300116U	3.0	0.1R	3.0	16	60	6	4
EPCRC40300120U	3.0	0.1R	3.0	20	60	6	4
EPCRC40300125U	3.0	0.1R	3.0	25	60	6	4
EPCRC40300130U	3.0	0.1R	3.0	30	75	6	4
EPCRC40300135U	3.0	0.1R	3.0	35	75	6	4
EPCRC40300210U	3.0	0.2R	3.0	10	50	6	4

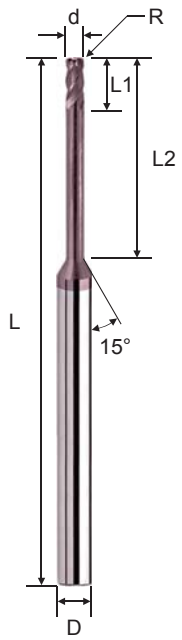
G550 Series

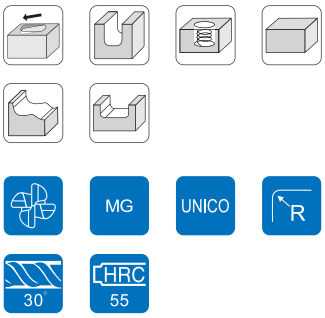
CARBIDE ENDMILLS - Long Neck Corner Radius Type - 4F

- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Multiple flutes and ling neck design provides better surface in deep cutting.
- Available in various cut lengths.

EPCBC4
EPCRC4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑





d	Tolerance
Ø	0 ~ 0.02

Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EPCRC40300216U	3.0	0.2R	3.0	16	60	6	4
EPCRC40300220U	3.0	0.2R	3.0	20	60	6	4
EPCRC40300225U	3.0	0.2R	3.0	25	60	6	4
EPCRC40300230U	3.0	0.2R	3.0	30	75	6	4
EPCRC40300235U	3.0	0.2R	3.0	35	75	6	4
EPCRC40300310U	3.0	0.3R	3.0	10	50	6	4
EPCRC40300316U	3.0	0.3R	3.0	16	60	6	4
EPCRC40300320U	3.0	0.3R	3.0	20	60	6	4
EPCRC40300325U	3.0	0.3R	3.0	25	60	6	4
EPCRC40300330U	3.0	0.3R	3.0	30	75	6	4
EPCRC40300335U	3.0	0.3R	3.0	35	75	6	4
EPCRC40300510U	3.0	0.5R	3.0	10	50	6	4
EPCRC40300516U	3.0	0.5R	3.0	16	60	6	4
EPCRC40300520U	3.0	0.5R	3.0	20	60	6	4
EPCRC40300525U	3.0	0.5R	3.0	25	60	6	4
EPCRC40300530U	3.0	0.5R	3.0	30	75	6	4
EPCRC40300535U	3.0	0.5R	3.0	35	75	6	4
EPCRC40301010U	3.0	1.0R	3.0	10	50	6	4
EPCRC40301016U	3.0	1.0R	3.0	16	60	6	4
EPCRC40301020U	3.0	1.0R	3.0	20	60	6	4
EPCRC40301025U	3.0	1.0R	3.0	25	60	6	4
EPCRC40301030U	3.0	1.0R	3.0	30	75	6	4
EPCRC40301035U	3.0	1.0R	3.0	35	75	6	4
EPCRC40400113U	4.0	0.1R	4.0	13	50	6	4
EPCRC40400116U	4.0	0.1R	4.0	16	60	6	4
EPCRC40400120U	4.0	0.1R	4.0	20	60	6	4
EPCRC40400125U	4.0	0.1R	4.0	25	60	6	4
EPCRC40400130U	4.0	0.1R	4.0	30	75	6	4
EPCRC40400135U	4.0	0.1R	4.0	35	75	6	4
EPCRC40400213U	4.0	0.2R	4.0	13	50	6	4
EPCRC40400216U	4.0	0.2R	4.0	16	60	6	4
EPCRC40400220U	4.0	0.2R	4.0	20	60	6	4
EPCRC40400225U	4.0	0.2R	4.0	25	60	6	4
EPCRC40400230U	4.0	0.2R	4.0	30	75	6	4
EPCRC40400235U	4.0	0.2R	4.0	35	75	6	4
EPCRC40400313U	4.0	0.3R	4.0	13	50	6	4
EPCRC40400316U	4.0	0.3R	4.0	16	60	6	4
EPCRC40400320U	4.0	0.3R	4.0	20	60	6	4
EPCRC40400325U	4.0	0.3R	4.0	25	60	6	4
EPCRC40400330U	4.0	0.3R	4.0	30	75	6	4
EPCRC40400335U	4.0	0.3R	4.0	35	75	6	4
EPCRC40400513U	4.0	0.5R	4.0	13	50	6	4
EPCRC40400516U	4.0	0.5R	4.0	16	60	6	4
EPCRC40400520U	4.0	0.5R	4.0	20	60	6	4
EPCRC40400525U	4.0	0.5R	4.0	25	60	6	4
EPCRC40400530U	4.0	0.5R	4.0	30	75	6	4
EPCRC40400535U	4.0	0.5R	4.0	35	75	6	4
EPCRC40401013U	4.0	1.0R	4.0	13	50	6	4
EPCRC40401016U	4.0	1.0R	4.0	16	60	6	4
EPCRC40401020U	4.0	1.0R	4.0	20	60	6	4
EPCRC40401025U	4.0	1.0R	4.0	25	60	6	4
EPCRC40401030U	4.0	1.0R	4.0	30	75	6	4
EPCRC40401035U	4.0	1.0R	4.0	35	75	6	4
EPCRC40500116U	5.0	0.1R	5.0	16	60	6	4

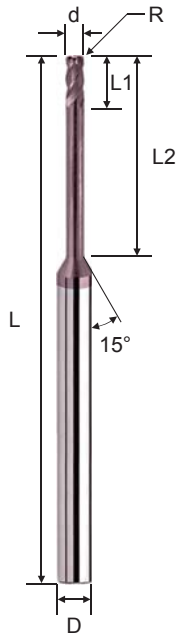
WINSTAR

CARBIDE ENDMILLS - Long Neck Corner Radius Type - 4F

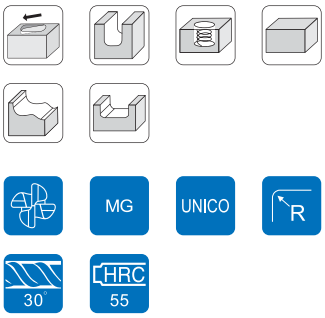
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Multiple flutes and ling neck design provides better surface in deep cutting.
- Available in various cut lengths.

EPCBC4
EPCRC4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



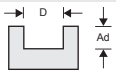
Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EPCRC40500130U	5.0	0.1R	5.0	30	60	6	4
EPCRC40500216U	5.0	0.2R	5.0	16	60	6	4
EPCRC40500230U	5.0	0.2R	5.0	30	60	6	4
EPCRC40500316U	5.0	0.3R	5.0	16	60	6	4
EPCRC40500330U	5.0	0.3R	5.0	30	60	6	4
EPCRC40500516U	5.0	0.5R	5.0	16	60	6	4
EPCRC40500530U	5.0	0.5R	5.0	30	60	6	4
EPCRC40501016U	5.0	1.0R	5.0	16	60	6	4
EPCRC40501030U	5.0	1.0R	5.0	30	60	6	4
EPCRC40600120U	6.0	0.1R	7.0	20	60	6	4
EPCRC40600130U	6.0	0.1R	7.0	30	60	6	4
EPCRC40600220U	6.0	0.2R	7.0	20	60	6	4
EPCRC40600230U	6.0	0.2R	7.0	30	60	6	4
EPCRC40600320U	6.0	0.3R	7.0	20	60	6	4
EPCRC40600330U	6.0	0.3R	7.0	30	60	6	4
EPCRC40600520U	6.0	0.5R	7.0	20	60	6	4
EPCRC40600530U	6.0	0.5R	7.0	30	60	6	4
EPCRC40601020U	6.0	1.0R	7.0	20	60	6	4
EPCRC40601030U	6.0	1.0R	7.0	30	60	6	4
EPCRC40601520U	6.0	1.5R	7.0	20	60	6	4
EPCRC40601530U	6.0	1.5R	7.0	30	60	6	4
EPCRC40800522U	8.0	0.5R	9.0	22	60	8	4
EPCRC40801022U	8.0	1.0R	9.0	22	60	8	4
EPCRC40801522U	8.0	1.5R	9.0	22	60	8	4
EPCRC40802022U	8.0	2.0R	9.0	22	60	8	4
EPCRC41000524U	10.0	0.5R	11.0	24	75	10	4
EPCRC41001024U	10.0	1.0R	11.0	24	75	10	4
EPCRC41001524U	10.0	1.5R	11.0	24	75	10	4
EPCRC41002024U	10.0	2.0R	11.0	24	75	10	4
EPCRC41200526U	12.0	0.5R	13.0	26	75	12	4
EPCRC41201026U	12.0	1.0R	13.0	26	75	12	4
EPCRC41201526U	12.0	1.5R	13.0	26	75	12	4
EPCRC41202026U	12.0	2.0R	13.0	26	75	12	4



d	Tolerance
Ø	0 ~ 0.02

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		HARDENED STEEL	
CODE	SCM, SKT, SKD		SKT, SKD	
HARDNESS	HRC 30 ~ 45		HRC 45 ~ 55	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1.0MM	11,700	1,100	10,200	910
1.5MM	9,900	1,100	9,000	1,000
2.0MM	11,000	1,100	10,200	1,020
2.5MM	9,200	1,200	8,500	1,000
3.0MM	9,600	1,800	8,900	1,800
4.0MM	7,900	1,370	6,600	1,330
6.0MM	4,900	1,470	2,900	850
8.0MM	4,000	1,600	2,400	680
10.0MM	3,200	1,750	1,900	540
12.0MM	2,500	1,800	1,500	430

Milling Amount (mm)



Please refer to 3xD table, reduce R.P.M. & Feed while efficient length is increasing.

G550 Series

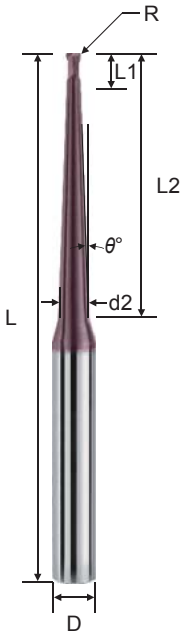
WINSTAR

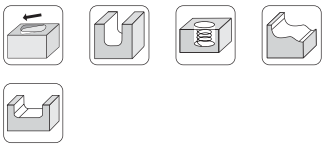
CARBIDE ENDMILLS - Taper Neck Corner Radius Type - 2F

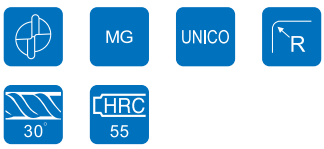
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Various tape angle makes it suitable for different applications.
- Small corner radius applied protect chipping of cutting edges.
  High strength of taper neck, can cut deep grooves without breaking.

EPCRT2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑







d	R Tolerance
Ø	± 0.02

Order No.	Dia. (d)	Corner Radius (R)	θ°	CL (L1)	EFF-L (L2)	OAL (L)	Shank (D)	Flutes (F)
EPCRT20100120HU	1.0	0.10R	0.5°	2.0	20	60	6	2
EPCRT201001201U	1.0	0.10R	1.0°	2.0	20	60	6	2
EPCRT20100120AU	1.0	0.10R	1.5°	2.0	20	60	6	2
EPCRT201201230HU2C	1.2	0.12R	0.5°	2.0	30	75	6	2
EPCRT2012012301U2C	1.2	0.12R	1.0°	2.0	30	75	6	2
EPCRT201201230AU2C	1.2	0.12R	1.5°	2.0	30	75	6	2
EPCRT201501530HU2C	1.5	0.15R	0.5°	2.0	30	75	6	2
EPCRT2015015301U2C	1.5	0.15R	1.0°	2.0	30	75	6	2
EPCRT201501530AU2C	1.5	0.15R	1.5°	2.0	30	75	6	2
EPCRT201801830HU2C	1.8	0.18R	0.5°	2.0	30	75	6	2
EPCRT2018018301U2C	1.8	0.18R	1.0°	2.0	30	75	6	2
EPCRT201801830AU2C	1.8	0.18R	1.5°	2.0	30	75	6	2
EPCRT20200225AU	2.0	0.20R	1.5°	3.0	25	75	6	2
EPCRT20200239AU	2.0	0.20R	1.5°	3.0	39	75	6	2
EPCRT20200525AU	2.0	0.50R	1.5°	3.0	25	75	6	2
EPCRT20200539AU	2.0	0.50R	1.5°	3.0	39	75	6	2
EPCRT20200550AU	2.0	0.50R	1.5°	3.0	50	100	6	2
EPCRT20200535HU4C	2.0	0.50R	0.5°	4.0	35	75	6	2
EPCRT202005351U4C	2.0	0.50R	1.0°	4.0	35	75	6	2
EPCRT20200535AU4C	2.0	0.50R	1.5°	4.0	35	75	6	2
EPCRT20201035HU4C	2.0	1.00R	0.5°	4.0	35	75	6	2
EPCRT202010351U4C	2.0	1.00R	1.0°	4.0	35	75	6	2
EPCRT20201035AU4C	2.0	1.00R	1.5°	4.0	35	75	6	2
EPCRT20250535HU5C	2.5	0.50R	0.5°	5.0	35	75	6	2
EPCRT202505351U5C	2.5	0.50R	1.0°	5.0	35	75	6	2
EPCRT20250535AU5C	2.5	0.50R	1.5°	5.0	35	75	6	2
EPCRT20251035HU5C	2.5	1.00R	0.5°	5.0	35	75	6	2
EPCRT202510351U5C	2.5	1.00R	1.0°	5.0	35	75	6	2
EPCRT20251035AU5C	2.5	1.00R	1.5°	5.0	35	75	6	2
EPCRT20300525AU	3.0	0.50R	1.5°	4.5	25	75	6	2
EPCRT20301025AU	3.0	1.00R	1.5°	4.5	25	75	6	2
EPCRT20301039AU	3.0	1.00R	1.5°	4.5	39	75	6	2
EPCRT20301050AU	3.0	1.00R	1.5°	4.5	50	100	6	2
EPCRT20300535HU5C	3.0	0.50R	0.5°	5.0	35	75	6	2
EPCRT203005351U5C	3.0	0.50R	1.0°	5.0	35	75	6	2
EPCRT20300535AU5C	3.0	0.50R	1.5°	5.0	35	75	6	2
EPCRT20301035HU5C	3.0	1.00R	0.5°	5.0	35	75	6	2
EPCRT203010351U5C	3.0	1.00R	1.0°	5.0	35	75	6	2
EPCRT20301035AU5C	3.0	1.00R	1.5°	5.0	35	75	6	2
EPCRT20350535HU	3.5	0.50R	0.5°	5.0	35	75	6	2
EPCRT203505351U	3.5	0.50R	1.0°	5.0	35	75	6	2
EPCRT20350535AU	3.5	0.50R	1.5°	5.0	35	75	6	2
EPCRT20351035HU	3.5	1.00R	0.5°	5.0	35	75	6	2
EPCRT203510351U	3.5	1.00R	1.0°	5.0	35	75	6	2
EPCRT20351035AU	3.5	1.00R	1.5°	5.0	35	75	6	2
EPCRT20400545HU	4.0	0.50R	0.5°	6.0	45	100	6	2
EPCRT204005451U	4.0	0.50R	1.0°	6.0	45	100	6	2
EPCRT20400525AU	4.0	0.50R	1.5°	6.0	25	75	6	2
EPCRT20400545AU	4.0	0.50R	1.5°	6.0	45	100	6	2
EPCRT20401045HU	4.0	1.00R	0.5°	6.0	45	100	6	2
EPCRT204010451U	4.0	1.00R	1.0°	6.0	45	100	6	2
EPCRT20401025AU	4.0	1.00R	1.5°	6.0	25	75	6	2
EPCRT20401045AU	4.0	1.00R	1.5°	6.0	45	100	6	2
EPCRT20501025AU	5.0	1.00R	1.5°	7.5	25	75	6	2
EPCRT20501050AU	5.0	1.00R	1.5°	7.5	50	100	8	2
EPCRT20601035AU	6.0	1.00R	1.5°	9.0	35	75	8	2
EPCRT20601050AU	6.0	1.00R	1.5°	9.0	50	100	10	2

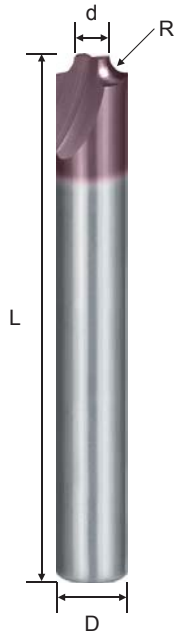
WINSTAR

CARBIDE ENDMILLS - Inner Radius Type - 2F

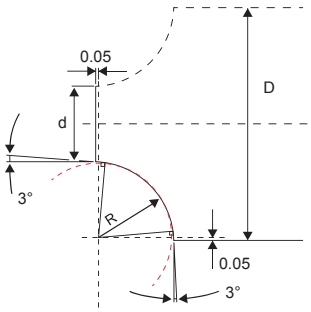
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Inner radius tools are suitable for chamfering with round corner application.

EPIFA2
EPISA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑

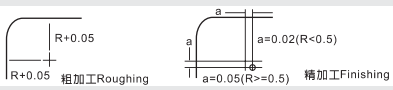


Order No.	Corner Radius (R)	Dia. (d1)	OAL (L)	Shank (D)	Flutes (F)
EPIFA202905U	0.5R	2.9	50	4	2
EPISA204905U	0.5R	4.9	50	6	2
EPIFA201910U	1.0R	1.9	50	4	2
EPISA203910U	1.0R	3.9	50	6	2
EPISA205910U	1.0R	5.9	60	8	2
EPISA204915U	1.5R	4.9	60	8	2
EPISA205920U	2.0R	5.9	75	10	2
EPISA204925U	2.5R	4.9	75	10	2
EPISA205930U	3.0R	5.9	75	12	2
EPISA203940U	4.0R	3.9	75	12	2
EPISA205950U	5.0R	5.9	75	16	2
EPISA203960U	6.0R	3.9	75	16	2



WORKING MATERIAL	CARBON STEEL			ALLOY STEEL / TOOL STEEL			HARDENED STEEL		
CODE	S50C			SCM, SKD			SKT, SKD		
HARDNESS	HRC < 20			HRC 30 ~ 40			HRC 40~50		
Vc	30~40 M/min			20~30 M/min			15~25 M/min		
DIAMETER	R.P.M	ROUGHING FEED (mm/min)	FINISHING FEED (mm/min)	R.P.M	ROUGHING FEED (mm/min)	FINISHING FEED (mm/min)	R.P.M	ROUGHING FEED (mm/min)	FINISHING FEED (mm/min)
0.50R	8,800	50	80	6,400	40	55	5,100	30	50
0.75R	7,200	50	80	5,100	40	55	4,100	30	50
1.00R	5,000	50	80	3,500	40	55	3,400	30	50
1.25R	4,300	50	80	3,100	40	55	2,900	30	50
1.50R	3,000	50	80	2,200	40	55	2,600	30	50
2.00R	2,600	50	80	1,900	40	55	2,200	30	50
2.50R	2,200	50	80	1,800	40	55	2,000	30	50
3.00R	2,000	50	80	1,600	40	55	1,700	30	50
4.00R	1,500	50	80	1,200	40	55	1,300	30	50
5.00R	1,300	50	80	960	40	55	1,000	30	50
6.00R	1,200	50	80	880	40	55	900	30	50

MG UNICO R 0 HRC 48

Milling Amount (mm)		· Divide the cutting depth into several time paths. · Use cutting fluid.

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G550 Series

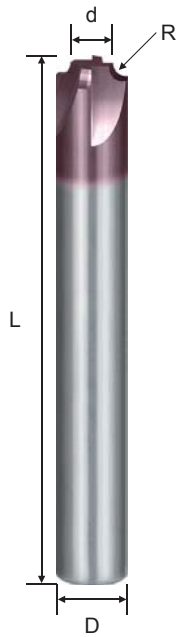
WINSTAR

CARBIDE ENDMILLS - Inner Radius Type - 4F

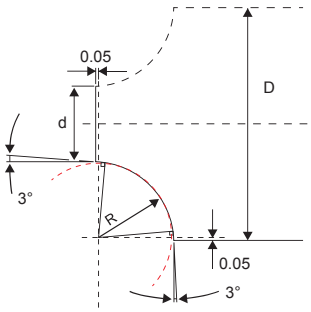
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 30 to HRC 55 Ordinary Steel, Alloy Steel, Cast Iron, Heat-Resistant Steel, etc.
- Inner radius and multiple flutes tools are suitable for good chamfering surfaces with round corner.

EPIFA4
EPISA4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑

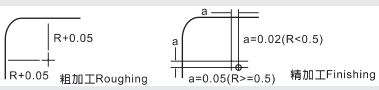


Order No.	Corner Radius (R)	Dia. (d1)	OAL (L)	Shank (D)	Flutes (F)
EPIFA402905U	0.5R	2.9	50	4	4
EPISA404905U	0.5R	4.9	50	6	4
EPIFA401910U	1.0R	1.9	50	4	4
EPISA403910U	1.0R	3.9	50	6	4
EPISA405910U	1.0R	5.9	60	8	4
EPISA404915U	1.5R	4.9	60	8	4
EPISA405920U	2.0R	5.9	75	10	4
EPISA404925U	2.5R	4.9	75	10	4
EPISA405930U	3.0R	5.9	75	12	4
EPISA403940U	4.0R	3.9	75	12	4
EPISA405950U	5.0R	5.9	75	16	4
EPISA403960U	6.0R	3.9	75	16	4



WORKING MATERIAL	CARBON STEEL			ALLOY STEEL / TOOL STEEL			HARDENED STEEL		
CODE	S50C			SCM, SKD			SKT, SKD		
HARDNESS	HRC < 20			HRC 30 ~ 40			HRC 40~50		
Vc	30~40 M/min			20~30 M/min			15~25 M/min		
DIAMETER	R.P.M	ROUGHING FEED (mm/min)	FINISHING FEED (mm/min)	R.P.M	ROUGHING FEED (mm/min)	FINISHING FEED (mm/min)	R.P.M	ROUGHING FEED (mm/min)	FINISHING FEED (mm/min)
0.50R	8,800	50	80	6,400	40	55	5,100	30	50
0.75R	7,200	50	80	5,100	40	55	4,100	30	50
1.00R	5,000	50	80	3,500	40	55	3,400	30	50
1.25R	4,300	50	80	3,100	40	55	2,900	30	50
1.50R	3,000	50	80	2,200	40	55	2,600	30	50
2.00R	2,600	50	80	1,900	40	55	2,200	30	50
2.50R	2,200	50	80	1,800	40	55	2,000	30	50
3.00R	2,000	50	80	1,600	40	55	1,700	30	50
4.00R	1,500	50	80	1,200	40	55	1,300	30	50
5.00R	1,300	50	80	960	40	55	1,000	30	50
6.00R	1,200	50	80	880	40	55	900	30	50

MG UNICO R 0 HRC 48

Milling Amount (mm)		· Divide the cutting depth into several time paths. · Use cutting fluid.

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

M500 series

up to HRC 50

- Our ARCO coating provides a superior wear resistance.
- For difficult to cut materials like Stainless Steel, Titanium, Inconel, Alloy Steel, etc.
- Incredible toughness and vibration reduction at high speeds.
- High precise tolerance End Mills.
- UMG carbide grade is suitable for cutting difficult materials.
- Anti-vibrations capabilities at high speeds and hi remove rate.
- Varix Technology with different helix angles (35 ° and 38 °) improves cutting performance.

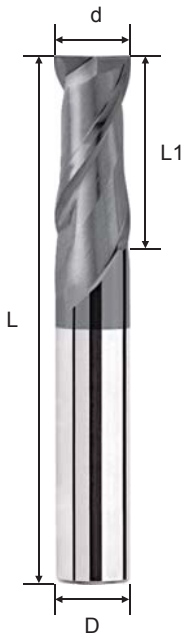
WINSTAR

CARBIDE ENDMILLS - Square Type - 2F

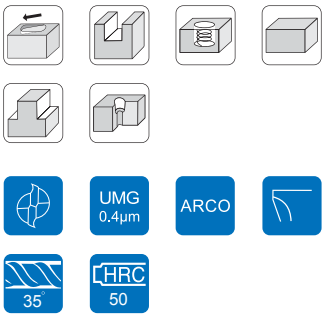
- ARCO coating provides a superior wear resistance.
- For difficult to cut materials like Stainless Steel, Titanium, Inconel, Alloy Steel, etc.
- Incredible toughness and vibration reduction at high speeds.
- UMG carbide grade is suitable for cutting difficult materials.

ESSFA2
ESSSA2

P	M	K	N	S	H
☑	☑	☐	☐	☑	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
ESSFA203000A	3	8	50	4	2
ESSFA204000A	4	10	50	4	2
ESSSA204000A	4	10	50	6	2
ESSSA205000A	5	13	50	6	2
ESSSA206000A	6	15	50	6	2
ESSSA208000A	8	20	60	8	2
ESSSA210000A	10	25	75	10	2
ESSSA212000A	12	30	75	12	2
ESSSA214000A	14	30	75	14	2
ESSSA216000A	16	35	100	16	2

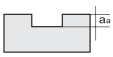


WORKING MATERIAL	STAINLESS 304		Moderately Difficults SUS		STAINLESS 316 L		TITANIUM (ALLOYS)		SOFT STEEL		SG CAST IRON		High Temperature ALLOYS	
Vc	72~90 M/min		56~70 M/min		48~60 M/min		40~56 M/min		120~160 M/min		96~120 M/min		20~25 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
4MM	7,452	458	4,459	286	3,822	183	3,185	122	9,554	764	7,643	611	1,592	56
5MM	4,586	440	3,567	286	3,057	245	2,548	122	7,643	734	6,115	587	1,274	45
6MM	3,822	489	2,972	333	2,548	245	2,123	136	6,369	815	5,096	652	1,062	58
8MM	2,866	458	2,229	321	1,911	245	1,592	153	4,777	917	3,822	734	796	69
10MM	2,293	440	1,783	286	1,529	220	1,274	124	3,822	734	3,057	587	637	55
12MM	1,911	398	1,486	262	1,274	204	1,062	136	3,185	714	2,548	570	531	65
14MM	1,638	351	1,274	232	1,092	185	910	126	2,730	637	2,184	510	455	65
16MM	1,433	321	1,115	214	955	168	796	114	2,389	574	1,911	458	398	62

d	Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03

Milling Amount (mm)

	aa
D≦ø3	0.15D
ø3 < D	0.20D



	aa
D≦ø6	0.10D
ø6 < D	0.15D

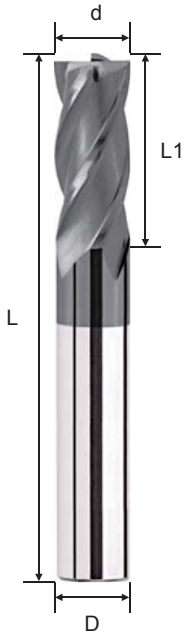
The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

CARBIDE ENDMILLS - Square Type - 4F

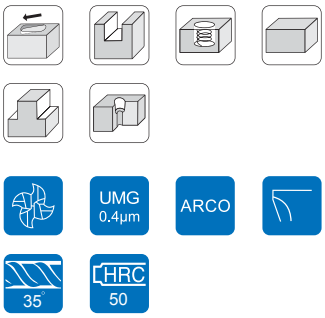
- ARCO coating provides a superior wear resistance.
- For difficult to cut materials like Stainless Steel, Titanium, Inconel, Alloy Steel, etc.
- Incredible toughness and vibration reduction at high speeds.
- High precise tolerance EndMills.
- UMG carbide grade is suitable for cutting difficult materials.

ESSFA4
ESSSA4

P	M	K	N	S	H
☑	☑	☐	☐	☑	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
ESSFA403000A	3	8	50	4	4
ESSFA404000A	4	10	50	4	4
ESSSA404000A	4	10	50	6	4
ESSSA405000A	5	13	50	6	4
ESSSA406000A	6	15	50	6	4
ESSSA408000A	8	20	60	8	4
ESSSA410000A	10	25	75	10	4
ESSSA412000A	12	30	75	12	4
ESSSA414000A	14	30	75	14	4
ESSSA416000A	16	35	100	16	4



d	Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03

WORKING MATERIAL	STAINLESS 304		Moderately Difficults SUS		STAINLESS 316 L		TITANIUM (ALLOYS)		SOFT STEEL		SG CAST IRON		High Temperature ALLOYS	
Vc	72~90 M/min		56~70 M/min		48~60 M/min		40~56 M/min		120~160 M/min		96~120 M/min		20~25 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
4MM	5,732	458	4,459	286	3,822	183	3,185	122	9,554	764	7,643	611	1,592	56
5MM	4,586	440	3,567	286	3,057	245	2,548	122	7,643	734	6,115	587	1,274	45
6MM	3,822	489	2,972	333	2,548	245	2,123	136	6,369	815	5,096	652	1,062	58
8MM	2,866	458	2,229	321	1,911	245	1,592	153	4,777	917	3,822	734	796	69
10MM	2,293	440	1,783	286	1,529	220	1,274	124	3,822	734	3,057	587	637	55
12MM	1,911	398	1,486	262	1,274	204	1,062	136	3,185	714	2,548	570	531	65
14MM	1,638	351	1,274	232	1,092	185	910	126	2,730	637	2,184	510	455	65
16MM	1,433	321	1,115	214	955	168	796	114	2,389	574	1,911	458	398	62

Milling Amount (mm)

	a_a	a_r
D<ø 6	1.0D	0.02D
ø6 ≦ D	1.0D	0.05D

	a_a	a_r
D < ø 6	1.0D	0.01D
ø 6 ≦ D	1.0D	0.02D

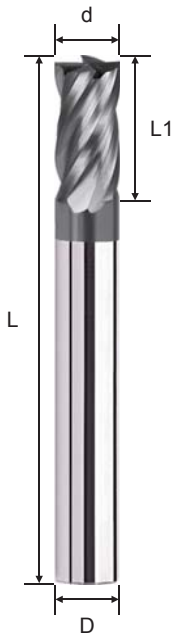
The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

CARBIDE ENDMILLS - Anti-Vibration Square Type - 4F

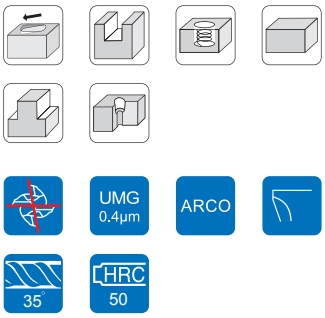
- ARCO coating provides a superior wear resistance.
- For difficult to cut materials like Stainless Steel, Titanium, Inconel, Alloy Steel, etc.
- Unequal axis and sophisticated geometry design provides outstanding Anti-vibrations capabilities at high speeds.
- UMG carbide grade is suitable for cutting difficult materials.

ESSSD4

P	M	K	N	S	H
☑	☑	☐	☐	☑	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
ESSSD405000A	5	13	50	6	4
ESSSD406000A	6	13	50	6	4
ESSSD408000A	8	16	60	8	4
ESSSD410000A	10	20	75	10	4
ESSSD412000A	12	24	75	12	4
ESSSD416000A	16	30	100	16	4



d	Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03

WORKING MATERIAL	STAINLESS 304		Moderately difficults SUS		STAINLESS 316 L		TITANIUM (ALLOYS)		SOFT STEEL		SG CAST IRON		High Temperature ALLOYS	
Vc	72~90 M/min		56~70 M/min		48~60 M/min		40~56 M/min		120~160 M/min		96~120 M/min		20~25 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
4MM	5,732	573	4,459	357	3,822	229	3,185	153	9,554	955	7,643	764	1,592	70
5MM	4,586	550	3,567	357	3,057	306	2,548	153	7,643	917	6,115	734	1,274	56
6MM	3,822	611	2,972	416	2,548	306	2,123	170	6,369	1,019	5,096	815	1,062	72
8MM	2,866	573	2,229	401	1,911	306	1,592	191	4,777	1,146	3,822	917	796	86
10MM	2,293	550	1,783	357	1,529	275	1,274	155	3,822	917	3,057	734	637	69
12MM	1,911	497	1,486	327	1,274	255	1,062	170	3,185	892	2,548	713	531	81
14MM	1,638	439	1,274	290	1,092	231	910	157	2,730	797	2,184	638	455	82
16MM	1,433	401	1,115	268	955	210	796	143	2,389	717	1,911	573	398	78

Milling Amount (mm)	a_a = 1.0D a_r = 0.5D	a_a = 1.0D a_r = 0.2D
	a_d = 1.0D	a_d = 0.3D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

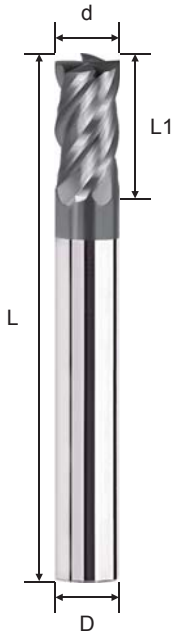
WINSTAR

CARBIDE ENDMILLS - Varix & Anti-Vibration Square Type - 4F

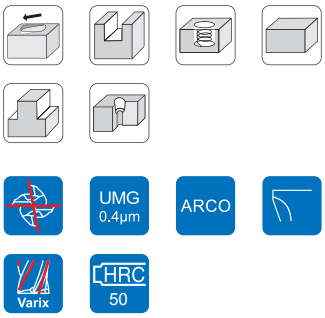
- ARCO coating provides a superior wear resistance.
- For difficult to cut materials like Stainless Steel, Titanium, Inconel, Alloy Steel, etc.
- Unequal axis and sophisticated geometry design provides outstanding Anti-vibrations capabilities at high speeds.
- Varix Technology with different helix angles (35 ° and 38 °) improves cutting performance.
- Provides the highest cutting action for aerospace applications.

ESSSV4

P	M	K	N	S	H
☑	☑	☐	☐	☑	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
ESSSV404000A	4	10	50	6	4
ESSSV405000A	5	13	50	6	4
ESSSV406000A	6	13	50	6	4
ESSSV408000A	8	16	60	8	4
ESSSV410000A	10	20	75	10	4
ESSSV412000A	12	24	75	12	4
ESSSV416000A	16	30	100	16	4



d	Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03

WORKING MATERIAL	STAINLESS 304		Moderately difficults SUS		STAINLESS 316 L		TITANIUM (ALLOYS)		SOFT STEEL		SG CAST IRON		High Temperature ALLOYS	
Vc	72~90 M/min		56~70 M/min		48~60 M/min		40~56 M/min		120~160 M/min		96~120 M/min		20~25 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
4MM	5,732	573	4,459	357	3,822	229	3,185	153	9,554	955	7,643	764	1,592	70
5MM	4,586	550	3,567	357	3,057	306	2,548	153	7,643	917	6,115	734	1,274	56
6MM	3,822	611	2,972	416	2,548	306	2,123	170	6,369	1,019	5,096	815	1,062	72
8MM	2,866	573	2,229	401	1,911	306	1,592	191	4,777	1,146	3,822	917	796	86
10MM	2,293	550	1,783	357	1,529	275	1,274	155	3,822	917	3,057	734	637	69
12MM	1,911	497	1,486	327	1,274	255	1,062	170	3,185	892	2,548	713	531	81
14MM	1,638	439	1,274	290	1,092	231	910	157	2,730	797	2,184	638	455	82
16MM	1,433	401	1,115	268	955	210	796	143	2,389	717	1,911	573	398	78

Milling Amount (mm)	a_a = 1.0D a_r = 0.5D	a_a = 1.0D a_r = 0.2D
	a_d = 1.0D	a_d = 0.3D

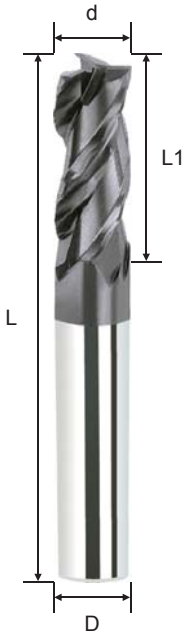
The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

CARBIDE ENDMILLS - Wave Edge Square Type - 3F

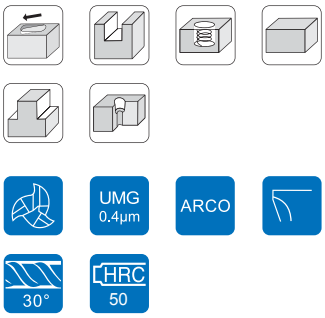
- ARCO coating provides a superior wear resistance.
- For difficult to cut materials like Stainless Steel, Titanium, Inconel, Alloy Steel, etc.
- Incredible toughness and vibration reduction at high speeds.
- UMG carbide grade is suitable for cutting difficult materials.
- Wave type increases the performance.

ESSSW3

P	M	K	N	S	H
☑	☑	☐	☐	☑	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
ESSSW306000A	6	15	50	6	3
ESSSW308000A	8	20	60	8	3
ESSSW310000A	10	25	75	10	3
ESSSW312000A	12	30	75	12	3
ESSSW316000A	16	40	100	16	3
ESSSW320000A	20	45	100	20	3



d	Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1MM	26,000	190	22,230	140	18,720	100	10,400	40	22,230	165	32,760	240
2MM	14,040	235	11,232	160	9,360	110	5,616	45	11,232	185	16,380	270
3MM	9,828	270	7,488	175	6,084	120	3,900	55	7,488	205	11,232	310
4MM	7,020	260	5,616	175	4,680	120	2,808	50	5,616	205	8,424	310
5MM	5,850	270	4,446	175	3,744	120	2,340	55	4,446	205	6,552	300
6MM	4,680	260	3,744	175	3,042	120	1,872	50	3,744	205	5,616	310
8MM	3,510	260	2,808	175	2,340	120	1,404	50	2,808	205	4,212	310
10MM	2,808	260	2,223	175	1,872	120	1,131	50	2,223	205	3,276	300
12MM	2,340	260	1,872	175	1,560	120	936	50	1,872	205	2,808	310
14MM	2,340	300	1,768	195	1,482	135	936	60	1,768	230	2,600	335
16MM	2,028	300	2,730	345	1,300	135	819	60	2,730	400	2,340	345
18MM	2,028	305	1,378	175	1,144	120	819	60	1,378	205	2,080	310
20MM	1,560	260	1,248	175	1,040	120	624	50	1,248	205	1,820	300

Milling Amount (mm)

	aa	ar
D<ø6	1.0D	0.02D
ø6 ≦ D	1.0D	0.05D

	aa	ar
D < ø6	1.0D	0.01D
ø6 ≦ D	1.0D	0.02D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

WINSTAR

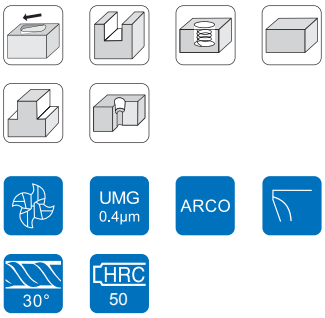
CARBIDE ENDMILLS - Wave Edge Square Type - 4F

- ARCO coating provides a superior wear resistance.
- For difficult to cut materials like Stainless Steel, Titanium, Inconel, Alloy Steel, etc.
- Incredible toughness and vibration reduction at high speeds.
- UMG carbide grade is suitable for cutting difficult materials.
- Wave type increases the performance.

ESSSW4

P	M	K	N	S	H
☑	☑	☐	☐	☑	☐

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
ESSSW406000A	6	15	50	6	4
ESSSW408000A	8	20	60	8	4
ESSSW410000A	10	25	75	10	4
ESSSW412000A	12	30	75	12	4
ESSSW416000A	16	40	100	16	4
ESSSW420000A	20	45	100	20	4



d	Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1MM	26,000	190	22,230	140	18,720	100	10,400	40	22,230	165	32,760	240
2MM	14,040	235	11,232	160	9,360	110	5,616	45	11,232	185	16,380	270
3MM	9,828	270	7,488	175	6,084	120	3,900	55	7,488	205	11,232	310
4MM	7,020	260	5,616	175	4,680	120	2,808	50	5,616	205	8,424	310
5MM	5,850	270	4,446	175	3,744	120	2,340	55	4,446	205	6,552	300
6MM	4,680	260	3,744	175	3,042	120	1,872	50	3,744	205	5,616	310
8MM	3,510	260	2,808	175	2,340	120	1,404	50	2,808	205	4,212	310
10MM	2,808	260	2,223	175	1,872	120	1,131	50	2,223	205	3,276	300
12MM	2,340	260	1,872	175	1,560	120	936	50	1,872	205	2,808	310
14MM	2,340	300	1,768	195	1,482	135	936	60	1,768	230	2,600	335
16MM	2,028	300	2,730	345	1,300	135	819	60	2,730	400	2,340	345
18MM	2,028	305	1,378	175	1,144	120	819	60	1,378	205	2,080	310
20MM	1,560	260	1,248	175	1,040	120	624	50	1,248	205	1,820	300

Milling Amount (mm)

	aa	ar
D<ø6	1.0D	0.02D
ø6 ≦ D	1.0D	0.05D

	aa	ar
D < ø6	1.0D	0.01D
ø6 ≦ D	1.0D	0.02D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

M500 Series

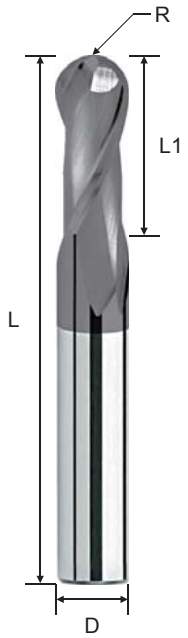
WINSTAR

CARBIDE ENDMILLS - Ball Nose Type - 2F

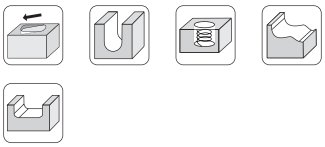
- ARCO coating provides a superior wear resistance.
- For difficult to cut materials like Stainless Steel, Titanium, Inconel, Alloy Steel, etc.
- Incredible toughness and vibration reduction at hi speeds, suitable for high performance profile milling.
- New tool geometry increases wear resistance and cutting force is decreased
- UMG carbide grade is suitable for cutting difficult materials.

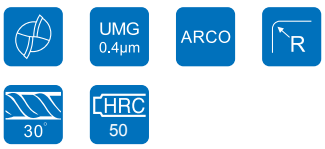
ESBFA2
ESBSA2

P	M	K	N	S	H
☑	☑	☐	☐	☑	☐



Order No.	Radius (R)	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
ESBFA202000A	1.0R	2	4	50	4	2
ESBFA203000A	1.5R	3	6	50	4	2
ESBFA204000A	2.0R	4	8	50	4	2
ESBSA204000A	2.0R	4	8	50	6	2
ESBSA205000A	2.5R	5	10	50	6	2
ESBSA206000A	3.0R	6	12	50	6	2
ESBSA208000A	4.0R	8	16	60	8	2
ESBSA210000A	5.0R	10	20	75	10	2
ESBSA212000A	6.0R	12	24	75	12	2
ESBSA214000A	7.0R	14	28	75	14	2
ESBSA216000A	8.0R	16	32	100	16	2

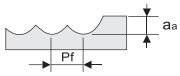
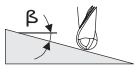




d	R Tolerance
Ø ≦ 12	± 0.01
Ø > 12	± 0.015

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~55		–		–	
Vc	94 M/min		71 M/min		44 M/min		38 M/min		71 M/min		94 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.5R	46,800	545	42,120	420	28,080	230	18,720	110	42,120	490	58,500	685
1.0R	26,676	700	21,060	470	15,210	280	10,660	140	21,060	555	29,718	780
2.0R	14,976	875	11,232	560	8,190	335	5,980	175	11,232	655	14,976	875
3.0R	9,828	860	7,488	560	4,914	300	3,926	170	7,488	655	9,828	860
4.0R	7,488	875	5,616	560	3,744	305	2,990	175	5,616	655	7,488	875
5.0R	5,967	870	4,446	550	2,808	285	2,379	175	4,446	650	5,967	870
6.0R	4,914	860	3,744	560	2,340	285	1,976	175	3,744	655	4,914	860
8.0R	4,160	970	3,120	620	2,028	330	1,664	195	3,120	730	4,160	970
10.0R	3,380	890	2,496	560	1,690	310	1,352	175	2,496	655	3,380	890

When β is less than 15° milling speed and feed speed in the table can be increased 1.0-1.2 times.

Milling Amount (mm)	a_a = 0.02D Pf = 0.05D		

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

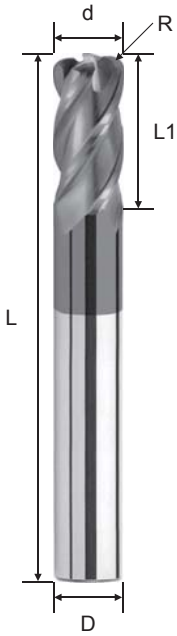
WINSTAR

CARBIDE ENDMILLS - Corner Radius Type - 4F

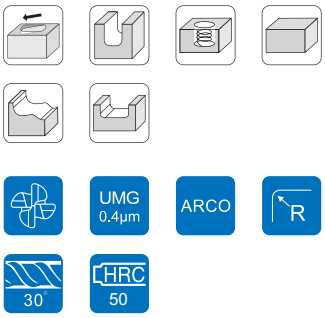
- ARCO coating provides a superior wear resistance.
- For difficult to cut materials like Stainless Steel, Titanium, Inconel, Alloy Steel, etc.
- Incredible toughness and vibration reduction at high speeds.
- Corner geometry and stronger design makes it suitable for cutting difficult material.

ESCSA4

P	M	K	N	S	H
☑	☑	☐	☐	☑	☐



Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
ESCSA403003A	3	0.3R	6	50	6	4
ESCSA403005A	3	0.5R	6	50	6	4
ESCSA403010A	3	1.0R	6	50	6	4
ESCSA404003A	4	0.3R	8	50	6	4
ESCSA404005A	4	0.5R	8	50	6	4
ESCSA404010A	4	1.0R	8	50	6	4
ESCSA405003A	5	0.3R	10	50	6	4
ESCSA405005A	5	0.5R	10	50	6	4
ESCSA406003A	6	0.3R	12	50	6	4
ESCSA406005A	6	0.5R	12	50	6	4
ESCSA406010A	6	1.0R	12	50	6	4
ESCSA408005A	8	0.5R	16	60	8	4
ESCSA408010A	8	1.0R	16	60	8	4
ESCSA408015A	8	1.5R	16	60	8	4
ESCSA410005A	10	0.5R	20	75	10	4
ESCSA410010A	10	1.0R	20	75	10	4
ESCSA410015A	10	1.5R	20	75	10	4
ESCSA410020A	10	2.0R	20	75	10	4
ESCSA412005A	12	0.5R	24	75	12	4
ESCSA412010A	12	1.0R	24	75	12	4
ESCSA412015A	12	1.5R	24	75	12	4
ESCSA412020A	12	2.0R	24	75	12	4
ESCSA412030A	12	3.0R	24	75	12	4



WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	9,828	455	7,098	295	6,084	195	3,900	90	7,488	345	11,232	520
4MM	7,020	430	5,616	295	4,680	200	2,808	85	5,616	345	8,424	520
5MM	5,850	450	4,446	290	3,744	200	2,340	90	4,446	345	6,552	505
6MM	4,680	430	3,744	295	3,042	195	1,872	85	3,744	345	5,616	520
8MM	3,510	430	2,808	295	2,340	200	1,404	85	2,808	345	4,212	520
10MM	2,808	430	2,223	290	1,872	200	1,131	85	2,223	340	3,276	505
12MM	2,340	430	1,872	295	1,560	200	936	85	1,872	345	2,808	520

d	Tolerance
Ø < 3	0 ~ -0.03
3 ≦ Ø ≦ 10	0 ~ -0.04
Ø > 10	0 ~ -0.05
R	± 0.015

Milling Amount (mm)

	a_a	a_r
D<ø 6	1.0D	0.02D
ø6 ≦ D	1.0D	0.05D

	a_a	a_r
D < ø 6	1.0D	0.01D
ø 6 ≦ D	1.0D	0.02D

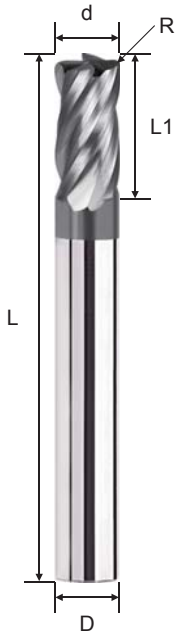
The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

CARBIDE ENDMILLS - Varix & Anti-Vibration Corner Radius Type - 4F

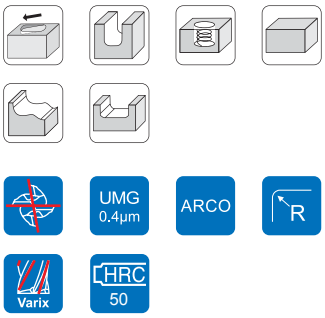
- ARCO coating provides a superior wear resistance.
- For difficult to cut materials like Stainless Steel, Titanium, Inconel, Alloy Steel, etc.
- Unequal axis and sophisticated geometry design provides outstanding Anti-vibrations capabilities at high speeds.
- Varix Technology to improve cutting performance.

ESCSV4

P	M	K	N	S	H
☑	☑	☐	☐	☑	☐



Order No.	Dia. (d)	Corner Radius (R)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
ESCSV404003A	4	0.3R	8	50	4	4
ESCSV405003A	5	0.3R	10	50	6	4
ESCSV406005A	6	0.5R	12	50	6	4
ESCSV408005A	8	0.5R	16	60	8	4
ESCSV410005A	10	0.5R	20	75	10	4
ESCSV412005A	12	0.5R	24	75	12	4
ESCSV412010A	12	1.0R	24	75	12	4
ESCSV416010A	16	1.0R	32	100	16	4



d	Tolerance
Ø < 3	0 ~ -0.03
3 ≦ Ø ≦ 10	0 ~ -0.04
Ø > 10	0 ~ -0.05
R	± 0.015

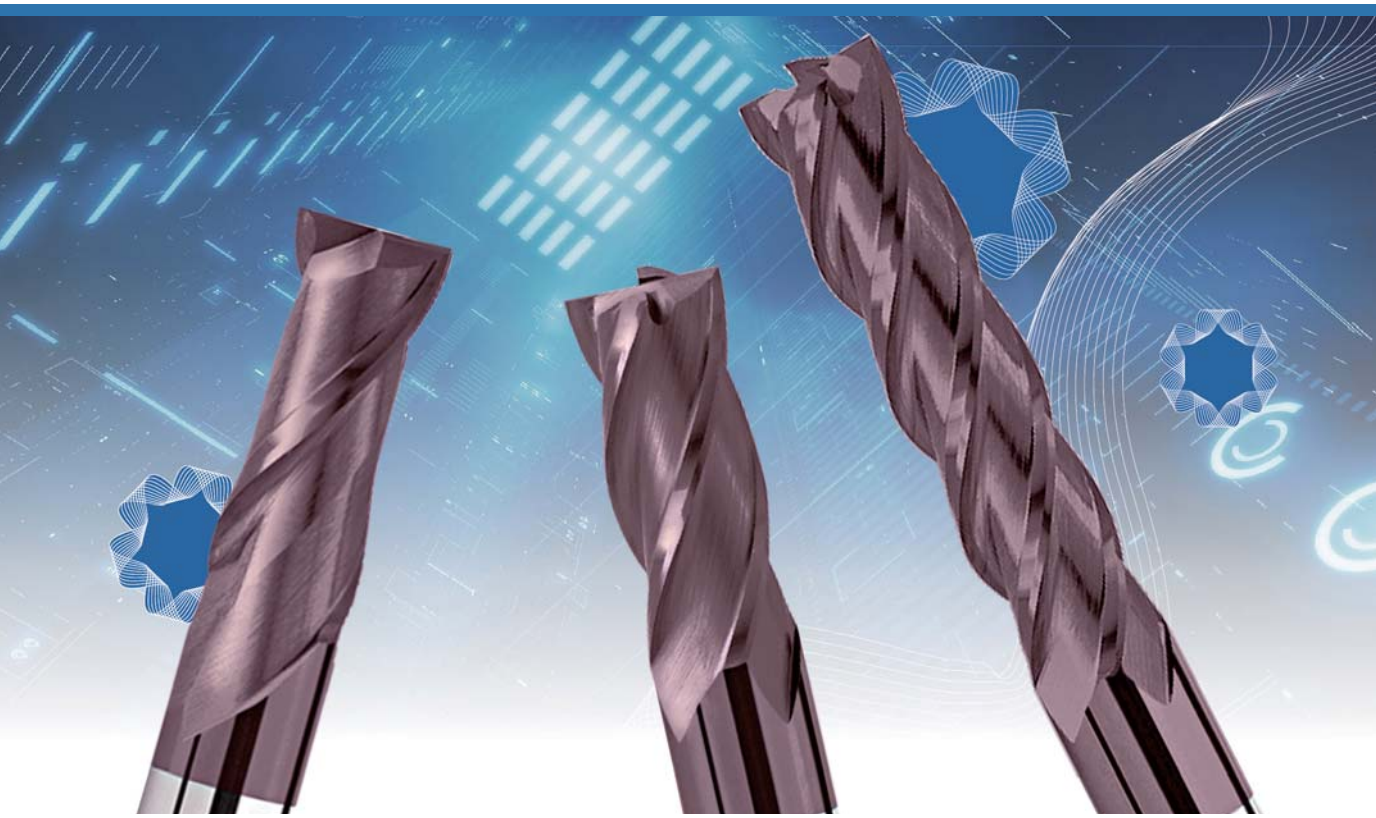
WORKING MATERIAL	STAINLESS 304		Moderately difficults SUS		STAINLESS 316 L		TITANIUM (ALLOYS)		SOFT STEEL		SG CAST IRON		High Temperature ALLOYS	
Vc	72~90 M/min		56~70 M/min		48~60 M/min		40~56 M/min		120~160 M/min		96~120 M/min		20~25 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
4MM	5,732	573	4,459	357	3,822	229	3,185	153	9,554	955	7,643	764	1,592	70
5MM	4,586	550	3,567	357	3,057	306	2,548	153	7,643	917	6,115	734	1,274	56
6MM	3,822	611	2,972	416	2,548	306	2,123	170	6,369	1,019	5,096	815	1,062	72
8MM	2,866	573	2,229	401	1,911	306	1,592	191	4,777	1,146	3,822	917	796	86
10MM	2,293	550	1,783	357	1,529	275	1,274	155	3,822	917	3,057	734	637	69
12MM	1,911	497	1,486	327	1,274	255	1,062	170	3,185	892	2,548	713	531	81
14MM	1,638	439	1,274	290	1,092	231	910	157	2,730	797	2,184	638	455	82
16MM	1,433	401	1,115	268	955	210	796	143	2,389	717	1,911	573	398	78

Milling Amount (mm)	a_a = 1.0D a_r = 0.5D	a_a = 1.0D a_r = 0.2D
	a_d = 1.0D	a_d = 0.3D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G450 series

up to HRC 48



- Our UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 20 to HRC 48 Steel, Alloy Steel, Cast Iron, Aluminum Alloy (Si >15%).
- Provides low run out tolerance.
- Excellent cutting ability of cutting edges.
- High precision cutting.
- Positive Geometry design is suitable for better shearing.
- Long flutes is available in various length of cut and overall length end mills.
- Long Shank is available in various length of cut and overall length end mills.

G450 Series

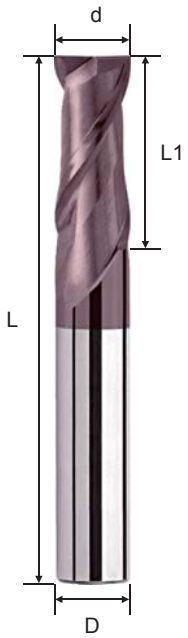
WINSTAR

CARBIDE ENDMILLS - Square Type - 2F

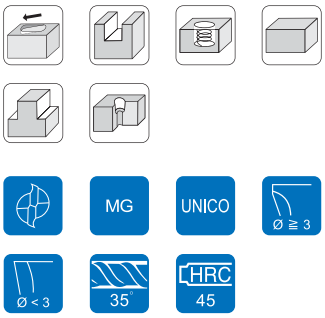
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 20 to HRC 45 Steel, Alloy Steel, Cast Iron, Aluminum Alloy (Si >15%).
- Excellent cutting ability of cutting edges.
- High precision cutting.
- Positive Geometry design is suitable for better shearing.

EPSFA2
EPSSA2

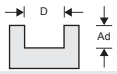
P	M	K	N	S	H
☑	☑	☑	☐	☐	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPSFA201000U	1.0	3	50	4	2
EPSFA201500U	1.5	4	50	4	2
EPSFA202000U	2.0	5	50	4	2
EPSFA202500U	2.5	6	50	4	2
EPSFA203000U	3.0	8	50	4	2
EPSSA203000U	3.0	8	50	6	2
EPSSA203500U	3.5	9	50	6	2
EPSFA204000U	4.0	10	50	4	2
EPSSA204000U	4.0	10	50	6	2
EPSSA204500U	4.5	11	50	6	2
EPSSA205000U	5.0	13	50	6	2
EPSSA205500U	5.5	14	50	6	2
EPSSA206000U	6.0	15	50	6	2
EPSSA206500U	6.5	16	60	8	2
EPSSA207000U	7.0	18	60	8	2
EPSSA208000U	8.0	20	60	8	2
EPSSA209000U	9.0	22	75	10	2
EPSSA210000U	10.0	25	75	10	2
EPSSA212000U	12.0	30	75	12	2
EPSSA214000U	14.0	30	75	14	2
EPSSA216000U	16.0	35	100	16	2
EPSSA218000U	18.0	40	100	20	2
EPSSA220000U	20.0	45	100	20	2
EPSSA225000U	25.0	45	100	25	2



d	Tolerance
Ø < 3	0 ~ -0.02
3 ≦ Ø ≦ 10	0 ~ -0.03
Ø > 10	0 ~ -0.04

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1MM	26,000	190	22,230	140	18,720	100	10,400	40	22,230	165	32,760	240
2MM	14,040	235	11,232	160	9,360	110	5,616	45	11,232	185	16,380	270
3MM	9,828	270	7,488	175	6,084	120	3,900	55	7,488	205	11,232	310
4MM	7,020	260	5,616	175	4,680	120	2,808	50	5,616	205	8,424	310
5MM	5,850	270	4,446	175	3,744	120	2,340	55	4,446	205	6,552	300
6MM	4,680	260	3,744	175	3,042	120	1,872	50	3,744	205	5,616	310
8MM	3,510	260	2,808	175	2,340	120	1,404	50	2,808	205	4,212	310
10MM	2,808	260	2,223	175	1,872	120	1,131	50	2,223	205	3,276	300
12MM	2,340	260	1,872	175	1,560	120	936	50	1,872	205	2,808	310
14MM	2,340	300	1,768	195	1,482	135	936	60	1,768	230	2,600	335
16MM	2,028	300	2,730	345	1,300	135	819	60	2,730	400	2,340	345
18MM	2,028	305	1,378	175	1,144	120	819	60	1,378	205	2,080	310
20MM	1,560	260	1,248	175	1,040	120	624	50	1,248	205	1,820	300
Milling Amount (mm)							Ad = 0.1D (D < 3, Ad ≦ 0.05D)		Ad = 0.5D (D < 3, Ad ≦ 0.25D)			

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G450 Series

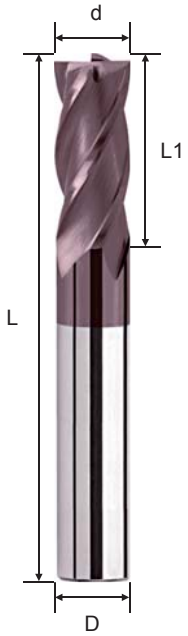
WINSTAR

CARBIDE ENDMILLS - Square Type - 4F

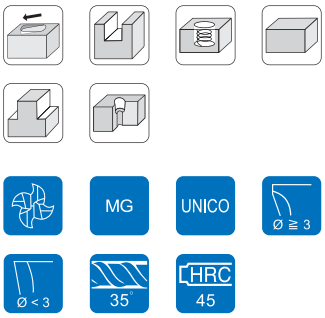
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 20 to HRC 45 Steel, Alloy Steel, Cast Iron, Aluminum Alloy (Si >15%).
- Excellent cutting ability of cutting edges.
- High precision cutting.
- Positive Geometry design is suitable for better shearing.

EPSFA4
EPSSA4

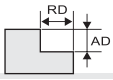
P	M	K	N	S	H
☑	☑	☑	☐	☐	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPSFA401000U	1.0	3	50	4	4
EPSFA401500U	1.5	4	50	4	4
EPSFA402000U	2.0	5	50	4	4
EPSFA402500U	2.5	6	50	4	4
EPSFA403000U	3.0	8	50	4	4
EPSSA403000U	3.0	8	50	6	4
EPSFA404000U	4.0	10	50	4	4
EPSSA404000U	4.0	10	50	6	4
EPSSA405000U	5.0	13	50	6	4
EPSSA406000U	6.0	15	50	6	4
EPSSA408000U	8.0	20	60	8	4
EPSSA410000U	10.0	25	75	10	4
EPSSA412000U	12.0	30	75	12	4
EPSSA414000U	14.0	30	75	14	4
EPSSA416000U	16.0	35	100	16	4
EPSSA420000U	20.0	45	100	20	4
EPSSA425000U	25.0	45	100	25	4



WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	9,828	455	7,488	295	6,084	195	3,926	90	7,488	345	11,232	520
4MM	7,020	430	5,616	295	4,680	200	2,808	85	5,616	345	8,424	520
5MM	5,850	450	4,446	290	3,744	200	2,340	90	4,446	345	6,552	505
6MM	4,680	430	3,744	295	3,042	195	1,872	85	3,744	345	5,616	520
8MM	3,510	430	2,808	295	2,340	200	1,404	85	2,808	345	4,212	520
10MM	2,808	430	2,223	290	1,872	200	1,118	85	2,223	340	3,276	505
12MM	2,340	430	1,872	295	1,560	200	936	85	1,872	345	2,808	520
14MM	2,340	500	1,768	325	1,482	225	936	100	1,768	380	2,600	560
16MM	2,028	500	1,560	325	1,300	225	806	100	1,560	385	2,340	575
18MM	1,820	455	1,378	290	1,144	200	728	90	1,378	345	2,080	520
20MM	1,560	430	1,248	295	1,040	200	624	85	1,248	345	1,820	505

Milling Amount (mm)		Ad = 1.5D RD ≦ 0.05D	Ad = 1.5D RD ≦ 0.1D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

d	Tolerance
Ø < 3	0 ~ -0.02
3 ≦ Ø ≦ 10	0 ~ -0.03
Ø > 10	0 ~ -0.04

G450 Series

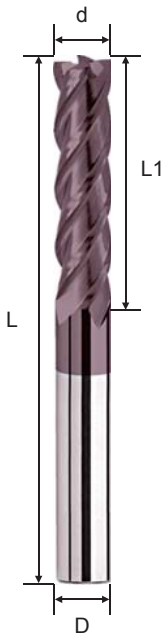
WINSTAR

CARBIDE ENDMILLS - Long Flute Square Type - 4F

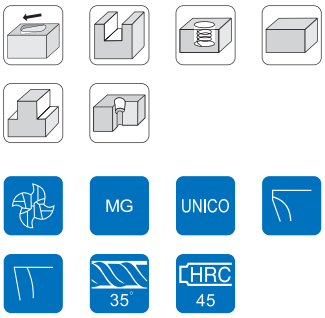
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 20 to HRC 45 Steel, Alloy Steel, Cast Iron, Aluminum Alloy (Si >15%).
- Excellent cutting ability of cutting edges.
- Long flutes is available in various length of cut and overall length end mills.

EPSCA4

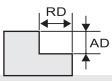
P	M	K	N	S	H
☑	☑	☑	☐	☐	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPSCA403000U	3.0	15	60	6	4
EPSCA404000U	4.0	20	60	6	4
EPSCA405000U	5.0	25	75	6	4
EPSCA406000U	6.0	30	75	6	4
EPSCA408000U	8.0	35	100	8	4
EPSCA410000U	10.0	45	100	10	4
EPSCA412000U	12.0	45	100	12	4
EPSCA414000U	14.0	70	150	14	4
EPSCA416000U	16.0	70	150	16	4
EPSCA420000U	20.0	75	150	20	4
EPSCA425000U	25.0	75	150	25	4



d	Tolerance
Ø < 3	0 ~ -0.03
3 ≦ Ø ≦ 10	0 ~ -0.04
Ø > 10	0 ~ -0.05

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	9,828	455	7,488	295	6,084	195	3,926	90	7,488	345	11,232	520
4MM	7,020	430	5,616	295	4,680	200	2,808	85	5,616	345	8,424	520
5MM	5,850	450	4,446	290	3,744	200	2,340	90	4,446	345	6,552	505
6MM	4,680	430	3,744	295	3,042	195	1,872	85	3,744	345	5,616	520
8MM	3,510	430	2,808	295	2,340	200	1,404	85	2,808	345	4,212	520
10MM	2,808	430	2,223	290	1,872	200	1,118	85	2,223	340	3,276	505
12MM	2,340	430	1,872	295	1,560	200	936	85	1,872	345	2,808	520
14MM	2,340	500	1,768	325	1,482	225	936	100	1,768	380	2,600	560
16MM	2,028	500	1,560	325	1,300	225	806	100	1,560	385	2,340	575
18MM	1,820	455	1,378	290	1,144	200	728	90	1,378	345	2,080	520
20MM	1,560	430	1,248	295	1,040	200	624	85	1,248	345	1,820	505
Milling Amount (mm)	Ad = 1.5D, RD ≦ 0.1D				Ad = 1.5D RD ≦ 0.05D		Ad = 1.5D RD ≦ 0.1D					

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G450 Series

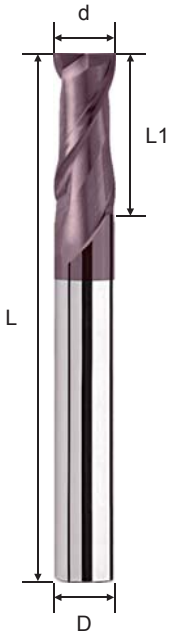
WINSTAR

CARBIDE ENDMILLS - Long Shank Square Type - 2F

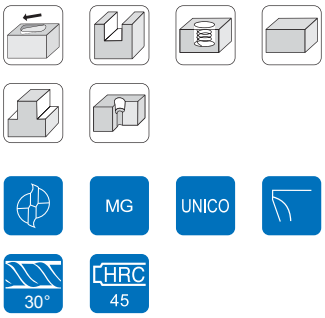
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 20 to HRC 45 Steel, Alloy Steel, Cast Iron, Aluminum Alloy (Si >15%).
- Excellent cutting ability of cutting edges.
- Long Shank is available in various length of cut and overall length end mills.

EPSEA2
EPSKA2
EPSLA2
EPSNA2

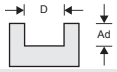
P	M	K	N	S	H
☑	☑	☑	☐	☐	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPSEA204000U	4.0	10	75	4	2
EPSKA204000U	4.0	10	100	4	2
EPSLA204000U	4.0	10	75	6	2
EPSNA204000U	4.0	10	100	6	2
EPSLA205000U	5.0	13	75	6	2
EPSNA205000U	5.0	13	100	6	2
EPSLA206000U	6.0	15	75	6	2
EPSNA206000U	6.0	15	100	6	2
EPSMA208000U	8.0	20	75	8	2
EPSLA208000U	8.0	20	100	8	2
EPSNA208000U	8.0	20	150	8	2
EPSLA210000U	10.0	25	100	10	2
EPSNA210000U	10.0	25	150	10	2
EPSLA212000U	12.0	30	100	12	2
EPSNA212000U	12.0	30	150	12	2
EPSLA216000U	16.0	40	150	16	2



d	Tolerance
Ø < 3	0 ~ -0.03
3 ≦ Ø ≦ 10	0 ~ -0.04
Ø > 10	0 ~ -0.05

WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1MM	26,000	190	22,230	140	18,720	100	10,400	40	22,230	165	32,760	240
2MM	14,040	235	11,232	160	9,360	110	5,616	45	11,232	185	16,380	270
3MM	9,828	270	7,488	175	6,084	120	3,900	55	7,488	205	11,232	310
4MM	7,020	260	5,616	175	4,680	120	2,808	50	5,616	205	8,424	310
5MM	5,850	270	4,446	175	3,744	120	2,340	55	4,446	205	6,552	300
6MM	4,680	260	3,744	175	3,042	120	1,872	50	3,744	205	5,616	310
8MM	3,510	260	2,808	175	2,340	120	1,404	50	2,808	205	4,212	310
10MM	2,808	260	2,223	175	1,872	120	1,131	50	2,223	205	3,276	300
12MM	2,340	260	1,872	175	1,560	120	936	50	1,872	205	2,808	310
14MM	2,340	300	1,768	195	1,482	135	936	60	1,768	230	2,600	335
16MM	2,028	300	2,730	345	1,300	135	819	60	2,730	400	2,340	345
18MM	2,028	305	1,378	175	1,144	120	819	60	1,378	205	2,080	310
20MM	1,560	260	1,248	175	1,040	120	624	50	1,248	205	1,820	300
Milling Amount (mm)							Ad = 0.1D (D < 3, Ad ≦ 0.05D)		Ad = 0.5D (D < 3, Ad ≦ 0.25D)			

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

G450 Series

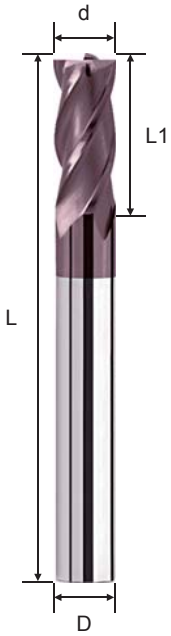
WINSTAR

CARBIDE ENDMILLS - Long Shank Square Type - 4F

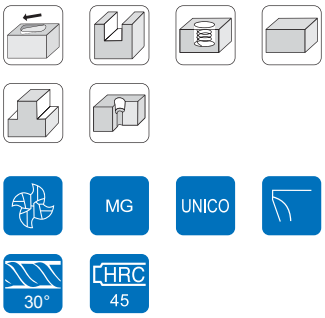
- UNICO Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for HRC 20 to HRC 45 Steel, Alloy Steel, Cast Iron, Aluminum Alloy (Si >15%).
- Excellent cutting ability of cutting edges.
- Long Shank is available in various length of cut and overall length end mills.

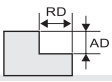
EPSEA4
EPSKA4
EPSLA4
EPSNA4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
EPSEA404000U	4.0	10	75	4	4
EPSKA404000U	4.0	10	100	4	4
EPSLA404000U	4.0	10	75	6	4
EPSNA404000U	4.0	10	100	6	4
EPSLA405000U	5.0	13	75	6	4
EPSNA405000U	5.0	13	100	6	4
EPSLA406000U	6.0	15	75	6	4
EPSNA406000U	6.0	15	100	6	4
EPSMA408000U	8.0	20	75	8	4
EPSLA408000U	8.0	20	100	8	4
EPSNA408000U	8.0	20	150	8	4
EPSLA410000U	10.0	25	100	10	4
EPSNA410000U	10.0	25	150	10	4
EPSLA412000U	12.0	30	100	12	4
EPSNA412000U	12.0	30	150	12	4
EPSLA416000U	16.0	40	150	16	4
EPSLA420000U	20.0	40	150	20	4



WORKING MATERIAL	ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		STAINLESS STEEL		CAST IRON	
CODE	45C,S50C,SCM		SCM,SKT,SKD		SCM,SKT,SKD		SKT, SKD		SUS 304		FC / FCD	
HARDNESS	HRC < 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~45		–		–	
Vc	88 M/min		71 M/min		59 M/min		35 M/min		71 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	9,828	455	7,488	295	6,084	195	4,160	90	7,488	345	11,232	520
4MM	7,020	430	5,616	295	4,680	200	2,808	85	5,616	345	8,424	520
5MM	5,850	450	4,446	290	3,744	200	2,340	90	4,446	345	6,552	505
6MM	4,680	430	3,744	295	3,042	195	1,872	85	3,744	345	5,616	520
8MM	3,510	430	2,808	295	2,340	200	1,404	85	2,808	345	4,212	520
10MM	2,808	430	2,223	290	1,872	200	1,118	85	2,223	340	3,276	505
12MM	2,340	430	1,872	295	1,560	200	936	85	1,872	345	2,808	520
14MM	2,340	500	1,768	325	1,482	225	936	100	1,768	380	2,600	560
16MM	2,028	500	1,560	325	1,300	225	806	100	1,560	385	2,340	575
18MM	1,820	455	1,378	290	1,144	200	728	90	1,378	345	2,080	520
20MM	1,560	430	1,248	295	1,040	200	624	85	1,248	345	1,820	505
Milling Amount (mm)	Ad = 1.5D, RD ≦ 0.1D				Ad = 1.5D RD ≦ 0.05D				Ad = 1.5D RD ≦ 0.1D			

d	Tolerance
Ø < 3	0 ~ -0.03
3 ≦ Ø ≦ 10	0 ~ -0.04
Ø > 10	0 ~ -0.05

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

A100 series

up to HRC 18

- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 18).
- DICO coating for Copper Electrode and hi Si (>12%) content Aluminum Alloy.
- Great chip evacuation.
- Due to polish surface grinding of cutting it provides an excellent surface.
- Radial flute design is suitable for high remove rate cutting.

WINSTAR

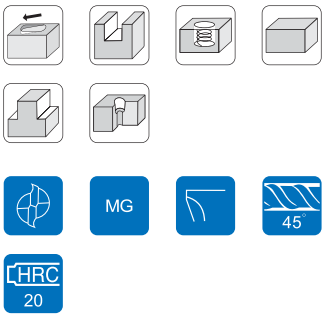
CARBIDE ENDMILLS - Square Type - 2F

- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 20).
- CrN coating is optional for Copper Electrode and high Si(>12%) content Aluminum Alloy.
- High Helix offers excellent and stable finished surfaces in high speed.
- Great chip evacuation and flute polishing increase cutting surface and feed rate.

ENSFS2
ENSSS2

P	M	K	N	S	H
☐	☐	☐	☑	☐	☐

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
ENSFS201000	1	3	50	4	2
ENSFS202000	2	6	50	4	2
ENSFS203000	3	9	50	4	2
ENSFS204000	4	12	50	4	2
ENSSS204000	4	12	50	6	2
ENSSS205000	5	15	50	6	2
ENSSS206000	6	15	50	6	2
ENSSS208000	8	20	60	8	2
ENSSS210000	10	30	75	10	2
ENSSS212000	12	30	75	12	2
ENSSS216000	16	40	100	16	2
ENSSS220000	20	45	100	20	2



WORKING MATERIAL	ALLUMINUM ALLOY			
CODE	A5052			
	Slotting		Side Milling	
Vc	196 M/min		325 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	20,800	1,200	34,580	1,350
4MM	15,600	1,000	26,000	1,350
5MM	12,480	900	20,670	1,350
6MM	10,400	820	17,290	1,350
8MM	7,800	750	13,000	1,350
10MM	6,240	680	10,270	1,350
12MM	5,200	620	8,580	1,350

d	Tolerance
Ø < 3	0 ~ -0.02
3 ≦ Ø ≦ 10	0 ~ -0.03
Ø > 10	0 ~ -0.04

Milling Amount (mm)

Ad = 0.1D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

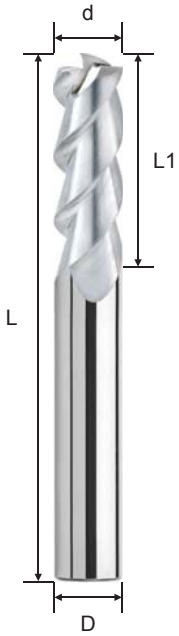
WINSTAR

CARBIDE ENDMILLS - Square Type - 3F

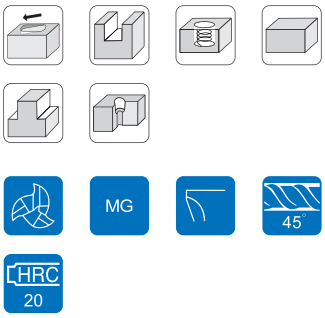
- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 20)
- CrN coating is optional for Copper Electrode and high Si(>12%) content Aluminum Alloy.
- High Helix offers excellent and stable finished surfaces in high speed.
- Great chip evacuation and flute polishing get good cutting surface and high feed rate.

ENSFS3
ENSSS3

P	M	K	N	S	H
☐	☐	☐	☑	☐	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
ENSFS302000	2	6	50	4	3
ENSFS303000	3	9	50	4	3
ENSFS304000	4	12	50	4	3
ENSSS304000	4	12	50	6	3
ENSSS305000	5	15	50	6	3
ENSSS306000	6	15	50	6	3
ENSSS308000	8	20	60	8	3
ENSSS310000	10	30	75	10	3
ENSSS312000	12	30	75	12	3
ENSSS316000	16	40	100	16	3
ENSSS320000	20	45	100	20	3



WORKING MATERIAL	ALLUMINUM ALLOY			
CODE	A5052			
	Slotting		Side Milling	
Vc	196 M/min		325 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	20,800	1,200	34,580	1,350
4MM	15,600	1,000	26,000	1,350
5MM	12,480	900	20,670	1,350
6MM	10,400	820	17,290	1,350
8MM	7,800	750	13,000	1,350
10MM	6,240	680	10,270	1,350
12MM	5,200	620	8,580	1,350
Milling Amount (mm)	Ad = 0.1D			

d	Tolerance
Ø < 3	0 ~ -0.02
3 ≦ Ø ≦ 10	0 ~ -0.03
Ø > 10	0 ~ -0.04

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

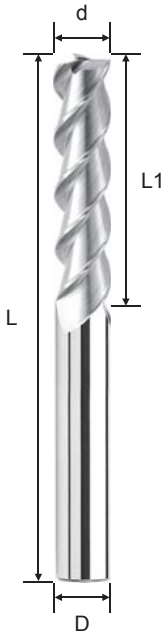
WINSTAR

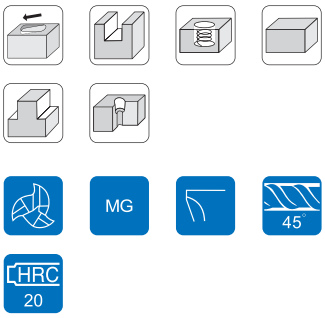
CARBIDE ENDMILLS - Long Flute Square Type - 3F

- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 20)
- CrN coating is optional for Copper Electrode and high Si(>12%) content Aluminum Alloy.
- High Helix offers excellent and stable finished surfaces in high speed.
- Great chip evacuation and flute polishing get good cutting surface and high feed rate.

ENSCS3

P	M	K	N	S	H
☐	☐	☐	☑	☐	☐





d	Tolerance
Ø < 3	0 ~ -0.02
3 ≦ Ø ≦ 10	0 ~ -0.03
Ø > 10	0 ~ -0.04

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
ENSCS303000	3	15	60	6	3
ENSCS304000	4	20	60	6	3
ENSCS305000	5	25	60	6	3
ENSCS306000	6	30	75	6	3
ENSCS308000	8	45	100	8	3
ENSCS310000	10	55	100	10	3
ENSCS312000	12	55	100	12	3
ENSCS316000	16	75	150	16	3
ENSCS320000	20	90	150	20	3

WORKING MATERIAL	ALLUMINUM ALLOY			
CODE	A5052			
	Slotting		Side Milling	
Vc	196 M/min		325 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	20,800	1,200	34,580	1,350
4MM	15,600	1,000	26,000	1,350
5MM	12,480	900	20,670	1,350
6MM	10,400	820	17,290	1,350
8MM	7,800	750	13,000	1,350
10MM	6,240	680	10,270	1,350
12MM	5,200	620	8,580	1,350
Milling Amount (mm)	Ad = 0.1D			

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

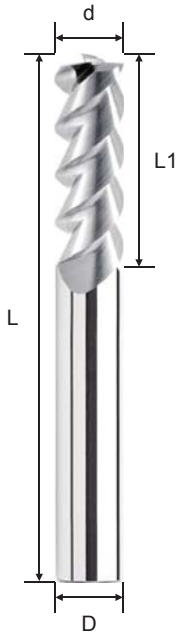
WINSTAR

CARBIDE ENDMILLS - High Helix Square Type - 3F

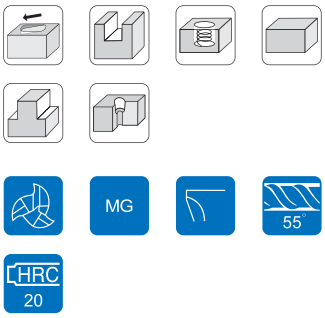
- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 20).
- CrN coating is optional for Copper Electrode and high Si(>12%) content Aluminum Alloy.
- 55° degree Helix offers excellent and stable finished surfaces in high speed side milling.
- Flute polishing gives a very good cutting surface and high feed rate.

ENSSH3

P ☐ M ☐ K ☐ N ☑ S ☐ H ☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
ENSSH304000	4	12	50	6	3
ENSSH305000	5	15	50	6	3
ENSSH306000	6	15	50	6	3
ENSSH308000	8	20	60	8	3
ENSSH310000	10	30	75	10	3
ENSSH312000	12	30	75	12	3
ENSSH316000	16	40	100	16	3



WORKING MATERIAL	ALLUMINUM ALLOY			
CODE	A5052			
	Slotting		Side Milling	
Vc	196 M/min		325 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	20,800	1,200	34,580	1,350
4MM	15,600	1,000	26,000	1,350
5MM	12,480	900	20,670	1,350
6MM	10,400	820	17,290	1,350
8MM	7,800	750	13,000	1,350
10MM	6,240	680	10,270	1,350
12MM	5,200	620	8,580	1,350

d	Tolerance
Ø < 3	0 ~ -0.02
3 ≦ Ø ≦ 10	0 ~ -0.03
Ø > 10	0 ~ -0.04

Milling Amount (mm)

Ad = 0.1D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

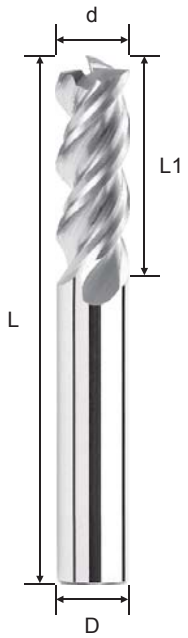
WINSTAR

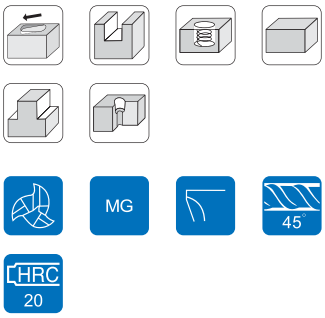
CARBIDE ENDMILLS - High Performance Square Type - 3F (for side milling)

- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 20).
- CrN coating is optional for Copper Electrode and high Si(>12%) content Aluminum Alloy.
- U-flute design with high chips volume space and easy to remove chips.
- Excellent for high feed rough milling.
- Also suitable for surface finish in high speed milling.

ENSSB3

P	M	K	N	S	H
☐	☐	☐	☑	☐	☐





d	Tolerance
Ø < 3	0 ~ -0.02
3 ≦ Ø ≦ 10	0 ~ -0.03
Ø > 10	0 ~ -0.04

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
ENSSB304000	4	12	50	6	3
ENSSB305000	5	15	50	6	3
ENSSB306000	6	15	50	6	3
ENSSB308000	8	20	60	8	3
ENSSB310000	10	30	75	10	3
ENSSB312000	12	30	75	12	3
ENSSB316000	16	40	100	16	3
ENSSB320000	20	45	100	20	3

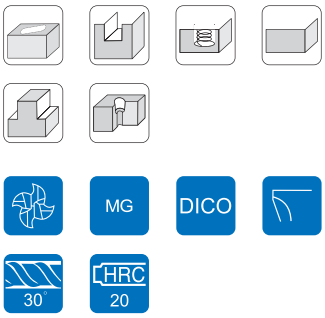
WINSTAR

CARBIDE ENDMILLS - High Performance Square Type - 4F (for slot milling)

- DICO Coating surface hardness exceeds 50GPa.
- Suitable for Non-ferrous cutting, e.g., copper, aluminum, graphite, plastic processing special.
- Multiple processing efficiency, coefficient of friction <0.1μm.
- Large positive rake angle and deep flute design, improves cutting efficiency.

ENSSC4

P	M	K	N	S	H
☐	☐	☐	☑	☐	☐



d	Tolerance
Ø < 3	0 ~ -0.02
3 ≦ Ø ≦ 10	0 ~ -0.03
Ø > 10	0 ~ -0.04

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
ENSSC405000D	5	13	50	6	4
ENSSC406000D	6	15	50	6	4
ENSSC408000D	8	20	60	8	4
ENSSC410000D	10	25	75	10	4
ENSSC412000D	12	30	75	12	4
ENSSC405000	5	13	50	6	4
ENSSC406000	6	15	50	6	4
ENSSC408000	8	20	60	8	4
ENSSC410000	10	25	75	10	4
ENSSC412000	12	30	75	12	4

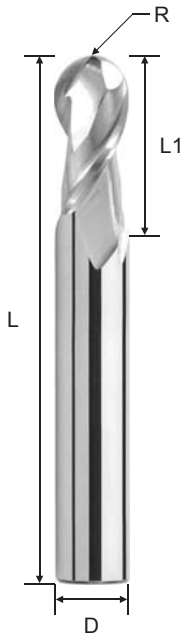
WINSTAR

CARBIDE ENDMILLS - Ball Nose Type - 2F

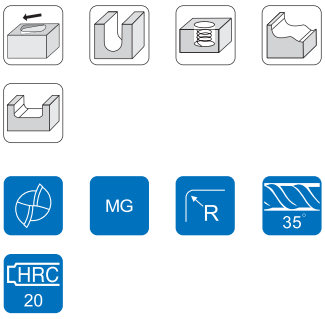
- Suitable for cutting non-ferrous metals, Aluminum, Aluminum Alloy, Copper (HRC< 20).
- CrN coating is optional for Copper Electrode and high Si(>12%) content Aluminum Alloy.
- Great chip evacuation.
- Due to polish surface grinding of cutting it provides an excellent surface.
- New tool geometry increases wear resistance and cutting force is decreased.

ENBFA2
ENBSA2

P ☐ M ☐ K ☐ N ☑ S ☐ H ☐



Order No.	Radius (R)	Dia. (d)	CL (L1)	OAL (L)	Shank (D)	Flutes (F)
ENBFA201000	0.5R	1	2	50	4	2
ENBFA202000	1.0R	2	4	50	4	2
ENBFA203000	1.5R	3	6	50	4	2
ENBFA204000	2.0R	4	8	50	4	2
ENBSA204000	2.0R	4	8	50	6	2
ENBSA205000	2.5R	5	10	50	6	2
ENBSA206000	3.0R	6	12	50	6	2
ENBSA208000	4.0R	8	16	60	8	2
ENBSA210000	5.0R	10	20	75	10	2
ENBSA212000	6.0R	12	24	75	12	2
ENBSA216000	8.0R	16	32	100	16	2

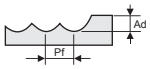


d	R Tolerance
Ø	± 0.02

WORKING MATERIAL	ALLUMINUM ALLOY	
CODE	A5052	
Vc	327 M/min	
DIAMETER	R.P.M	FEED (mm/min)
2MM	50,700	2,000
3MM	33,800	2,000
4MM	26,000	2,000
5MM	20,800	2,000
6MM	16,900	2,000
8MM	13,000	2,000
10MM	10,400	2,000
12MM	7,800	2,000
16MM	6,500	2,000

Milling Amount (mm)

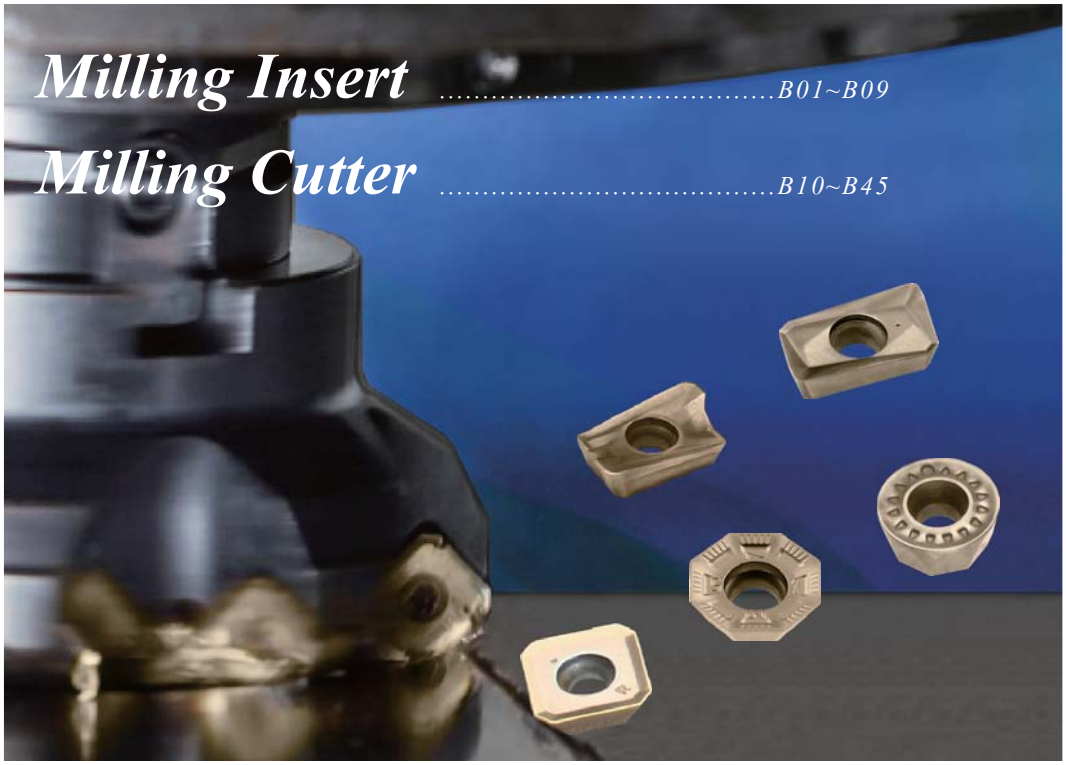
Ad = 0.1D



The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

WINSTAR

B Milling Insert & Cutter



Milling Insert .....B01~B09

Milling Cutter .....B10~B45

WinMaster .....B46~B61

MILLING GRADE INTRODUCTION

GOLD

Grade Code : CP3050, CP4050

Ingredient : Ti, Al, Si, N

Feature :
- Si contained
- Improve the hardness and heat resistance
- The Si NANO particles uniformly distributed
- Effective protection of the substrate
- Extend inserts life

BLACK

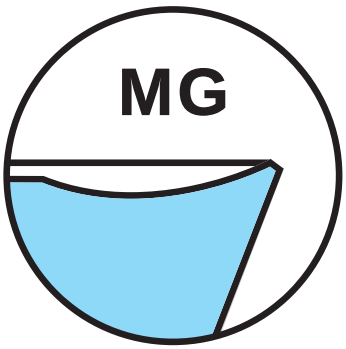
Grade Code : CP3020

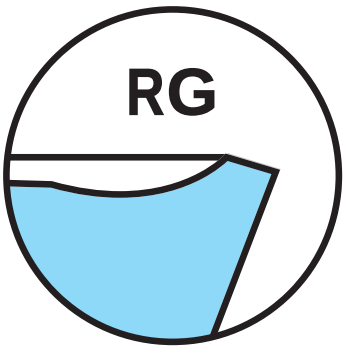
Ingredient : Ti, Al, Cr, N

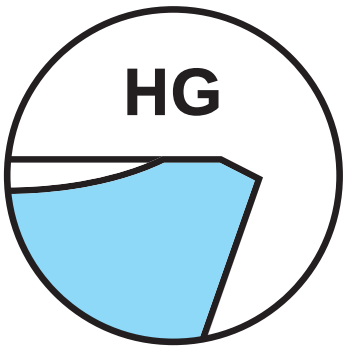
Feature :
- Al contained
- Improve the hardness and toughness
- Al oxidized to Al_2O_3 film during cutting condition
- Effective protection of the substrate
- Extend inserts life

Grade	ISO	Substrate (HRA)	Coating Type	Thickness	Coolant		Cutting Condition
					WET	DRY	
CP3020	P20~P30 M15~M30 K30	91.5	AlTiCrN	Thin	★	★ ★	Medium Continuous
CP3050	P20~P30 M15~M30 K30	91.6	TiSixN	Thin	★ ★	★	Medium Continuous
CP4050	P20~P40 M20~M40 K30	90.0	TiSixN	Thin	★ ★	★	Rough Interrupted

Chip breaker design



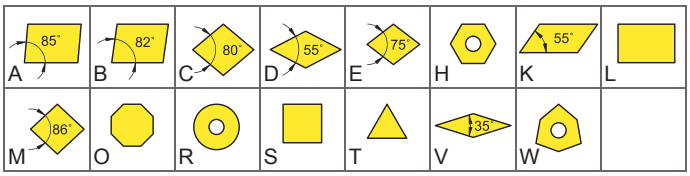




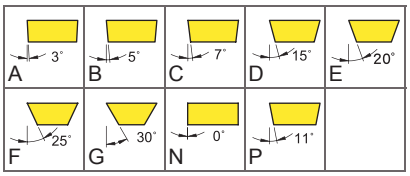
DESIGNATIONS FOR MILLING INSERTS

A	P	M	T	16	04	PD	E	R	-MG
1	2	3	4	5	6	7	8	9	10

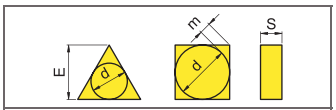
1 INSERT SHAPE



2 CLEARANCE ANGLE

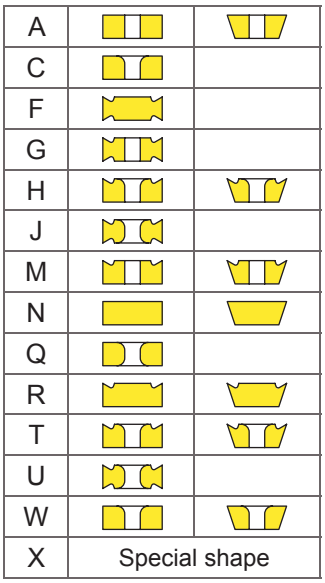


3 TOLERANCES CLASS

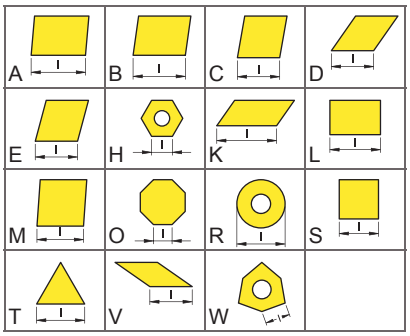


Tolerance	Range of tolerance		
	d±	m±	s±
A	0.025	0.005	0.025
C	0.025	0.013	0.025
E	0.025	0.025	0.025
F	0.013	0.005	0.025
G	0.025	0.025	0.05~0.13
H	0.013	0.013	0.025
J	0.05~0.15	0.005	0.025
K	0.05~0.15	0.013	0.025
L	0.05~0.15	0.025	0.025
M	0.05~0.15	0.08~0.2	0.05~0.13
N	0.05~0.15	0.08~0.2	0.025
U	0.08~0.25	0.13~0.38	0.13

4 INSERT FEATURES



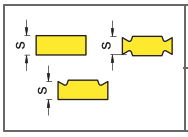
5 EDGE LENGTH



8 CUTTING EDGE

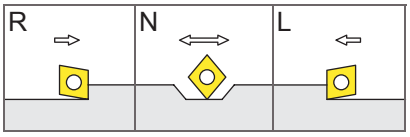
E	F	T	S
Rounded	Sharp	Chamferd	Chamferd and rounded

6 TIP THICKNESS

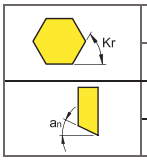


Index	01	T1	02	03	T3	04	05	06	07	09
S(mm)	1.59	1.98	2.38	3.18	3.97	4.76	5.56	6.35	7.94	9.52

9 CUTTING DIRECTION



7 CORNER RADIUS



A	D	E	F	P	Z				
45°	60°	75°	85°	90°	other				
A	B	C	D	E	F	G	N	P	Z
3°	5°	7°	15°	20°	25°	30°	0°	11°	other

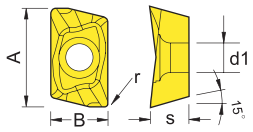
10 MANUFACTURE'S TYPE DESIGNATION

Chip breaker design

MG, RG, HG

ADMT, APKT

ADMT



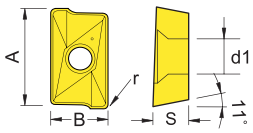
- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	ADMT	060204-MG	7	4.09	2.45	0.4	2	CP3020	★	★★	★★★	★★	◎	○	○	○
								CP3050	★	★★	★★★	★★	◎	○	○	○
	ADMT	060208-MG	7	4.09	2.45	0.8	2	CP3020	★	★★	★★★	★★	◎	○	○	○
								CP3050	★	★★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B10

APKT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

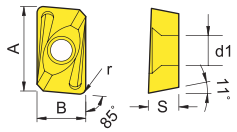
Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	APKT	100304PDER-MG	10.5	6.7	3.50	0.4	2.8	CP3020	★	★★	★★★	★★	◎	○	○	○
								CP3050	★	★★	★★★	★★	◎	○	○	○
	APKT	100308PDER-MG	10.5	6.7	3.50	0.8	2.8	CP3020	★	★★	★★★	★★	◎	○	○	○
								CP3050	★	★★	★★★	★★	◎	○	○	○
	APKT	160408PDER-MG	16.3	9.525	5.25	0.8	4.5	CP3020	★	★★	★★★	★	◎	◎	○	○
								CP3050	★	★★	★★★	★	◎	◎	○	○
	APKT	160408PDER-RG	16.3	9.525	5.25	0.8	4.5	CP3020		★	★★	★★	◎	○	○	○
								CP3050		★	★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B11~B14

APMT

APMT



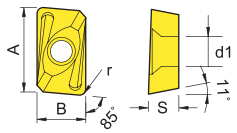
- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	APMT	113508PDER-MG	11.00	6.35	3.5	0.8	2.8	CP3020	★	★★	★★★	★	◎	◎	○	○
								CP3050	★	★★	★★★	★	◎	◎	○	○
	APMT	113508PDER-RG	11.00	6.35	3.5	0.8	2.8	CP3020		★	★★	★★	◎	○	○	○
								CP3050		★	★★	★★	◎	○	○	○
	APMT	113508PDER-HG	11.00	6.35	3.5	0.8	2.8	CP3020			★★	★★★	◎	○	○	○
								CP3050			★★	★★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B15~B16

APMT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

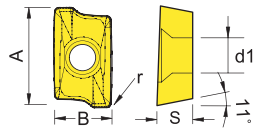
Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	APMT	160408PDER-MG	16.50	9.525	4.76	0.8	4.4	CP3020	★	★★	★★★	★	◎	◎	○	○
								CP3050	★	★★	★★★	★	◎	◎	○	○
	APMT	160408PDER-RG	16.50	9.525	4.76	0.8	4.4	CP3020		★	★★	★★	◎	○	○	○
								CP3050		★	★★	★★	◎	○	○	○
	APMT	160408PDER-HG	16.50	9.525	4.76	0.8	4.4	CP3020			★★	★★★	◎	○	○	○
								CP3050			★★	★★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B17~B18

AXMT, CPMT, JDMT

AXMT



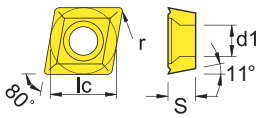
- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	AXMT	123508PEER-RG	12.18	6.93	3.58	0.8	3.4	CP3020		★	★★	★★★	◎	○	○	○
								CP3050		★	★★	★★★	◎	○	○	○
	AXMT	170508PEER-RG	17.60	10.2	5.56	0.8	4.6	CP3020		★	★★	★★★	◎	○	○	○
								CP3050		★	★★	★★★	◎	○	○	○
	AXMT	170516PEER-RG	17.60	10.2	5.56	1.6	4.6	CP3020		★	★★	★★★	◎	○	○	○
								CP3050		★	★★	★★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B19~B21

CPMT



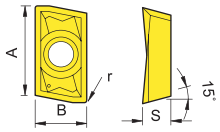
- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)				Grade	Application				Material			
			lc	S	r	d1		F	S	M	R	P	M	K	H
	CPMT	090308-MG	9.525	3.18	0.8	4.4	CP3020	★	★★	★★★	★	◎	◎	○	○
							CP3050	★	★★	★★★	★	◎	◎	○	○
		120408-MG	12.7	4.76	0.8	5.5	CP3020	★	★★	★★★	★	◎	◎	○	○
							CP3050	★	★★	★★★	★	◎	◎	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B22

JDMT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

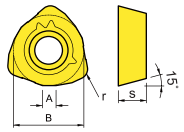
Type	Designation		Dimension (mm)				Grade	Application				Material			
			A	B	S	r		F	S	M	R	P	M	K	H
	JDMT	150508R-MG	15.1	9.12	5.0	0.8	CP3020	★	★★	★★★	★	◎	◎	○	○
							CP3050	★	★★	★★★	★	◎	◎	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B23

JDMW, OFMT

JDMW



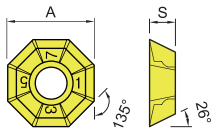
- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)				Grade	Application				Material			
			A	B	S	r		F	S	M	R	P	M	K	H
	JDMW	120420ZDSR-RG	2.5	12	4.76	2.0	CP3020			★★★	★★	◎	○	○	○
							CP3050			★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B24

OFMT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

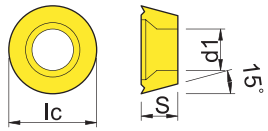
Type	Designation		Dimension (mm)			Grade	Application				Material			
			A	S	r		F	S	M	R	P	M	K	H
	OFMT	05T3TN-MG	12.7	3.8	0.6	CP3020		★★	★★★	★★	◎	○	○	○
						CP3050		★★	★★★	★★	◎	○	○	○
	OFMT	05T3TN-RG	12.7	3.8	0.6	CP3020		★★	★★★	★★	◎	○	○	○
						CP3050		★★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B25

RDKW, RDMX, RDMT, RDMW

RDKW, RDMX, RDMT, RDMW



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

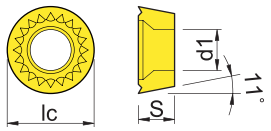
Type	Designation		Dimension (mm)			Grade	Application				Material			
			Ic	S	d1		F	S	M	R	P	M	K	H
	RDKW	0501MOE	5.00	1.59	2.20	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○
	RDKW	0702MOE	7.00	2.38	2.80	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○
	RDMX	1003MOE	10.00	3.18	4.15	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○
	RDMT	10T3MOE	10.00	3.97	4.50	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○
	RDMT	10T3MOT	10.00	3.97	4.50	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
	RDMW	10T3MOE	10.00	3.97	4.50	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○
	RDMX	12T3MOE	12.00	3.97	4.10	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○
	RDMT	1204MOT	12.00	4.76	4.40	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○
	RDMW	1204MOT	12.00	4.76	4.40	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○
	RDMT	1604MOT	16.00	4.76	5.50	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
						CP4050		★	★★	★★★	◎	○	○	○
	RDMW	1604MOT	16.00	4.76	5.50	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
						CP4050		★	★★	★★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B26~B32

RPMT, RPMW

RPMT, RPMW



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

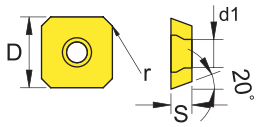
Type	Designation		Dimension (mm)			Grade	Application				Material			
			Ic	S	d1		F	S	M	R	P	M	K	H
	RPMT	08T2MOE	8.00	2.78	3.2	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
	RPMW	1003MOE	10.00	3.18	4.6	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
	RPMW	1003MOT	10.00	3.18	4.6	CP3020		★	★★★	★★★	◎	○	○	○
						CP3050		★	★★★	★★★	◎	○	○	○
	RPMT	10T3MOE	10.00	3.97	4.3	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
	RPMT	1204MOE	12.00	4.76	4.3	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
	RPMT	1204MOT	12.00	4.76	4.3	CP3020		★	★★★	★★★	◎	○	○	○
						CP3050		★	★★★	★★★	◎	○	○	○
	RPMW	1204MOE	12.00	4.76	4.3	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B33~B34

SEKT, SEKW, SEMR, SEMT

SEKT, SEKW



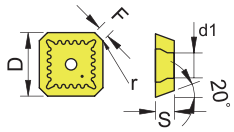
- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm) D	S	r	d1	Grade	Application F	S	M	R	Material P	M	K	H
	SEKT	1204AFTN-RG	12	4.76	0.8	5.5	CP3020		★	★★★	★★★	◎	○	○	○
							CP3050		★	★★★	★★★	◎	○	○	○
	SEKW	1204AFEN	12	4.76	0.8	5.5	CP3020		★	★★★	★★★	◎	○	◎	○
							CP3050		★	★★★	★★★	◎	○	◎	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B35

SEMR

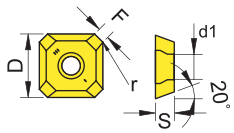


- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm) D	S	F	r	d1	Grade	Application F	S	M	R	Material P	M	K	H
	SEMR	1203AFSN-RG	12.7	3.18	1.6	1.0	2.0	CP3020		★	★★★	★★	◎	○	○	○
								CP3050		★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

SEMT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

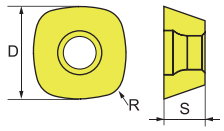
Type	Designation		Dimension (mm) D	S	F	r	d1	Grade	Application F	S	M	R	Material P	M	K	H
	SEMT	13T3AGSN-MG	13.4	3.97	1.9	1.5	4.2	CP3020		★★	★★★	★	◎	◎	○	○
								CP3050		★★	★★★	★	◎	◎	○	○
	SEMT	13T3AGSN-RG	13.4	3.97	1.9	1.5	4.2	CP3020		★	★★★	★★★	◎	○	○	○
								CP3050		★	★★★	★★★	◎	○	○	○
	SEMT	13T3AGSN-HG	13.4	3.97	1.9	1.5	4.2	CP3020			★★	★★★	◎	○	◎	○
								CP3050			★★	★★★	◎	○	◎	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B36

SDNW, SPMG, SPMN

SDNW



P Alloy Steel
M Stainless Steel
K Cast Iron
H Hard Steel

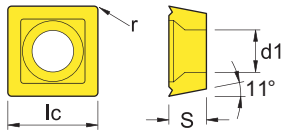
F Finishing
S Semi Finishing
M Medium
R Roughing

Type	Designation		Dimension (mm) D	S	R	Grade	Application F	S	M	R	Material P	M	K	H
	SDNW	1205 ZDTN-RG	12.7	5.56	15	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B37

SPMG



P Alloy Steel
M Stainless Steel
K Cast Iron
H Hard Steel

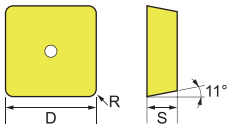
F Finishing
S Semi Finishing
M Medium
R Roughing

Type	Designation		Dimension (mm) lc	S	r	d1	Grade	Application F	S	M	R	Material P	M	K	H
	SPMG	050204-MG	5.0	2.38	0.4	2.30	CP3020				★★★	◎	○	◎	
							CP3050				★★★	◎	○	◎	
	SPMG	060204-MG	6.0	2.38	0.4	2.65	CP3020				★★★	◎	○	◎	
							CP3050				★★★	◎	○	◎	

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B38~B39

SPMN



P Alloy Steel
M Stainless Steel
K Cast Iron
H Hard Steel

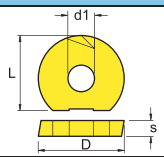
F Finishing
S Semi Finishing
M Medium
R Roughing

Type	Designation		Dimension (mm) D	S	R	Grade	Application F	S	M	R	Material P	M	K	H
	SPMN	120308	12.7	3.18	0.8	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

WP32, WRT

WP32



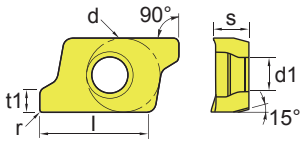
- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm) D	S	d1	L	Grade	Application F	S	M	R	Material P	M	K	H
	WP32	16-SG	16	3	5	14.0	CP3020	★	★	★★	★★	◎	○	○	○
							CP3050	★	★	★★	★★	◎	○	○	○
	WP32	20-SG	20	3	5	16.0	CP3020	★	★	★★	★★	◎	○	○	○
							CP3050	★	★	★★	★★	◎	○	○	○
	WP32	25-SG	25	4	6	21.5	CP3020	★	★	★★	★★	◎	○	○	○
							CP3050	★	★	★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B40

WRT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

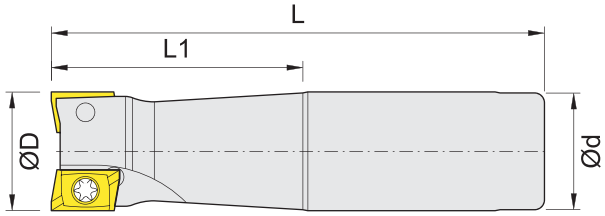
Type	Designation		Dimension (mm) d	s	d1	l	r	t1	Grade	Application F	S	M	R	Material P	M	K	H
	WRT	070204-RG	4.30	2.38	2.2	6.4	0.4	1.3	CP3020		★★	★★★	★★	◎	○	○	○
									CP3050		★★	★★★	★★	◎	○	○	○
	WRT	100308-RG	6.35	3.40	2.9	9.3	0.8	1.8	CP3020		★★	★★★	★★	◎	○	○	○
									CP3050		★★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : B41~B43

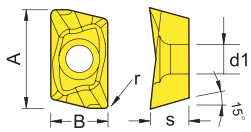
AKS SHOULDER MILLING CUTTER

AKS



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	L1				
IAKS06-102-S10-120	10	10	120	20	2	ADMT0602...	MS1804A	TF6
IAKS06-112-S10-110	11	10	110	16	2			
IAKS06-122-S12-100	12	12	100	25	2			
IAKS06-122-S12-130	12	12	130	25	2			
IAKS06-123-S12-100	12	12	100	25	3			
IAKS06-123-S12-130	12	12	130	25	3			
IAKS06-132-S12-130	13	12	130	18	2			
IAKS06-133-S12-130	13	12	130	18	3			
IAKS06-164-S16-150	16	16	150	28	4			
IAKS06-164-S16-200	16	16	200	28	4			

ADMT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	ADMT	060204-MG	7	4.09	2.45	0.4	2	CP3020	★	★★	★★★	★★	◎	○	○	○
								CP3050	★	★★	★★★	★★	◎	○	○	○
	ADMT	060208-MG	7	4.09	2.45	0.8	2	CP3020	★	★★	★★★	★★	◎	○	○	○
								CP3050	★	★★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

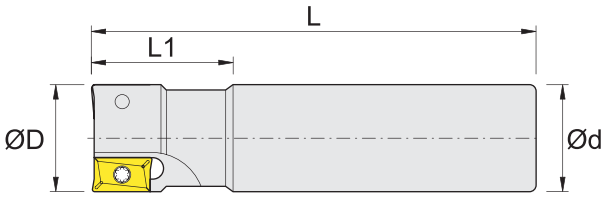
CAP SHOULDER MILLING CUTTER

Groove Milling

Shoulder Milling

Face Milling

CAP



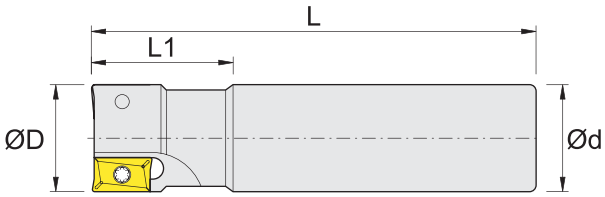
Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	L1				
ICAP3-162-S16-100	16	16	100	28	2	APKT1003...	MS2506B	TF9
ICAP3-162-S16-150	16	16	150	28	2			
ICAP3-162-S16-200	16	16	200	28	2			
ICAP3-172-S16-150	17	16	150	26	2			
ICAP3-172-S16-200	17	16	200	26	2			
ICAP3-182-S20-150	18	20	150	30	2			
ICAP3-182-S20-200	18	20	200	30	2			
ICAP3-202-S20-100	20	20	100	30	2			
ICAP3-202-S20-150	20	20	150	30	2			
ICAP3-203-S20-150	20	20	150	30	3			
ICAP3-203-S20-200	20	20	200	30	3			
ICAP3-212-S20-150	21	20	150	30	2			
ICAP3-212-S20-200	21	20	200	30	2			
ICAP3-213-S20-150	21	20	150	30	3			
ICAP3-253-S25-150	25	25	150	30	3			
ICAP3-263-S25-150	26	25	150	30	3			
ICAP3-263-S25-200	26	25	200	30	3			
ICAP3-264-S25-150	26	25	150	30	4			
ICAP3-264-S25-200	26	25	200	30	4			
ICAP3-324-S32-150	32	32	150	40	4			
ICAP3-324-S32-200	32	32	200	40	4			

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	APKT	100304PDER-MG	10.5	6.7	3.50	0.4	2.8	CP3020	★	★★	★★★	★★	◎	○	○	○
								CP3050	★	★★	★★★	★★	◎	○	○	○
	APKT	100308PDER-MG	10.5	6.7	3.50	0.8	2.8	CP3020	★	★★	★★★	★★	◎	○	○	○
								CP3050	★	★★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

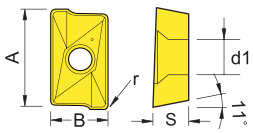
CAP SHOULDER MILLING CUTTER

CAP



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	L1				
ICAP4-252-S25-125	25	25	125	40	2	APKT1604..	MS4009A	TF15
ICAP4-252-S25-150	25	25	150	40	2			
ICAP4-262-S25-150	26	25	150	30	2		MS4011A	
ICAP4-262-S25-200	26	25	200	30	2			
ICAP4-323-S32-150	32	32	150	45	3			
ICAP4-323-S32-200	32	32	200	45	3			
ICAP4-333-S32-150	33	32	150	35	3			
ICAP4-333-S32-200	33	32	200	35	3			
ICAP4-353-S32-150	35	32	150	35	3			

APKT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	APKT	160408PDER-MG	16.3	9.525	5.25	0.8	4.5	CP3020	★	★★	★★★	★	◎	◎	○	○
								CP3050	★	★★	★★★	★	◎	◎	○	○
	APKT	160408PDER-RG	16.3	9.525	5.25	0.8	4.5	CP3020		★	★★	★★	◎	○	○	○
								CP3050		★	★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

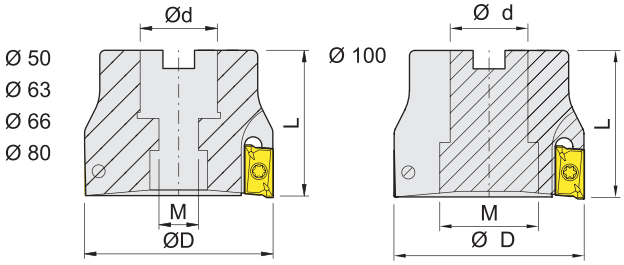
CAP SHOULDER MILLING CUTTER

Groove Milling

Shoulder Milling

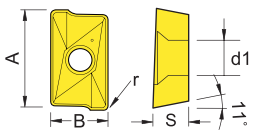
Face Milling

CAP



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	L1				
ICAP4-403-25.4	40	25.4	50	13	3	APKT1604..	MS4011A	TF15
ICAP4-504-22.0	50	22.0	50	11	4			
ICAP4-504-25.4	50	25.4	50	13	4			
ICAP4-635-22.0	63	22.0	50	11	5			
ICAP4-635-25.4	63	25.4	50	13	5			
ICAP4-665-25.4	66	25.4	50	13	5			
ICAP4-806-25.4	80	25.4	50	13	6			
ICAP4-806-27.0	80	27.0	50	13	6			
ICAP4-1008-31.75	100	31.75	50	45	8			

APKT



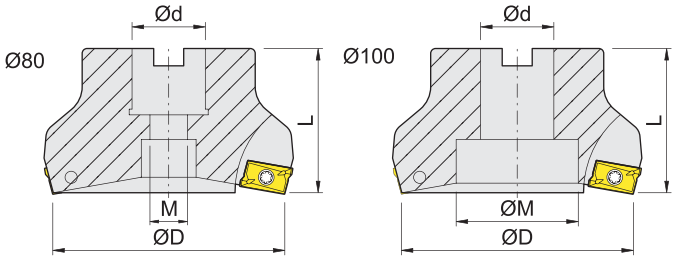
- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	APKT	160408PDER-MG	16.3	9.525	5.25	0.8	4.5	CP3020	★	★★	★★★	★	◎	◎	○	○
								CP3050	★	★★	★★★	★	◎	◎	○	○
	APKT	160408PDER-RG	16.3	9.525	5.25	0.8	4.5	CP3020		★	★★	★★	◎	○	○	○
								CP3050		★	★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

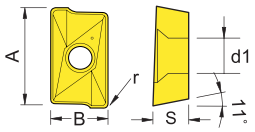
CAP SHOULDER MILLING CUTTER

CAPW



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	L1				
ICAPW4-806-25.4	80	25.4	50	13	6	APKT1604..	MS4011A	TF15
ICAPW4-1007-31.75	100	31.75	50	45	7			

APKT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel

- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	APKT	160408PDER-MG	16.3	9.525	5.25	0.8	4.5	CP3020	★	★★	★★★	★	◎	◎	○	○
								CP3050	★	★★	★★★	★	◎	◎	○	○
	APKT	160408PDER-RG	16.3	9.525	5.25	0.8	4.5	CP3020		★	★★	★★	◎	○	○	○
								CP3050		★	★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

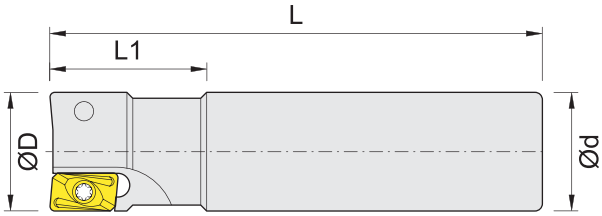
BAP SHOULDER MILLING CUTTER

Groove Milling

Shoulder Milling

Face Milling

BAP



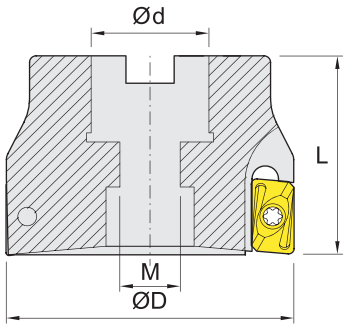
Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	L1				
IBAP3-15.5-S16-100	15.5	16	100	28	2	APMT1135....	MS2506E	TF8
IBAP3-162-S16-100	16	16	100	28	2			
IBAP3-162-S16-150	16	16	150	28	2			
IBAP3-172-S16-150	17	16	150	20	2			
IBAP3-172-S16-200	17	16	200	20	2			
IBAP3-182-S20-100	18	20	100	28	2			
IBAP3-182-S20-150	18	20	150	28	2			
IBAP3-202-S20-100	20	20	100	28	2			
IBAP3-202-S20-150	20	20	150	28	2			
IBAP3-202-S20-200	20	20	200	28	2			
IBAP3-203-S20-150	20	20	150	28	3			
IBAP3-203-S20-200	20	20	200	28	3			
IBAP3-212-S20-150	21	20	150	25	2			
IBAP3-212-S20-200	21	20	200	25	2			
IBAP3-213-S20-150	21	20	150	25	3			
IBAP3-213-S20-200	21	20	200	25	3			
IBAP3-243-S25-125	24	25	125	35	3			
IBAP3-253-S25-150	25	25	150	35	3			
IBAP3-253-S25-200	25	25	200	35	3			
IBAP3-254-S25-150	25	25	150	35	4			
IBAP3-254-S25-200	25	25	200	35	4			
IBAP3-263-S25-150	26	25	150	35	3			
IBAP3-263-S25-200	26	25	200	35	3			
IBAP3-264-S25-150	26	25	150	35	4			
IBAP3-264-S25-200	26	25	200	35	4			
IBAP3-324-S32-150	32	32	150	35	4			
IBAP3-324-S32-200	32	32	200	35	4			

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	APMT	113508PDER-MG	11.00	6.35	3.5	0.8	2.8	CP3020	★	★★	★★★	★	◎	◎	○	○
								CP3050	★	★★	★★★	★	◎	◎	○	○
	APMT	113508PDER-RG	11.00	6.35	3.5	0.8	2.8	CP3020		★	★★	★★	◎	○	○	○
								CP3050		★	★★	★★	◎	○	○	○
	APMT	113508PDER-HG	11.00	6.35	3.5	0.8	2.8	CP3020			★★	★★★	◎	○	○	○
								CP3050			★★	★★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

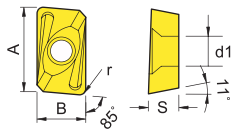
BAP SHOULDER MILLING CUTTER

BAP



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	M				
IBAP3-507-22.0	50	22.0	40	11	7	APMT1135....	MS2506E	TF8

APMT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	APMT	113508PDER-MG	11.00	6.35	3.5	0.8	2.8	CP3020	★	★★	★★★	★	◎	◎	○	○
								CP3050	★	★★	★★★	★	◎	◎	○	○
	APMT	113508PDER-RG	11.00	6.35	3.5	0.8	2.8	CP3020		★	★★	★★	◎	○	○	○
								CP3050		★	★★	★★	◎	○	○	○
	APMT	113508PDER-HG	11.00	6.35	3.5	0.8	2.8	CP3020			★★	★★★	◎	○	○	○
								CP3050			★★	★★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

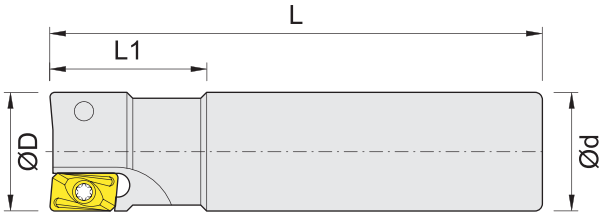
BAP SHOULDER MILLING CUTTER

Groove Milling

Shoulder Milling

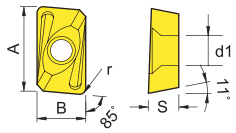
Face Milling

BAP



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	L1				
IBAP4-252-S25-125	25	25	125	40	2	APMT1604....	MS4009A	TF15
IBAP4-252-S25-150	25	25	150	40	2			
IBAP4-252-S25-200	25	25	200	40	2			
IBAP4-322-S32-150	32	32	150	45	2		MS4011A	
IBAP4-322-S32-200	32	32	200	45	2			
IBAP4-323-S32-150	32	32	150	45	3			
IBAP4-323-S32-200	32	32	200	45	3			

APMT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel

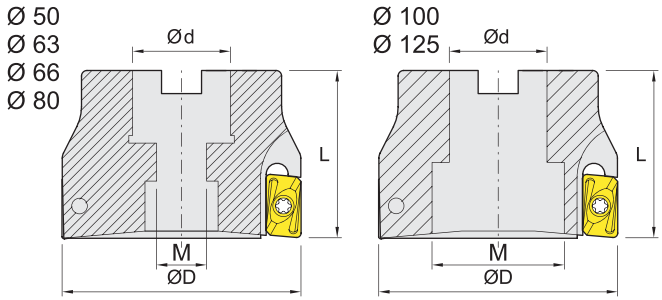
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	APMT	160408PDER-MG	16.50	9.525	4.76	0.8	4.4	CP3020	★	★★	★★★	★	◎	◎	○	○
								CP3050	★	★★	★★★	★	◎	◎	○	○
	APMT	160408PDER-RG	16.50	9.525	4.76	0.8	4.4	CP3020		★	★★	★★	◎	○	○	○
								CP3050		★	★★	★★	◎	○	○	○
	APMT	160408PDER-HG	16.50	9.525	4.76	0.8	4.4	CP3020			★★	★★★	◎	○	○	○
								CP3050			★★	★★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

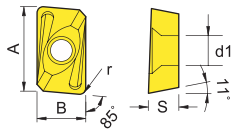
BAP SHOULDER MILLING CUTTER

BAP



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	M				
IBAP4-504-22.0	50	22.0	50	11	4	APMT1604....	MS4011A	TF15
IBAP4-504-25.4	50	25.4	50	13	4			
IBAP4-635-25.4	63	25.4	50	13	5			
IBAP4-665-25.4	66	25.4	50	13	5			
IBAP4-806-25.4	80	25.4	50	13	6			
IBAP4-1008-31.75	100	31.75	50	45	8			
IBAP4-1259-38.1	125	38.1	50	60	9			

APMT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel

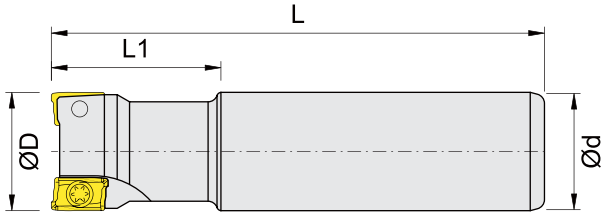
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	APMT	160408PDER-MG	16.50	9.525	4.76	0.8	4.4	CP3020	★	★★	★★★	★	◎	◎	○	○
								CP3050	★	★★	★★★	★	◎	◎	○	○
	APMT	160408PDER-RG	16.50	9.525	4.76	0.8	4.4	CP3020		★	★★	★★	◎	○	○	○
								CP3050		★	★★	★★	◎	○	○	○
	APMT	160408PDER-HG	16.50	9.525	4.76	0.8	4.4	CP3020			★★	★★★	◎	○	○	○
								CP3050			★★	★★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

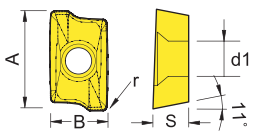
WEX SHOULDER MILLING CUTTER

WEX



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	L1				
IWEX12-162-S16-100	16	16	100	25	2	AXMT1235....	MS3006A	TF9
IWEX12-162-S16-150	16	16	150	25	2			
IWEX12-162-S16-200	16	16	200	25	2			
IWEX12-172-S16-100	17	16	100	25	2			
IWEX12-172-S16-150	17	16	150	25	2			
IWEX12-172-S16-200	17	16	200	25	2			
IWEX12-203-S20-150	20	20	150	30	3		MS3008A	
IWEX12-203-S20-200	20	20	200	30	3			
IWEX12-213-S20-150	21	20	150	30	3			
IWEX12-213-S20-200	21	20	200	30	3			
IWEX12-254-S25-150	25	25	150	35	4			
IWEX12-254-S25-200	25	25	200	35	4			
IWEX12-263-S25-150	26	25	150	35	3			
IWEX12-263-S25-200	26	25	200	35	3			
IWEX12-263-S25-250	26	25	250	35	3			
IWEX12-264-S25-150	26	25	150	35	4			
IWEX12-264-S25-200	26	25	200	35	4			
IWEX12-325-S32-150	32	32	150	40	5			
IWEX12-325-S32-200	32	32	200	40	5			
IWEX12-335-S32-150	33	32	150	40	5			

AXMT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel

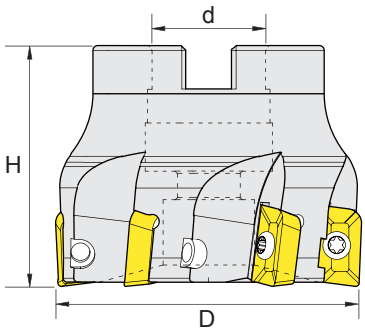
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	AXMT	123508PEER-RG	12.18	6.93	3.58	0.8	3.4	CP3020		★	★★	★★★	◎	○	○	○
								CP3050		★	★★	★★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

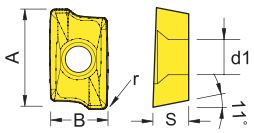
EAX SHOULDER MILLING CUTTER

EAX



Item Code	Dimensions, mm			Teeth	Insert	Screw	Wrench
	D	H	d				
IEAX3040FB-O	40	40	16	4	AXMT1705....	MS4009A	TF15
IEAX3050FB-O	50	40	22	5			
IEAX3063FB-O	63	40	22	6			
IEAX3080RA-O	80	50	25.4	4			
IEAX3100RA-O	100	63	31.75	5			
IEAX3125RA-O	125	63	38.1	6			
IEAXF3080RA-O	80	50	25.4	7			
IEAXF3100RA-O	100	63	31.75	8			
IEAXF3125RA-O	125	63	38.1	9			

AXMT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	AXMT	170508PEER-RG	17.6	10.2	5.56	0.8	4.6	CP3020		★	★★	★★★	◎	○	○	○
								CP3050		★	★★	★★★	◎	○	○	○
	AXMT	170516PEER-RG	17.6	10.2	5.56	1.6	4.6	CP3020		★	★★	★★★	◎	○	○	○
								CP3050		★	★★	★★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

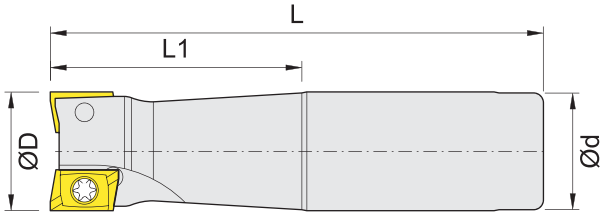
EAX SHOULDER MILLING CUTTER

Groove Milling

Shoulder Milling

Face Milling

EAX

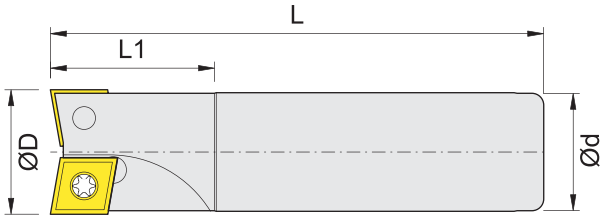


Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	L1				
IEAX3025E-20-120	25	20	120	35	2	AXMT1705....	MS4009A	TF15
IEAX3025E-120	25	25	120	35	2			
IEAX3028E-120	28	25	120	35	2			
IEAX3030E-130	30	25	130	40	3			
IEAX3032E-25-130	32	25	130	40	3			
IEAX3032E-130	32	32	130	40	3			
IEAX3035E-130	35	32	130	40	3			
IEAX3040E-170	40	32	170	50	4			
IEAX3050E-170	50	32	170	50	5			
IEAX3063E-170	63	32	170	50	6			
IEAX3050ES-135	50	32	135	25	5			
IEAX3050ES-42-135	50	42	135	25	5			
IEAX3063ES-135	63	32	135	25	6			
IEAX3063ES-42-135	63	42	135	25	6			
IEAX3025EL-170	25	25	170	50	2			
IEAX3026EL-150	26	25	150	35	2			
IEAX3026EL-200	26	25	200	35	2			
IEAX3026EL-250	26	25	250	35	2			
IEAX3026EL-300	26	25	300	35	2			
IEAX3028EL-170	28	25	170	50	2			
IEAX3030EL-180	30	25	180	60	2			
IEAX3032EL-180	32	32	180	60	2			
IEAX3033EL-150	33	32	150	40	2			
IEAX3033EL-200	33	32	200	40	2			
IEAX3033EL-250	33	32	250	40	2			
IEAX3033EL-300	33	32	300	40	2			
IEAX3033EL-350	33	32	350	40	2			
IEAX3033EL-150-3T	33	32	150	40	3			
IEAX3033EL-200-3T	33	32	200	40	3			
IEAX3033EL-250-3T	33	32	250	40	3			
IEAX3033EL-300-3T	33	32	300	40	3			
IEAX3033EL-350-3T	33	32	350	40	3			

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	AXMT	170508PEER-RG	17.6	10.2	5.56	0.8	4.6	CP3020		★	★★	★★★	◎	○	○	○
								CP3050		★	★★	★★★	◎	○	○	○
	AXMT	170516PEER-RG	17.6	10.2	5.56	1.6	4.6	CP3020		★	★★	★★★	◎	○	○	○
								CP3050		★	★★	★★★	◎	○	○	○

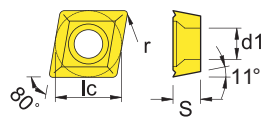
HCP SHOULDER MILLING CUTTER

HCP



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	L1				
IHCP09-161-S16-150	16	16	150	30	1	CPMT0903...	MS4009A	TF15
IHCP09-161-S16-200	16	16	200	30	1			
IHCP09-171-S16-150	17	16	150	30	1			
IHCP09-171-S16-200	17	16	200	30	1			
IHCP09-212-S20-150	21	20	150	30	2			
IHCP09-212-S20-200	21	20	200	30	2			
IHCP09-252-S25-150	25	25	150	40	2			
IHCP09-252-S25-200	25	25	200	40	2			
IHCP09-262-S25-150	26	25	150	40	2			
IHCP09-262-S25-200	26	25	200	40	2			
IHCP09-262-S25-250	26	25	250	40	2			
IHCP09-332-S32-150	33	32	150	40	2	CPMT0903...	MS4011A	
IHCP09-332-S32-200	33	32	200	40	2			
IHCP09-332-S32-250	33	32	250	40	2			
IHCP09-332-S32-300	33	32	300	40	2			
IHCP09-333-S32-150	33	32	150	40	3			
IHCP09-333-S32-200	33	32	200	40	3			
IHCP09-333-S32-250	33	32	250	40	3			
IHCP09-333-S32-300	33	32	300	40	3			
IHCP12-332-S32-150	33	32	150	40	2	CPMT1204...	MS5011A	TF20
IHCP12-332-S32-200	33	32	200	40	2			
IHCP12-332-S32-250	33	32	250	40	2			
IHCP12-332-S32-300	33	32	300	40	2			

CPMT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)				Grade	Application				Material			
			Ic	S	r	d1		F	S	M	R	P	M	K	H
	CPMT	090308-MG	9.525	3.18	0.8	4.4	CP3020	★	★★	★★★	★	◎	◎	○	○
							CP3050	★	★★	★★★	★	◎	◎	○	○
		120408-MG	12.7	4.76	0.8	5.5	CP3020	★	★★	★★★	★	◎	◎	○	○
							CP3050	★	★★	★★★	★	◎	◎	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

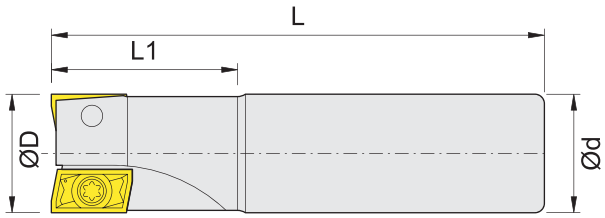
AHU SHOULDER MILLING CUTTER

Groove Milling

Shoulder Milling

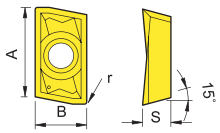
Face Milling

AHU



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	M				
IAHU15-252-S25-125	25	25	125	40	2	JDMT1505..R	MS4011A	TF15
IAHU15-252-S25-150	25	25	150	40	2			
IAHU15-252-S25-200	25	25	200	40	2			
IAHU15-302-S25-125	30	25	125	35	2			
IAHU15-302-S25-150	30	25	150	35	2			
IAHU15-302-S25-200	30	25	200	35	2			
IAHU15-323-S32-150	32	32	150	45	3			
IAHU15-323-S32-200	32	32	200	45	3			
IAHU15-323-S32-250	32	32	250	45	3			
IAHU15-323-S32-300	32	32	300	45	3			
IAHU15-353-S32-150	35	32	150	45	3			
IAHU15-353-S32-200	35	32	200	45	3			
IAHU15-353-S32-250	35	32	250	45	3			
IAHU15-353-S32-300	35	32	300	45	3			

JDMT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel

- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)				Grade	Application				Material			
			A	B	S	r		F	S	M	R	P	M	K	H
	JDMT	150508R-MG	15.1	9.12	5.0	0.8	CP3020	★	★★	★★★	★	◎	◎	○	○
							CP3050	★	★★	★★★	★	◎	◎	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

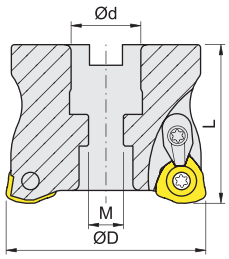
AJX RADIUS MILLING CUTTER

Groove Milling

Shoulder Milling

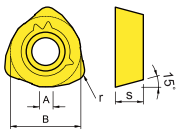
Face Milling

AJX



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench	Clamp	Clamp Screw	Clamp Wrench
	D	d	L	M							
IAJX12-050A03R-22.0	50	22.0	50	11	3	JD..1204..	MS4011G	TF15	MC35-143	MC3509A	TF15
IAJX12-050A04R-22.0	50	22.0	50	11	4						
IAJX12-063A04R-22.0	63	22.0	50	11	4						
IAXJ12-06304CR-25.4	63	25.4	50	13	4						
IAJX12-06604CR-25.4	66	25.4	50	13	4						
IAXJ12-08004CR-25.4	80	25.4	50	13	4						

JDMW



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

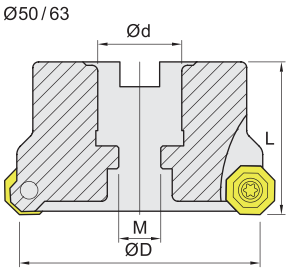
Type	Designation		Dimension (mm)				Grade	Application				Material			
			A	B	S	r		F	S	M	R	P	M	K	H
	JDMW	120420ZDSR-RG	2.5	12	4.76	2.0	CP3020			★★★	★★	◎	○	○	○
							CP3050			★★★	★★	◎	○	○	○

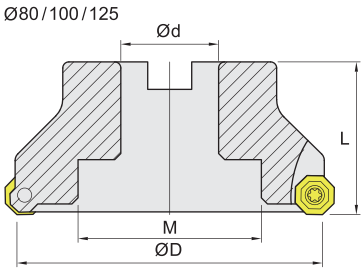
★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

TFM 45° FACE MILLING CUTTER

Face Milling

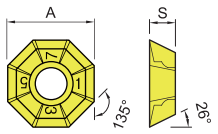
TFM





Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	M				
ITFM435R-05005-22.0	50	22.0	40	11	5	OFMT05T3....	MS4011A	TF15
ITFM435R-06306-25.4	63	25.4	40	13	6			
ITFM435R-08007-27.0	80	27.0	50	38	7			
ITFM435R-10008-32.0	100	32.0	50	60	8			
ITFM435R-12509-40.0	125	40.0	63	60	9			

OFMT



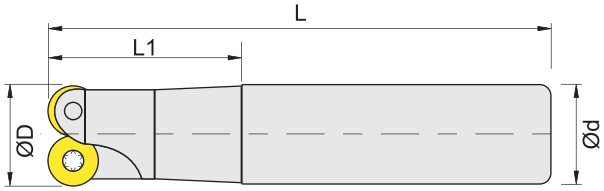
- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)			Grade	Application				Material			
			A	S	r		F	S	M	R	P	M	K	H
	OFMT	05T3TN-MG	12.7	3.8	0.6	CP3020		★★	★★★	★★	◎	○	○	○
						CP3050		★★	★★★	★★	◎	○	○	○
	OFMT	05T3TN-RG	12.7	3.8	0.6	CP3020		★★	★★★	★★	◎	○	○	○
						CP3050		★★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

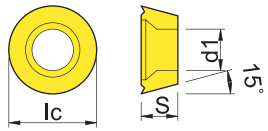
RD CORNER ROUNDING MILLING CUTTER

RD



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	L1				
IRD051-D092-S08-100	9	8	100	12	2	RD..0501..	MS2004A	TF6
IRD051-D102-S10-100	10	10	100	18	2			
IRD051-D112-S10-100	11	10	100	15	2			
IRD051-D122-S12-100	12	12	100	22	2			
IRD051-D123-S12-100	12	12	100	22	3			
IRD051-D132-S12-100	13	12	100	18	2			
IRD051-D133-S12-100	13	12	100	18	3			
IRD051-D164-S16-150	16	16	150	30	4			
IRD051-D164-S16-200	16	16	200	30	4			
IRD051-D174-S16-150	17	16	150	20	4			
IRD051-D174-S16-200	17	16	200	20	4			

RDKW



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel

- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)			Grade	Application				Material			
			Ic	S	d1		F	S	M	R	P	M	K	H
	RDKW	0501MOE	5.00	1.59	2.20	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

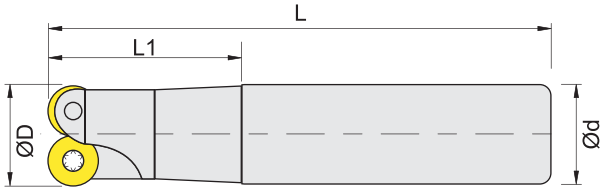
RD CORNER ROUNDING MILLING CUTTER

Radius Milling

Copy Milling

Face Milling

RD



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	L1				
IRD072-D162-S16-150	16	16	150	35	2	RD..0702..	MS2506B	TF9
IRD072-D162-S16-200	16	16	200	35	2			
IRD072-D172-S16-150	17	16	150	20	2			
IRD072-D172-S16-200	17	16	200	20	2			
IRD072-D203-S20-150	20	20	150	35	3			
IRD072-D203-S20-200	20	20	200	35	3			
IRD072-D213-S20-150	21	20	150	25	3			
IRD072-D213-S20-200	21	20	200	25	3			
IRD072-D254-S25-150	25	25	150	40	4			
IRD072-D254-S25-200	25	25	200	40	4			
IRD072-D254-S25-250	25	25	250	40	4			
IRD072-D255-S25-150	25	25	150	40	5			
IRD072-D255-S25-200	25	25	200	40	5			
IRD072-D255-S25-250	25	25	250	40	5			
IRD072-D264-S25-150	26	25	150	25	4			
IRD072-D264-S25-200	26	25	200	25	4			
IRD072-D264-S25-250	26	25	250	25	4			
IRD072-D265-S25-150	26	25	150	25	5			
IRD072-D265-S25-200	26	25	200	25	5			
IRD072-D265-S25-250	26	25	250	25	5			
IRD072-D355-S32-150	35	32	150	30	5			
IRD072-D355-S32-200	35	32	200	30	5			
IRD072-D355-S32-250	35	32	250	30	5			
IRD072-D355-S32-300	35	32	300	30	5			
IRD072-D356-S32-150	35	32	150	30	6			
IRD072-D356-S32-200	35	32	200	30	6			
IRD072-D356-S32-250	35	32	250	30	6			

Type	Designation		Dimension (mm)			Grade	Application				Material			
			lc	S	d1		F	S	M	R	P	M	K	H
	RDKW	0702MOE	7.00	2.38	2.80	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

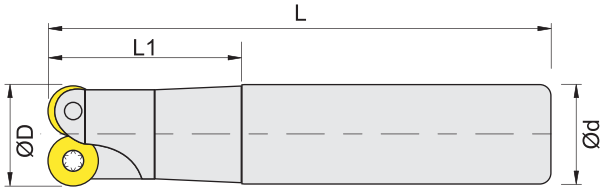
RD CORNER ROUNDING MILLING CUTTER

Radius Milling

Copy Milling

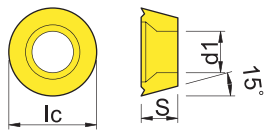
Face Milling

RD



Item Code	Dimensions, mm				Teeth	Insert	Screw	Clamp	Clamp Screw	Wrench
	D	d	L	L1						
IRD103-D202-S20-150	20	20	150	40	2	RD..1003..	MS3507A	--	--	TF15
IRD103-D202-S20-200	20	20	200	40	2					
IRD103-D212-S20-150	21	20	150	25	2					
IRD103-D212-S20-200	21	20	200	25	2					
IRD103-D253-S25-150	25	25	150	40	3					
IRD103-D253-S25-200	25	25	200	40	3					
IRD103-D253-S25-250	25	25	250	40	3					
IRD103-D263-S25-150	26	25	150	25	3					
IRD103-D263-S25-200	26	25	200	25	3					
IRD103-D263-S25-250	26	25	250	25	3					
IRD103-D303-S25-150	30	25	150	25	3		MS3509A	--	--	
IRD103-D303-S25-200	30	25	200	25	3					
IRD103-D303-S25-250	30	25	250	25	3					
IRD103-D323-S32-150	32	32	150	40	3		MS3509A	MC35-143	MS3509A	
IRD103-D323-S32-200	32	32	200	40	3					
IRD103-D323-S32-250	32	32	250	40	3					
IRD103-D323-S32-300	32	32	300	40	3					
IRD103-D353-S32-150	35	32	150	40	3					
IRD103-D353-S32-200	35	32	200	40	3					
IRD103-D353-S32-250	35	32	250	40	3					
IRD103-D353-S32-300	35	32	300	40	3					
IRD103-D354-S32-150	35	32	150	40	4					
IRD103-D354-S32-200	35	32	200	40	4					
IRD103-D354-S32-250	35	32	250	40	4					
IRD103-D354-S32-300	35	32	300	40	4					

RDMX



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)			Grade	Application				Material			
			lc	S	d1		F	S	M	R	P	M	K	H
	RDMX	1003MOE	10.00	3.18	4.15	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

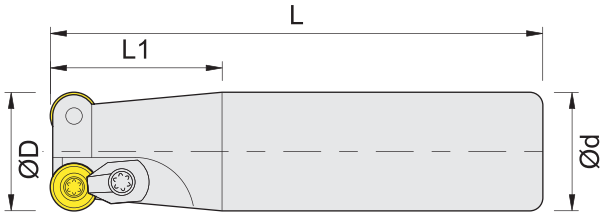
RC CORNER ROUNDING MILLING CUTTER

Radius Milling

Copy Milling

Face Milling

RC



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench	Clamp	Clamp Screw	Clamp Wrench
	D	d	L	L1							
IRC25-5R25-150	25	25	150	45	2	RD..10T3	MS4009B	TF15	MC35-141	MS3509A	TF15
IRC25-5R25-200	25	25	200	45	2						
IRC25-5R25-250	25	25	250	45	2						
IRC25-5R26-150	26	25	150	30	2	RD..10T3	MS4009B	TF15	MC35-141	MS3509A	TF15
IRC25-5R26-200	26	25	200	30	2						
IRC25-5R26-250	26	25	250	30	2						
IRC25-5R302-150	30	25	150	35	2						
IRC25-5R302-200	30	25	200	35	2						
IRC25-5R302-250	30	25	250	35	2						
IRC25-5R303-150	30	25	150	35	3						
IRC25-5R303-200	30	25	200	35	3						
IRC25-5R303-250	30	25	250	35	3						
IRC32-5R32-150	32	32	150	45	3						
IRC32-5R32-200	32	32	200	45	3						
IRC32-5R32-250	32	32	250	45	3						
IRC32-5R32-300	32	32	300	45	3						
IRC32-5R35-150	35	32	150	50	3						
IRC32-5R35-200	35	32	200	50	3						
IRC32-5R35-250	35	32	250	30	3						
IRC32-5R35-300	35	32	300	50	3						
IRC32-5R40-150	40	32	150	50	3						
IRC32-5R40-200	40	32	200	50	3						
IRC32-5R40-250	40	32	250	50	3						
IRC32-5R40-300	40	32	300	50	3						

Type	Designation		Dimension (mm)			Grade	Application				Material			
			lc	S	d1		F	S	M	R	P	M	K	H
	RDMT	10T3MOE	10.00	3.97	4.50	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○
	RDMT	10T3MOT	10.00	3.97	4.50	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
	RDMW	10T3MOE	10.00	3.97	4.50	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

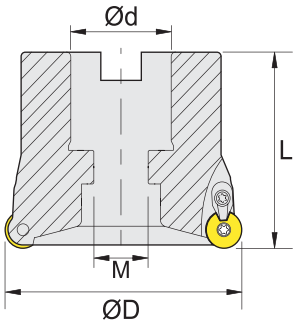
RD CORNER ROUNDING MILLING CUTTER

Radius Milling

Copy Milling

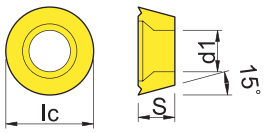
Face Milling

RD



Item Code	Dimensions, mm				Teeth	Insert	Screw	Clamp	Clamp Screw	Wrench
	D	d	L	M						
IRD103-D504-22.0	50	22.0	40	11	4	RD..1003..	MS3509A	MC35-143	MS3509A	TF15
IRD103-D505-22.0	50	22.0	40	11	5					
IRD103-D504-25.4	50	25.4	40	11	4					
IRD103-D505-25.4	50	25.4	40	11	5					
IRD103-D635-25.4	63	25.4	50	13	5					
IRD103-D636-25.4	63	25.4	50	13	6					

RDMX



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel

- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)			Grade	Application				Material			
			Ic	S	d1		F	S	M	R	P	M	K	H
	RDMX	1003MOE	10.00	3.18	4.15	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

RM CORNER ROUNDING MILLING CUTTER

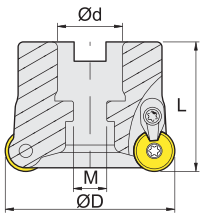
Radius Milling

Copy Milling

Face Milling

RM

Ø50 / Ø63 / Ø66 / Ø80



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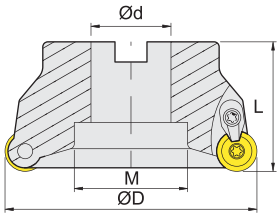


Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench	Clamp	Clamp Screw	Clamp Wrench
	D	d	L	M							
IRM-5R504-22.0	50	22.0	50	11	4	RD..10T3	MS4009B	TF15	MC35-141	MS3509A	TF15
IRM-5R504-25.4	50	25.4	50	13	4						
IRM-5R635-25.4	63	25.4	50	13	5						
IRM-5R806-25.4	80	25.4	50	13	6						
IRM-8R633-25.4	63	25.4	50	13	3	RD..1604	MS5011A	TF20	MC50-147	MS5011A	TF20
IRM-8R634-25.4	63	25.4	50	13	4						
IRM-8R635-25.4	63	25.4	50	13	5						
IRM-8R635-27.0	63	27.0	50	13	5						
IRM-8R664-25.4	66	25.4	50	13	4						
IRM-8R665-25.4	66	25.4	50	13	5						
IRM-8R664-27.0	66	27.0	50	13	4						
IRM-8R665-27.0	66	27.0	50	13	5						
IRM-8R805-25.4	80	25.4	55	13	5						
IRM-8R805-27.0	80	27.0	55	13	5						
IRM-8R806-27.0	80	27.0	55	13	6						
IRM-8R1006-31.75	100	31.75	60	45	6						

Type	Designation		Dimension (mm)			Grade	Application				Material			
			lc	S	d1		F	S	M	R	P	M	K	H
	RDMT	10T3MOE	10.00	3.97	4.50	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○
	RDMT	10T3MOT	10.00	3.97	4.50	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
	RDMW	10T3MOE	10.00	3.97	4.50	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○
	RDMT	1604MOT	16.00	4.76	5.50	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
						CP4050		★	★★	★★★	◎	○	○	○
	RDMW	1604MOT	16.00	4.76	5.50	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
						CP4050		★	★★	★★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

RM CORNER ROUNDING MILLING CUTTER

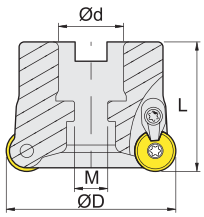
Radius Milling

Copy Milling

Face Milling

RM

Ø50 / Ø63 / Ø66 / Ø80



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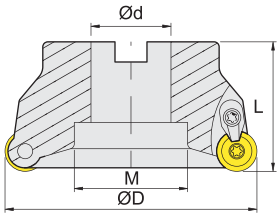
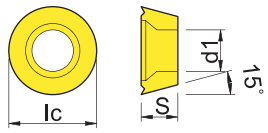


Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench	Clamp	Clamp Screw	Clamp Wrench
	D	d	L	M							
IRM-6R504-22.0	50	22.0	50	11	4	RD..1204	MS4011A	TF15	MC35-141	MS3509A	TF15
IRM-6R504-25.4	50	25.4	50	13	4						
IRM-6R635-25.4	63	25.4	50	13	5						
IRM-6R635-27.0	63	27.0	50	13	5						
IRM-6R665-25.4	66	25.4	50	13	5						
IRM-6R806-25.4	80	25.4	50	13	6						
IRM-6R805-27.0	80	27.0	50	13	5						
IRM-6R806-27.0	80	27.0	50	13	6						

RDMT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)			Grade	Application				Material			
			lc	S	d1		F	S	M	R	P	M	K	H
	RDMT	1204MOT	12.00	4.76	4.40	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○
	RDMW	1204MOT	12.00	4.76	4.40	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

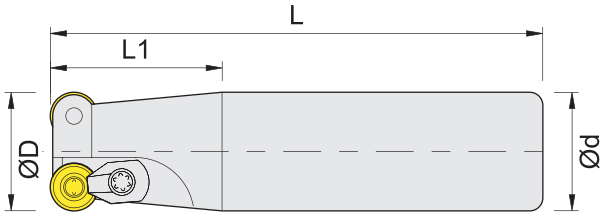
BRP CORNER ROUNDING MILLING CUTTER

Radius Milling

Copy Milling

Face Milling

BRP



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench	Clamp	Clamp Screw	Clamp Wrench
	D	d	L	L1							
IBRP08-202-S20-150	20	20	150	35	2	RP..08T2	MS2506A	TF9	MS3509A	MC35-143	TF15
IBRP08-202-S20-200	20	20	200	35	2						
IBRP10-252-S25-150	25	25	150	40	2	RP..10T3	MS3509A	TF15	MS3509A	MC35-143	TF15
IBRP10-252-S25-200	25	25	200	40	2						
IBRP12-252-S25-150	25	25	150	45	2	RP..1204	MS4009A	TF15	MS3509A	MC35-143	TF15
IBRP12-252-S25-200	25	25	200	45	2						
IBRP12-252-S25-250	25	25	250	45	2						
IBRP12-262-S25-150	26	25	150	45	2						
IBRP12-262-S25-200	26	25	200	45	2						
IBRP12-262-S25-250	26	25	250	45	2						
IBRP12-322-S32-150	32	32	150	45	2						
IBRP12-322-S32-200	32	32	200	45	2						
IBRP12-323-S32-150	32	32	150	45	3						
IBRP12-323-S32-200	32	32	200	45	3						
IBRP12-323-S32-250	32	32	250	45	3						
IBRP-103-252-S25-150	25	25	150	40	2	RP..1003	MS4009A	TF15	MS3509A	MC35-143	TF15
IBRP-103-252-S25-200	25	25	200	40	2						
IBRP-103-504-S32-180	50	32	180	40	4		MS4011A				

Type	Designation		Dimension (mm)			Grade	Application				Material			
			lc	S	d1		F	S	M	R	P	M	K	H
	RPMT	08T2MOE	8.00	2.78	3.2	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
	RPMW	1003MOE	10.00	3.18	4.6	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
	RPMW	1003MOT	10.00	3.18	4.6	CP3020		★	★★★	★★★	◎	○	○	○
						CP3050		★	★★★	★★★	◎	○	○	○
	RPMT	10T3MOE	10.00	3.97	4.3	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
	RPMT	1204MOE	12.00	4.76	4.3	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
		1204MOT												
	RPMW	1204MOE	12.00	4.76	4.3	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

RPM CORNER ROUNDING MILLING CUTTER

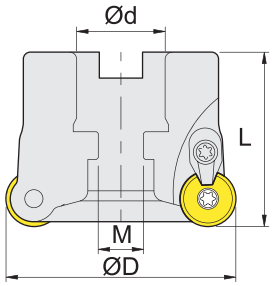
Radius Milling

Copy Milling

Face Milling

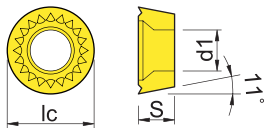
RPM

Ø50 / Ø63 / Ø66 / Ø80



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench	Clamp	Clamp Screw	Clamp Wrench
	D	d	L	M							
IRPM-6R504-22.0	50	22.0	50	11	4	RP..1204	MS4011A	TF15	MC35-141	MS3509A	TF15
IRPM-6R504-25.4	50	25.4	50	13	4						
IRPM-6R635-25.4	63	25.4	50	13	5						
IRPM-6R665-25.4	66	25.4	50	13	5						
IRPM-6R806-25.4	80	25.4	55	13	6						

RPMT, RPMW



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel

- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

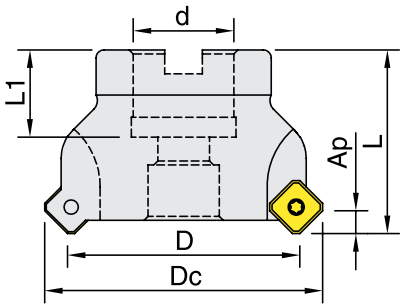
Type	Designation		Dimension (mm)			Grade	Application				Material			
			lc	S	d1		F	S	M	R	P	M	K	H
	RPMT	1204MOE	12.00	4.76	4.3	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
	RPMT	1204MOT	12.00	4.76	4.3	CP3020		★	★★★	★★★	◎	○	○	○
						CP3050		★	★★★	★★★	◎	○	○	○
	RPMW	1204MOE	12.00	4.76	4.3	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

SE445 45˚ FACE MILLING CUTTER

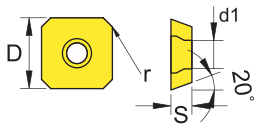
Face Milling

SE445



Item Code	Dimensions, mm						Teeth	Insert	Screw	Wrench
	D	Dc	d1	L	L1	Ap				
ISE445R050-22-4T	50	64	22	40	20	4	4	SE..1204..	TS5006	TF20
ISE445R063-22-5T	63	77	22	45	21	4	5			
ISE445R063-25.4-5T	63	77	25.4	45	21	4	5			
ISE445080-27-6T	80	94	27	50	26	4	6			
ISE445080-31.75-6T	80	94	31.75	50	26	4	6			
ISE445R100-32-6T	100	114	32	50	32	4	6			
ISE445R100-31.75-6T	100	114	31.75	50	32	4	6			
ISE445R125-40-8T	125	139	40	63	38	4	8			
ISE445R125-38.1-8T	125	139	38.1	63	38	4	8			
ISE445R160-40-10T	160	174	40	63	38	4	10			
ISE445R160-50.8-10T	160	174	50.8	63	38	4	10			
ISE445R200-47.625-12T	200	214	47.625	63	38	4	12			
ISE445R250-47.625-14T	250	264	47.625	63	38	4	14			

SEKT, SEKW



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)				Grade	Application				Material			
			D	S	r	d1		F	S	M	R	P	M	K	H
	SEKT	1204AFTN-RG	12	4.76	0.8	5.5	CP3020		★	★★★	★★★	◎	○	○	○
							CP3050		★	★★★	★★★	◎	○	○	○
	SEKW	1204AFEN	12	4.76	0.8	5.5	CP3020		★	★★★	★★★	◎	○	◎	○
							CP3050		★	★★★	★★★	◎	○	◎	○

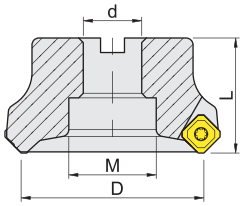
★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

ASX 45˚ FACE MILLING CUTTER

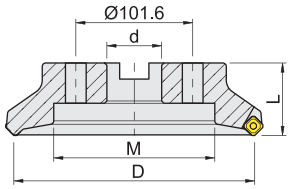
Face Milling

ASX

Ø50 / Ø63 / Ø80
Ø100 / Ø125 / Ø160

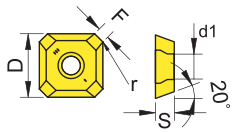


Ø210 / Ø260



Item Code	Dimensions, mm				Teeth	Insert	Shim	Shim Screw	Wrench	Screw	Wrench
	D	d	L	M							
IASX445-050A04R-22.0	50	22.0	40	11	4	SE..13T3..	SSS445N	MDS5035	PL35	MS3512B	TF15
IASX445-063A05R-22.0	63	22.0	40	11	5						
IASX445-R05004C-25.4	50	25.4	50	13	4						
IASX445-R06305C-25.4	63	25.4	50	13	5						
IASX445-R08006C-25.4	80	25.4	50	38	6						
IASX445-R10007D-31.75	100	31.75	50	45	7						
IASX445-R12508E-38.1	125	38.1	63	60	8						
IASX445-R16010F-50.8	160	50.8	63	80	10						
IASX445-R21012K-47.625	210	47.625	63	140	12						
IASX445-R26014K-47.625	260	47.625	63	180	14						

SEMT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)					Grade	Application				Material			
			D	S	F	r	d1		F	S	M	R	P	M	K	H
	SEMT	13T3AGSN-MG	13.4	3.97	1.9	1.5	4.2	CP3020		★★	★★★	★	◎	◎	○	○
								CP3050		★★	★★★	★	◎	◎	○	○
	SEMT	13T3AGSN-RG	13.4	3.97	1.9	1.5	4.2	CP3020		★	★★★	★★★	◎	○	○	○
								CP3050		★	★★★	★★★	◎	○	○	○
	SEMT	13T3AGSN-HG	13.4	3.97	1.9	1.5	4.2	CP3020			★★	★★★	◎	○	◎	○
								CP3050			★★	★★★	◎	○	◎	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

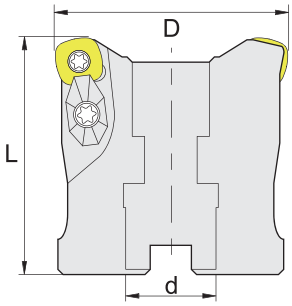
ASRF SUPER RADIUS SUFRACE MILLING CUTTER

Groove Milling

Copy Milling

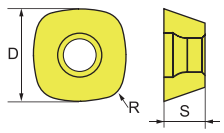
Face Milling

ASRF



Item Code	Dimensions, mm			Teeth	Insert	Screw	Clamp	Clamp Screw	Wrench
	D	ap	d						
IASRF 50-22.0-3	50	50	22.0	3	SDNW1205ZDTN-RG	MS4011A	YR-06	MS4008ES	TF15
IASRF 50-22.225-3	50	50	22.225	3					
IASRF 50-22.0-4	50	50	22.0	4					
IASRF 50-22.225-4	50	50	22.225	4					
IASRF 63-22.0-3	63	50	22.0	3					
IASRF 63-22.225-3	63	50	22.225	3					
IASRF 63-22.0-4	63	50	22.0	4					
IASRF 63-22.225-4	63	50	22.225	4					
IASRF 80-31.75-4	80	55	31.75	4					
IASRF 80-32.0-4	80	55	32.0	4					
IASRF 80-31.75-5	80	55	31.75	5					
IASRF 80-32.0-5	80	55	32.0	5					

SDNW



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)			Grade	Application				Material			
			D	S	R		F	S	M	R	P	M	K	H
	SDNW	1205 ZDTN-RG	12.7	5.56	15	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○

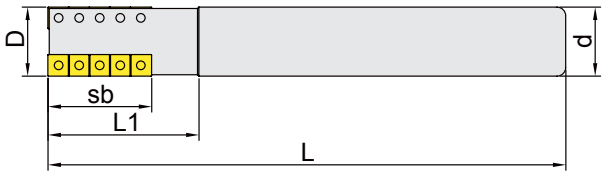
★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

SRE HIGH SPEED ROUGH MILLING CUTTER

Groove Milling

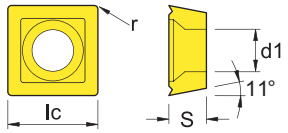
Shoulder Milling

SRE



Item Code	Dimensions, mm					Teeth	Number of Inserts	Insert	Screw	Wrench
	D	sb	L	d	L1					
ISRE.W.016.Z02.020.05	16	20	100	16	30	2	10	SPMG0502...	TS2003	TF6
ISRE.W.020.Z02.030.06	20	30	110	20	40	2	12	SPMG0602...	TS2202	TF6

SPMG



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)				Grade	Application				Material			
			lc	S	r	d1		F	S	M	R	P	M	K	H
	SPMG	050204-MG	5.0	2.38	0.4	2.30	CP3020				★★★	◎	○	◎	
							CP3050				★★★	◎	○	◎	
	SPMG	060204-MG	6.0	2.38	0.4	2.65	CP3020				★★★	◎	○	◎	
							CP3050				★★★	◎	○	◎	

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

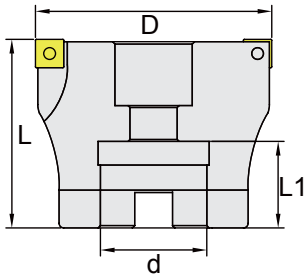
SEC SHOULDER HIGH SPEED SHELL MILLING CUTTER

Groove Milling

Shoulder Milling

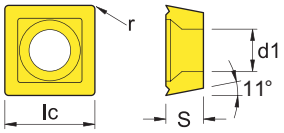
Face Milling

SEC



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	L	L1	d				
ISEC06R04006-16	40	40	18	16	6	SPMG0602...	TS2202	TF7
ISEC06R05007-22	50	45	20	22	7			
ISEC06R05007-25.4	50	45	20	25.4	7			
ISEC06R06309-22	63	45	20	22	9			
ISEC06R06309-25.4	63	45	20	25.4	9			
ISEC06R08011-27	80	50	23	27	11			
ISEC06R08011-25.4	80	50	23	25.4	11			

SPMG



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)				Grade	Application				Material			
			lc	S	r	d1		F	S	M	R	P	M	K	H
	SPMG	060204-MG	6.0	2.38	0.4	2.65	CP3020				★★★	◎	○	◎	
							CP3050				★★★	◎	○	◎	

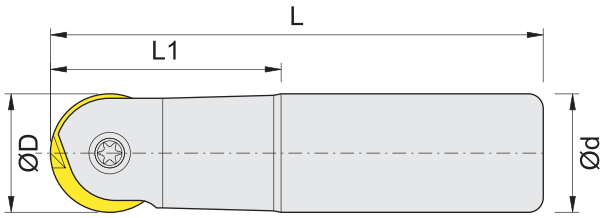
★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

WGR BALL PRECISION MILLING CUTTER

Radius Milling

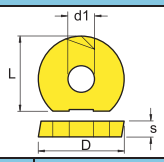
Copy Milling

WGR



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	L1				
IWGR16-S16-150	16	16	150	36	1	WP3216...	MGR5016	TF20
IWGR16-S16-200	16	16	200	36	1			
IWGR16-S20-200	16	20	200	65	1			
IWGR16-S20-250	16	20	250	65	1			
IWGR20-S20-150	20	20	150	45	1	WP3220...	MGR5020	TF20
IWGR20-S20-200	20	20	200	45	1			
IWGR20-S25-200	20	25	200	76	1			
IWGR20-S25-250	20	25	250	76	1			
IWGR25-S25-200	25	25	200	45	1	WP3225...	MGR6025	TF30
IWGR25-S25-250	25	25	250	45	1			
IWGR25-S32-200	25	32	200	98	1			
IWGR25-S32-250	25	32	250	98	1			
IWGR25-S32-300	25	32	300	98	1			

WP32



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel

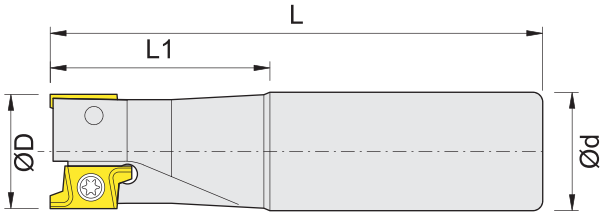
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)				Grade	Application				Material			
			D	S	d1	L		F	S	M	R	P	M	K	H
	WP32	16-SG	16	3	5	14.0	CP3020	★	★	★★	★★	◎	○	○	○
							CP3050	★	★	★★	★★	◎	○	○	○
	WP32	20-SG	20	3	5	16.0	CP3020	★	★	★★	★★	◎	○	○	○
							CP3050	★	★	★★	★★	◎	○	○	○
	WP32	25-SG	25	4	6	21.5	CP3020	★	★	★★	★★	◎	○	○	○
							CP3050	★	★	★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

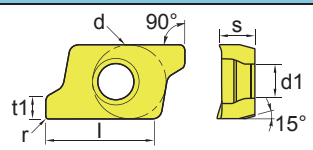
RT SHOULDER MILLING CUTTER

RT



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	L1				
IRT07-D102-S10-150	10	10	150	25	2	WRT0702...	MS2004A	TF6
IRT07-D112-S10-150	11	10	150	20	2			
IRT07-D122-S12-150	12	12	150	30	2			
IRT07-D132-S12-150	13	12	150	20	2			
IRT07-D163-S16-150	16	16	150	30	3		MS2005A	
IRT07-D163-S16-200	16	16	200	30	3			
IRT07-D173-S16-150	17	16	150	25	3			
IRT07-D173-S16-200	17	16	200	25	3			
IRT07-D204-S20-150	20	20	150	30	4			
IRT07-D204-S20-200	20	20	200	30	4			

WRT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel

- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)						Grade	Application				Material			
			d	s	d1	l	r	t1		F	S	M	R	P	M	K	H
	WRT	070204-RG	4.30	2.38	2.2	6.4	0.4	1.3	CP3020		★★	★★★	★★	◎	○	○	○
									CP3050		★★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

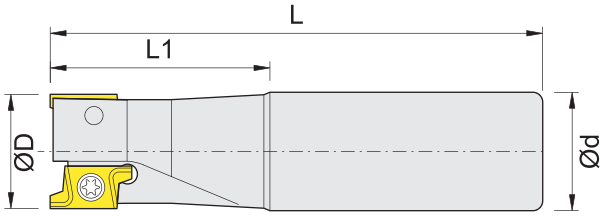
RT SHOULDER MILLING CUTTER

Groove Milling

Shoulder Milling

Face Milling

RT



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	L1				
IRT10-D162-S16-150	16	16	150	30	2	WRT1003...	MS2506B	TF9
IRT10-D162-S16-200	16	16	200	30	2			
IRT10-D172-S16-150	17	16	150	25	2			
IRT10-D172-S16-200	17	16	200	25	2			
IRT10-D202-S20-150	20	20	150	30	2			
IRT10-D202-S20-200	20	20	200	30	2			
IRT10-D203-S20-150	20	20	150	30	3			
IRT10-D203-S20-200	20	20	200	30	3			
IRT10-D212-S20-150	21	20	150	25	2			
IRT10-D212-S20-200	21	20	200	25	2			
IRT10-D213-S20-150	21	20	150	25	3			
IRT10-D213-S20-200	21	20	200	25	3			
IRT10-D252-S25-150	25	25	150	40	2			
IRT10-D252-S25-200	25	25	200	40	2			
IRT10-D253-S25-150	25	25	150	40	3			
IRT10-D253-S25-200	25	25	200	40	3			
IRT10-D262-S25-150	26	25	150	25	2			
IRT10-D262-S25-200	26	25	200	25	2			
IRT10-D263-S25-150	26	25	150	25	3			
IRT10-D263-S25-200	26	25	200	25	3			
IRT10-D324-S32-150	32	32	150	40	4			
IRT10-D324-S32-200	32	32	200	40	4			
IRT10-D325-S32-150	32	32	150	40	5			
IRT10-D325-S32-200	32	32	200	40	5			
IRT10-D334-S32-150	33	32	150	35	4			
IRT10-D334-S32-200	33	32	200	35	4			
IRT10-D335-S32-150	33	32	150	35	5			
IRT10-D335-S32-200	33	32	200	35	5			
IRT10-D354-S32-150	35	32	150	35	4			
IRT10-D354-S32-200	35	32	200	35	4			
IRT10-D355-S32-150	35	32	150	35	5			
IRT10-D355-S32-200	35	32	200	35	5			

Type	Designation		Dimension (mm)						Grade	Application				Material			
			d	s	d1	l	r	t1		F	S	M	R	P	M	K	H
	WRT	100308-RG	6.35	3.40	2.9	9.3	0.8	1.8	CP3020		★★	★★★	★★	◎	○	○	○
									CP3050		★★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

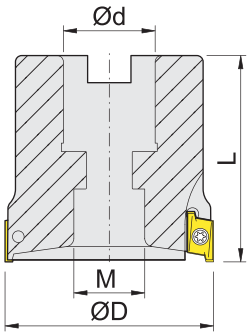
RT SHOULDER MILLING CUTTER

Groove Milling

Shoulder Milling

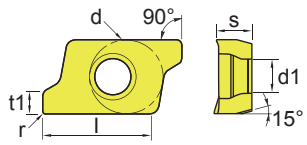
Face Milling

RT



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	M				
IRT10-D504-22.0	50	22.0	50	11	4	WRT1003...	MS2508B	TF9
IRT10-D506-22.0	50	22.0	50	11 6	2			
IRT10-D634-25.4	63	25.4	50	13	4			
IRT10-D636-25.4	63	25.4	50	13	6			
IRT10-D664-25.4	66	25.4	50	13	4			
IRT10-D666-25.4	66	25.4	50	13	6			

WRT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel

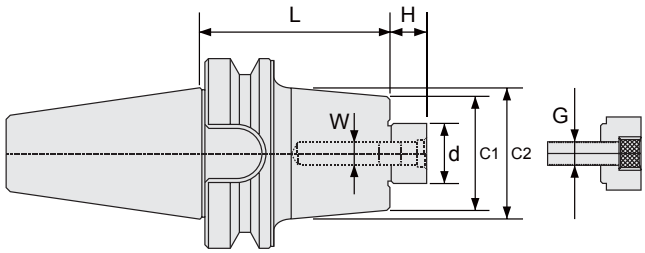
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)						Grade	Application				Material			
			d	s	d1	l	r	t1		F	S	M	R	P	M	K	H
	WRT	100308-RG	6.35	3.40	2.9	9.3	0.8	1.8	CP3020		★★	★★★	★★	◎	○	○	○
									CP3050		★★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

BT40FMA BT40 FACE MILL HOLDER

BT40FMA

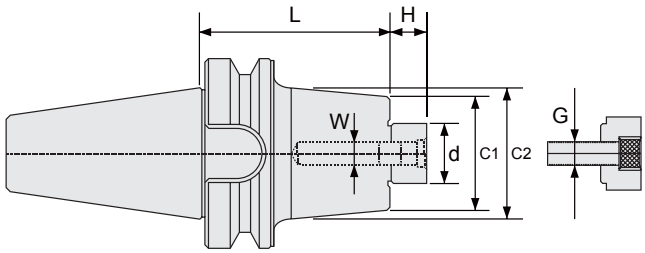


Item Code	Dimensions, mm							
	Cutter dia.	d	L	C1	C2	H	W	G
IBT40FMA25045	76	25.4	45	50	-	20	9.5	M12
IBT40FMA25090	76	25.4	90	50	60	20	9.5	M12
IBT40FMA31045	100	31.75	45	60	-	22	12.5	M12
IBT40FMA31075	100	31.75	75	60	70	22	12.5	M12
IBT40FMA31105	100	31.75	105	60	70	22	12.5	M12

Pull Studs refer to page B61

BT40FMB BT40 FACE MILL HOLDER

BT40FMB

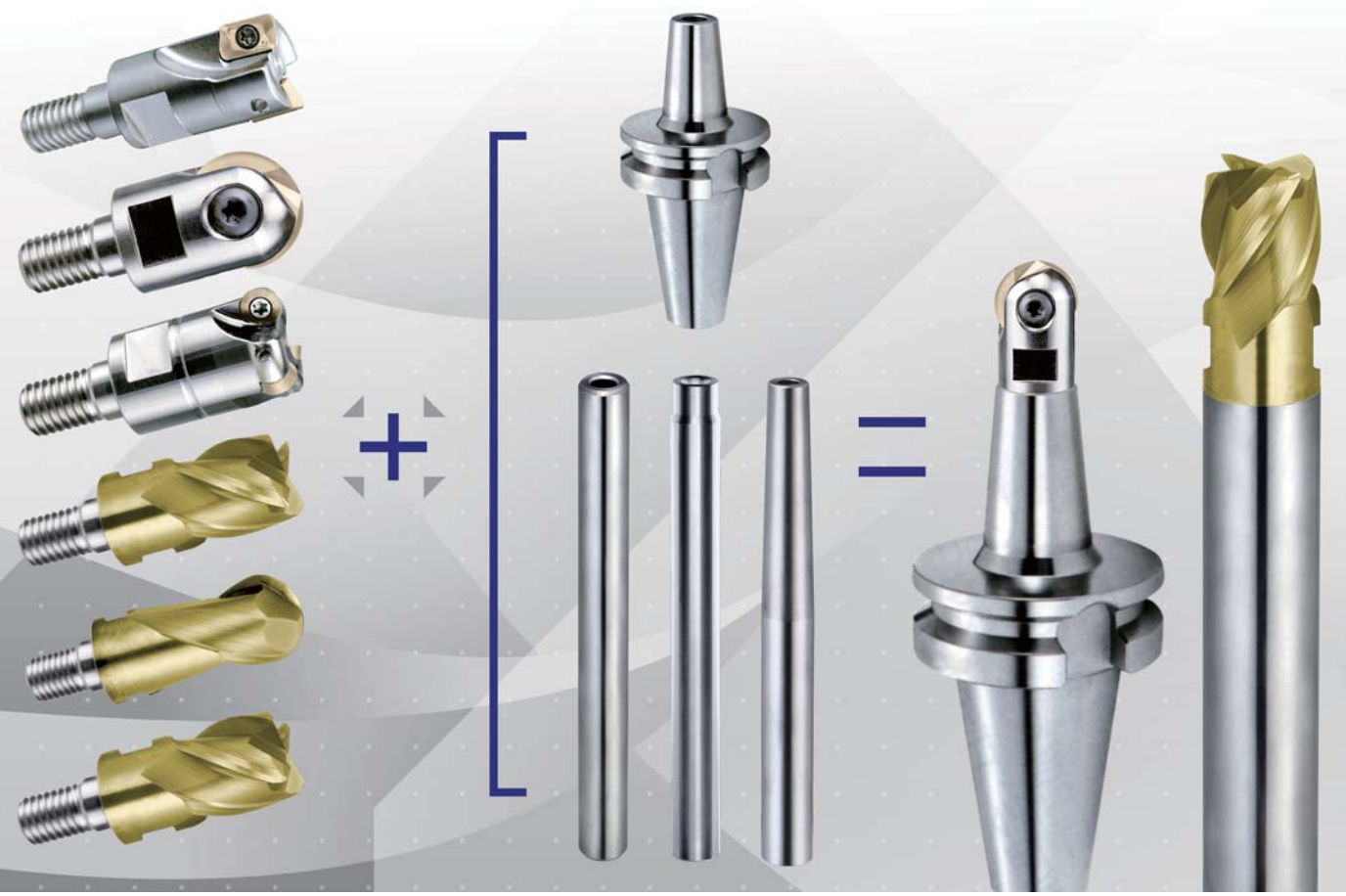


Item Code	Dimensions, mm							
	Cutter dia.	d	L	C1	C2	H	W	G
IBT40FMB22045	60	22	45	50	-	18	10	M10
IBT40FMB22060	60	22	60	50	60	81	10	M10
IBT40FMB22090	60	22	90	50	60	18	10	M10
IBT40FMB27045	80	27	45	60	-	20	12	M12
IBT40FMB27060	80	27	60	60	-	20	12	M12
IBT40FMB27090	80	27	90	60	-	20	12	M12
IBT40FMB27105	80	27	105	60	-	20	12	M12
IBT40FMB32045	100	32	45	78	-	20	14	M16
IBT40FMB40060	125	40	60	85	-	22	16	M16

Pull Studs refer to page B61

WinMaster series

up to HRC 55



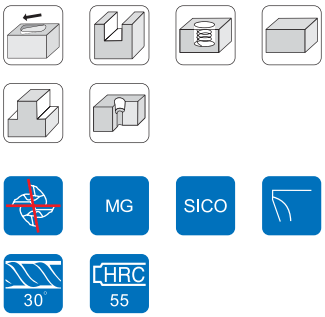
- High efficiency machining.
- Excellent compatibility.
- SICO coating.
- Flexible adapter.

CARBIDE REPLACEABLE ENDMILLS - Anti-Vibration Square Type - 4F

EPSWH4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑

Order No.	Dia. (D)	CL (L1)	ND (d)	M (M)	Flutes (F)
EPSWH410000S	10	10	5.5	M5	4
EPSWH412000S	12	12	6.5	M6	4
EPSWH416000S	16	16	8.5	M8	4
EPSWH420000S	20	20	10.5	M10	4



d	Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03

WORKING MATERIAL	CAST IRON		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	FC / FCD		SCM,SKT,SKD		SKT,SKD		SKT, SKD		SKT,SKD	
HARDNESS	~ HRC 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~55		HRC 55~60	
Vc	163 M/min		143 M/min		143 M/min		122 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
10MM	5,200	1,150	4,550	990	4,550	830	3,900	610	3,315	400
12MM	4,420	1,150	3,770	990	3,770	830	3,250	610	2,730	400
16MM	3,250	1,150	2,730	950	2,730	830	2,340	610	1,950	390
18MM	2,860	1,150	2,470	960	2,470	830	2,080	610	1,690	390
20MM	2,600	1,150	2,210	960	2,210	830	1,950	610	1,560	390

Milling Amount (mm)

	aa	ar
D<ø6	1.0D	0.02D
ø6 ≦ D	1.0D	0.05D

	aa	ar
D < ø6	1.0D	0.01D
ø6 ≦ D	1.0D	0.02D

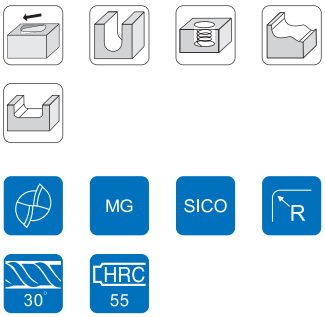
The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

CARBIDE REPLACEABLE ENDMILLS - Ball Nose Type - 2F

EPBWH2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑

Order No.	Radius (R)	Dia. (D)	CL (L1)	ND (d)	M (M)	Flutes (F)
EPBWH210000S	5R	10	10	5.5	M5	2
EPBWH212000S	6R	12	12	6.5	M6	2
EPBWH216000S	8R	16	16	8.5	M8	2
EPBWH220000S	10R	20	20	10.5	M10	2



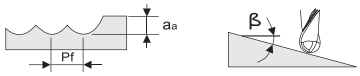
d	R Tolerance
Ø ≦ 12	± 0.01
Ø > 12	± 0.015

WORKING MATERIAL	CAST IRON		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	FC / FCD		SCM,SKT,SKD		SKT,SKD		SKT, SKD		SKT,SKD	
HARDNESS	~ HRC 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~55		HRC 55~60	
Vc	163 M/min		143 M/min		143 M/min		122 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
10MM	5,200	1,150	4,550	990	4,550	830	3,900	610	3,315	400
12MM	4,420	1,150	3,770	990	3,770	830	3,250	610	2,730	400
16MM	3,250	1,150	2,730	950	2,730	830	2,340	610	1,950	390
18MM	2,860	1,150	2,470	960	2,470	830	2,080	610	1,690	390
20MM	2,600	1,150	2,210	960	2,210	830	1,950	610	1,560	390

When β is less than 15° milling speed and feed speed in the table can be increased 1.0-1.2 times.

Milling Amount (mm)

$a_a = 0.02D$
$P_f = 0.05D$

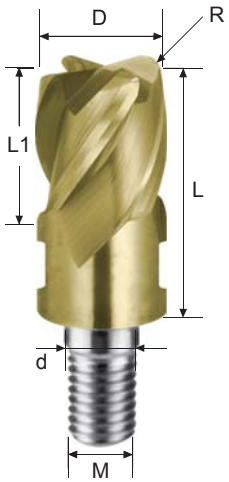


The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

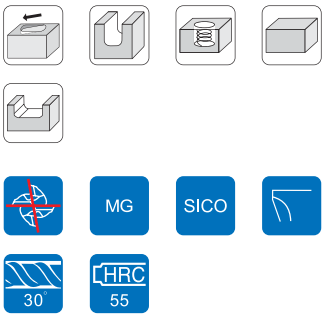
CARBIDE REPLACEABLE ENDMILLS - Anti-Vibration Corner Radius Type - 4F

EPCWH4

P	M	K	N	S	H
☑	☑	☑	☐	☐	☑



Order No.	Dia. (D)	Corner Radius (R)	CL (L1)	ND (d)	M (M)	Flutes (F)
EPCWH410005S	10	0.5R	10	5.5	M5	4
EPCWH410010S	10	1.0R	10	5.5	M5	4
EPCWH410020S	10	2.0R	10	5.5	M5	4
EPCWH412005S	12	0.5R	12	6.5	M6	4
EPCWH412010S	12	1.0R	12	6.5	M6	4
EPCWH412020S	12	2.0R	12	6.5	M6	4
EPCWH412030S	12	3.0R	12	6.5	M6	4
EPCWH416010S	16	1.0R	16	8.5	M8	4
EPCWH416020S	16	2.0R	16	8.5	M8	4
EPCWH416030S	16	3.0R	16	8.5	M8	4
EPCWH420010S	20	1.0R	20	10.5	M10	4
EPCWH420020S	20	2.0R	20	10.5	M10	4
EPCWH420030S	20	3.0R	20	10.5	M10	4



d	Tolerance
Ø ≦ 12	0 ~ -0.02
Ø > 12	0 ~ -0.03

WORKING MATERIAL	CAST IRON		ALLOY STEEL / TOOL STEEL		HARDENED STEEL		HARDENED STEEL		HARDENED STEEL	
CODE	FC / FCD		SCM,SKT,SKD		SKT,SKD		SKT, SKD		SKT,SKD	
HARDNESS	~ HRC 20		HRC 20 ~ 30		HRC 30 ~ 40		HRC 45~55		HRC 55~60	
Vc	163 M/min		143 M/min		143 M/min		122 M/min		103 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
10MM	5,200	1,150	4,550	990	4,550	830	3,900	610	3,315	400
12MM	4,420	1,150	3,770	990	3,770	830	3,250	610	2,730	400
16MM	3,250	1,150	2,730	950	2,730	830	2,340	610	1,950	390
18MM	2,860	1,150	2,470	960	2,470	830	2,080	610	1,690	390
20MM	2,600	1,150	2,210	960	2,210	830	1,950	610	1,560	390

Milling Amount (mm)

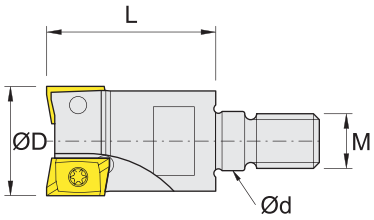
	aa	ar
D<ø6	1.0D	0.02D
ø6 ≦ D	1.0D	0.05D

	aa	ar
D < ø6	1.0D	0.01D
ø6 ≦ D	1.0D	0.02D

The Feed & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

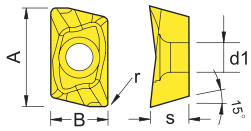
AKS SHOULDER MILLING CUTTER

AKS



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	M				
IAKS06-102-MD10	10	5.5	16	M5	2	ADMT0602...	MS1804A	TF6
IAKS06-112-MD10	11	5.5	16	M5	2			
IAKS06-122-MD11	12	6.5	18	M6	2			
IAKS06-123-MD11	12	6.5	18	M6	3			
IAKS06-132-MD11	13	6.5	18	M6	2			
IAKS06-133-MD11	13	6.5	18	M6	3			
IAKS06-164-MD14	16	8.5	20	M8	4			

ADMT



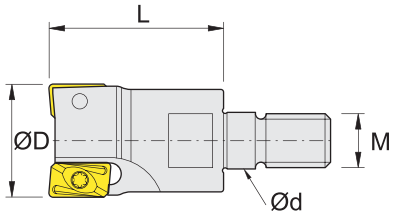
- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	ADMT	060204-MG	7	4.09	2.45	0.4	2	CP3020	★	★★	★★★	★★	◎	○	○	○
								CP3050	★	★★	★★★	★★	◎	○	○	○
	ADMT	060208-MG	7	4.09	2.45	0.8	2	CP3020	★	★★	★★★	★★	◎	○	○	○
								CP3050	★	★★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

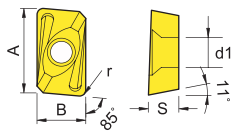
BAP SHOULDER MILLING CUTTER

BAP



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	M				
IBAP3-162-MD14	16	8.5	25	M8	2	APMT1135....	MS2506E	TF8
IBAP3-172-MD14	17	8.5	25	M8	2			
IBAP3-202-MD18	20	10.5	30	M10	2			
IBAP3-203-MD18	20	10.5	30	M10	3			
IBAP3-212-MD18	21	10.5	30	M10	2			
IBAP3-213-MD18	21	10.5	30	M10	3			
IBAP3-253-MD23	25	12.5	35	M12	3			
IBAP3-254-MD23	25	12.5	35	M12	4			
IBAP3-263-MD23	26	12.5	35	M12	3			
IBAP3-264-MD23	26	12.5	35	M12	4			

APMT



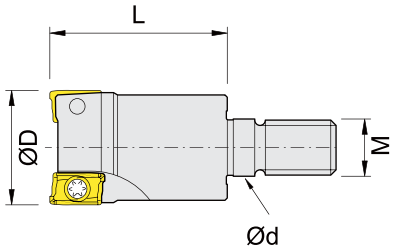
- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	APMT	113508PDER-MG	11.00	6.35	3.5	0.8	2.8	CP3020	★	★★	★★★	★	◎	◎	○	○
								CP3050	★	★★	★★★	★	◎	◎	○	○
	APMT	113508PDER-RG	11.00	6.35	3.5	0.8	2.8	CP3020		★	★★	★★	◎	○	○	○
								CP3050		★	★★	★★	◎	○	○	○
	APMT	113508PDER-HG	11.00	6.35	3.5	0.8	2.8	CP3020			★★	★★★	◎	○	○	○
								CP3050			★★	★★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

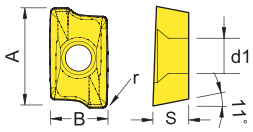
WEX SHOULDER MILLING CUTTER

WEX



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	M				
IWEX12-162-MD14	16	8.5	23	M8	2	AXMT1235...	MS3006A	TF9
IWEX12-172-MD14	17	8.8	23	M8	2			
IWEX12-203-MD18	20	10.5	30	M10	3		MS3008A	
IWEX12-213-MD18	21	10.5	30	M10	3			
IWEX12-254-MD23	25	12.5	35	M12	4			
IWEX12-264-MD23	26	12.5	35	M12	4			

AXMT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)					Grade	Application				Material			
			A	B	S	r	d1		F	S	M	R	P	M	K	H
	AXMT	123508PEER-RG	12.18	6.93	3.58	0.8	3.4	CP3020		★	★★	★★★	◎	○	○	○
								CP3050		★	★★	★★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

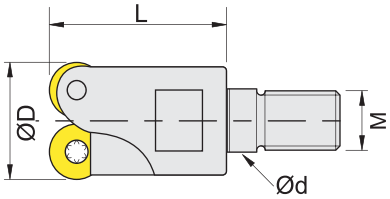
RD CORNER ROUNDING MILLING CUTTER

Radius Milling

Copy Milling

Face Milling

RD



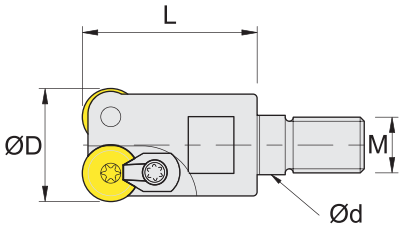
Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	M				
IRD051-D092-MD08	9	4.5	15	M4	2	RD..0501..	MS2004A	TF6
IRD051-D102-MD10	10	5.5	16	M5	2			
IRD051-D112-MD10	11	5.5	18	M5	2			
IRD051-D122-MD11	12	6.5	18	M6	2		MS2004A	TF6
IRD051-D123-MD11	12	6.5	18	M6	3			
IRD051-D132-MD11	13	6.5	18	M6	2			
IRD051-D133-MD11	13	6.5	18	M6	3			
IRD051-D164-MD14	16	8.5	23	M8	4			
IRD051-D174-MD14	17	8.5	23	M8	4			
IRD072-D162-MD14	16	8.5	23	M8	2	RD..0702..	MS2506B	TF9
IRD072-D163-MD14	16	8.5	23	M8	3			
IRD072-D172-MD14	17	8.5	23	M8	2			
IRD072-D173-MD14	17	8.5	23	M8	3			
IRD072-D203-MD18	20	10.5	30	M10	3			
IRD072-D212-MD18	21	10.5	30	M10	2			
IRD072-D213-MD18	21	10.5	30	M10	3			
IRD072-D254-MD23	25	12.5	35	M12	4			
IRD072-D255-MD23	25	12.5	35	M12	5			
IRD072-D264-MD23	26	12.5	35	M12	4			
IRD072-D265-MD23	26	12.5	35	M12	5			
IRD103-D202-MD18	20	10.5	30	M10	2	RD..1003..	MS3507A	TF15
IRD103-D212-MD18	21	10.5	30	M10	2			
IRD103-D253-MD23	25	12.5	35	M12	3			
IRD103-D263-MD23	26	12.5	35	M12	3			
IRD103-D303-MD23	30	12.5	35	M12	3			

Type	Designation		Dimension (mm)			Grade	Application				Material			
			lc	S	d1		F	S	M	R	P	M	K	H
	RDKW	0501MOE	5.00	1.59	2.20	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○
	RDKW	0702MOE	7.00	2.38	2.80	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○
	RDMX	1003MOE	10.00	3.18	4.15	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

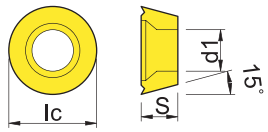
HAR CORNER ROUNDING MILLING CUTTER

HAR



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench	Clamp	Clamp Screw	Clamp Wrench
	D	d	L	M							
IHAR10-252-MD23	25	12.5	35	M12	2	RD..10T3	MS4009B	TF15	MC35-143	MS3509A	TF15
IHAR10-253-MD23	25	12.5	35	M12	3				--	--	--
IHAR10-262-MD23	26	12.5	35	M12	2	RD..10T3	MS4009B	TF15	MC35-143	MS3509A	TF15
IHAR10-263-MD23	26	12.5	35	M12	3				--	--	--

RDMT, RDMW



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)			Grade	Application				Material			
			lc	S	d1		F	S	M	R	P	M	K	H
	RDMT	10T3MOE	10.00	3.97	4.50	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○
	RDMT	10T3MOT	10.00	3.97	4.50	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
	RDMW	10T3MOE	10.00	3.97	4.50	CP3020		★	★★★	★	◎	○	○	○
						CP3050		★	★★★	★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

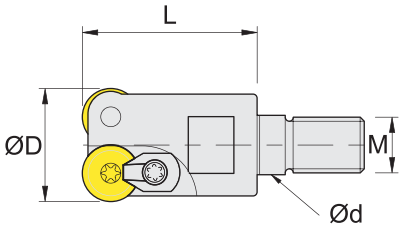
BRP CORNER ROUNDING MILLING CUTTER

Radius Milling

Copy Milling

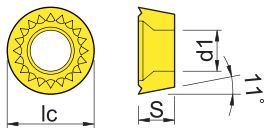
Face Milling

BRP



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench	Clamp	Clamp Screw	Clamp Wrench
	D	d	L	M							
IBRP12-252-MD23	25	12.5	35	M12	2	RP..1204	MS4009A	TF15	MS3509A	MC35-143	TF15
IBRP12-262-MD23	26	12.5	35	M12	2						
IBRP103-202-MD18	20	10.5	30	M10	2	RP..1003	MS4009A	TF15	--	--	--
IBRP103-212-MD18	21	10.5	30	M10	2						
IBRP103-252-MD23	25	12.5	35	M12	2				MS3509A	MC35-143	TF15
IBRP103-262-MD23	26	12.5	35	M12	3						
IBRP103-303-MD23	30	12.5	35	M12	3						

RPMT, RPMW



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel

- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)			Grade	Application				Material			
			lc	S	d1		F	S	M	R	P	M	K	H
	RPMW	1003MOE	10.00	3.18	4.6	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
	RPMW	1003MOT	10.00	3.18	4.6	CP3020		★	★★★	★★★	◎	○	○	○
						CP3050		★	★★★	★★★	◎	○	○	○
	RPMT	1204MOE	12.00	4.76	4.3	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○
	RPMT	1204MOT	12.00	4.76	4.3	CP3020		★	★★★	★★★	◎	○	○	○
						CP3050		★	★★★	★★★	◎	○	○	○
	RPMW	1204MOE	12.00	4.76	4.3	CP3020		★	★★★	★★	◎	○	○	○
						CP3050		★	★★★	★★	◎	○	○	○

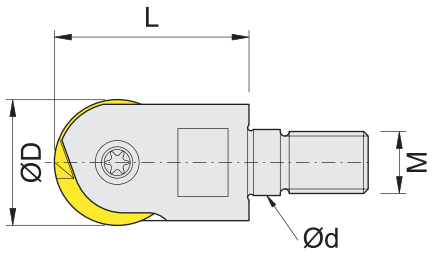
★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

WGR BALL PRECISION MILLING CUTTER

Radius Milling

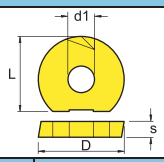
Copy Milling

WGR



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	M				
IWGR16-MD14	16	8.5	28	M8	1	WP3216...	MGR5016	TF20
IWGR20-MD18	20	10.5	30	M10	1	WP3220...	MGR5020	TF20
IWGR25-MD23	25	12.5	40	M12	1	WP3225...	MGR6025	TF30

WP32



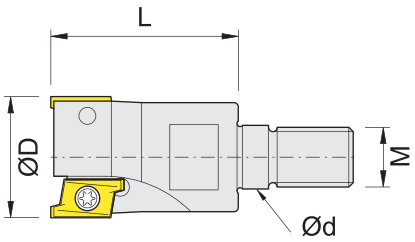
- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)				Grade	Application				Material			
			D	S	d1	L		F	S	M	R	P	M	K	H
	WP32	16-SG	16	3	5	14.0	CP3020	★	★	★★	★★	◎	○	○	○
							CP3050	★	★	★★	★★	◎	○	○	○
	WP32	20-SG	20	3	5	16.0	CP3020	★	★	★★	★★	◎	○	○	○
							CP3050	★	★	★★	★★	◎	○	○	○
	WP32	25-SG	25	4	6	21.5	CP3020	★	★	★★	★★	◎	○	○	○
							CP3050	★	★	★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

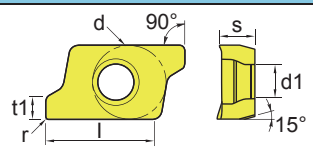
RT SHOULDER MILLING CUTTER

RT



Item Code	Dimensions, mm				Teeth	Insert	Screw	Wrench
	D	d	L	M				
IRT07-D102-MD10	10	5.5	18	M5	2	WRT0702...	MS2004A	TF6
IRT07-D112-MD10	11	5.5	18	M5	2			
IRT07-D122-MD11	12	6.5	20	M6	2			
IRT07-D132-MD11	13	6.5	20	M6	2			
IRT07-D163-MD14	16	8.5	23	M8	3			
IRT07-D173-MD14	17	8.5	23	M8	3			
IRT07-D204-MD18	20	10.5	30	M10	4			
IRT07-D214-MD18	21	10.5	30	M10	4			
IRT10-D162-MD14	16	8.5	30	M8	2	WRT1003...	MS2506B	TF9
IRT10-D172-MD14	17	8.5	30	M8	2			
IRT10-D202-MD18	20	10.5	30	M10	2			
IRT10-D203-MD18	20	10.5	30	M10	3			
IRT10-D212-MD18	21	10.5	30	M10	2			
IRT10-D213-MD18	21	10.5	30	M10	3			
IRT10-D253-MD23	25	12.5	35	M12	3			
IRT10-D263-MD23	26	12.5	35	M12	3			

WRT



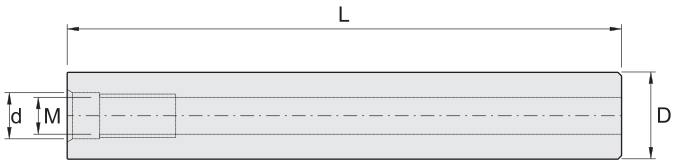
- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)						Grade	Application				Material			
			d	s	d1	l	r	t1		F	S	M	R	P	M	K	H
	WRT	070204-RG	4.30	2.38	2.2	6.4	0.4	1.3	CP3020		★★	★★★	★★	◎	○	○	○
									CP3050		★★	★★★	★★	◎	○	○	○
	WRT	100308-RG	6.35	3.40	2.9	9.3	0.8	1.8	CP3020		★★	★★★	★★	◎	○	○	○
									CP3050		★★	★★★	★★	◎	○	○	○

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

SWSEA CARBIDE EXTENSION ADAPTER (Anti-Vibration)

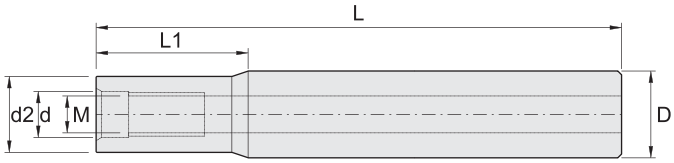
SWSEA



Item Code	Dimensions, mm			
	d	L	D	M
ISWSEA050750	5.5	75	10	M5
ISWSEA051000	5.5	100	10	M5
ISWSEA051500	5.5	150	10	M5
ISWSEA061001	5.5	100	10	M6
ISWSEA061501	5.5	150	10	M6
ISWSEA060750	6.5	75	12	M6
ISWSEA061000	6.5	100	12	M6
ISWSEA061500	6.5	150	12	M6
ISWSEA062000	6.5	200	12	M6
ISWSEA081000	8.5	100	16	M8
ISWSEA081500	8.5	150	16	M8
ISWSEA082000	8.5	200	16	M8
ISWSEA082500	8.5	250	16	M8
ISWSEA101000	10.5	100	20	M10
ISWSEA101500	10.5	150	20	M10
ISWSEA102000	10.5	200	20	M10
ISWSEA102500	10.5	250	20	M10
ISWSEA103000	10.5	300	20	M10
ISWSEA121000	12.5	100	25	M12
ISWSEA121500	12.5	150	25	M12
ISWSEA122000	12.5	200	25	M12
ISWSEA122500	12.5	250	25	M12
ISWSEA123000	12.5	300	25	M12

SWSEB CARBIDE EXTENSION ADAPTER

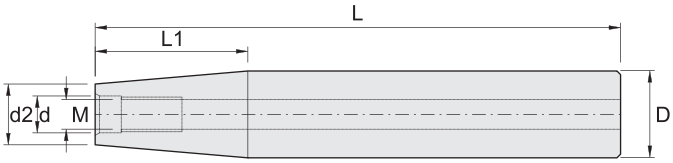
SWSEB



Item Code	Dimensions, mm					
	d	d2	L1	L	D	M
ISWSEB0610024	6.5	11.8	24	100	12	M6
ISWSEB0615024	6.5	11.5	24	150	12	M6
ISWSEB0815030	8.5	15	30	150	16	M8
ISWSEB0820040	8.5	15	40	200	16	M8
ISWSEB1015040	10.5	19	40	150	20	M10
ISWSEB1020040	10.5	19	40	200	20	M10
ISWSEB1220048	12.5	24	48	150	25	M12
ISWSEB1220048	12.5	24	48	200	25	M12

SWTEA CARBIDE EXTENSION ADAPTER

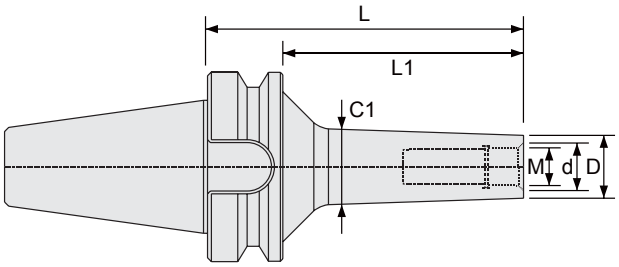
SWTEA



Item Code	Dimensions, mm					
	d	d2	L1	L	D	M
ISWTEA051500	5.5	9.8	60	150	12	M5
ISWTEA061500	6.5	11.8	70	150	16	M6
ISWTEA082000	8.5	15.5	90	200	20	M8
ISWTEA102000	10.5	19.8	90	200	25	M10
ISWTEA122000	12.5	24.5	90	200	32	M12

BT40DM BT40 REPLACEABLE INTEGRATED SHANK

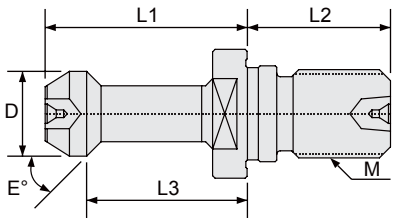
BT40DM



Item Code	Dimensions, mm					
	d	L	L1	D	C1	M
IBT40DM08050	8.5	50	23	13	15	M8
IBT40DM10057	10.5	57	30	18	21	M10
IBT40DM12080	12.5	80	53	21	25	M12

P40T PULL STUDS

P40T



Item Code	Dimensions, mm						For Shank
	L1	L2	L3	D	E°	M	
IP40T01	35	25	28	15	45	M16	BT40
IP40T02	35	25	28	15	60	M16	BT40

C

Solid Carbide Drill

G400 Series .....C01~C16
G300 Series.....C17~C20
Micro Series C21
DT Series C22
DC Series C23
DR Series C24
RS Series C25
Cutting Condition.....C26~C31

G400 Series

- 3XD is available in diameters from 2.00mm to 20.00mm in 0.1mm and various increments.
- 5XD is available in diameters from 3.00mm to 20.00mm in 0.1mm and various increments.
- 7XD is available in diameters from 3.00mm to 17.00mm in 0.1mm and various increments.
- 12XD is available in diameters from 3.00mm to 12.00mm 0.1mm and various increments.
- With coolant and non-coolant holes.
- With a stronger 140° Tip Angle.
- Our S-Fire Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for Alloy Steel, Stainless Steel and Cast Iron. (Please refer to Catalog).

G300 Series

- 3XD is available in diameters from 2.00mm to 16.00mm in 0.1mm and various increments.
- 5XD is available in diameters from 5.00mm to 16.00mm in 0.1mm and various increments.
- With a stronger 130° Tip Angle.
- Our S-Fire Coating provides superior wear resistance and reduces the coefficient of friction.
- Suitable for Alloy Steel, Stainless Steel and Cast Iron. (Please refer to Catalog).

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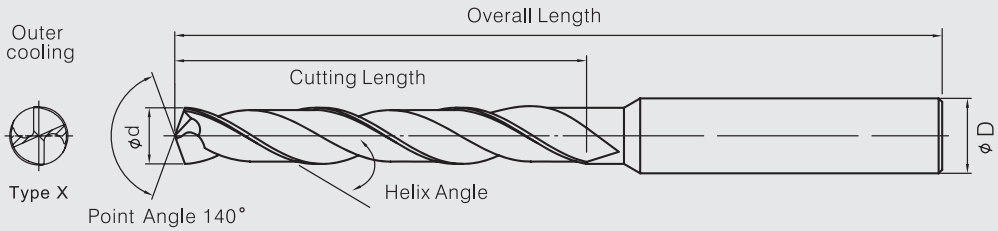
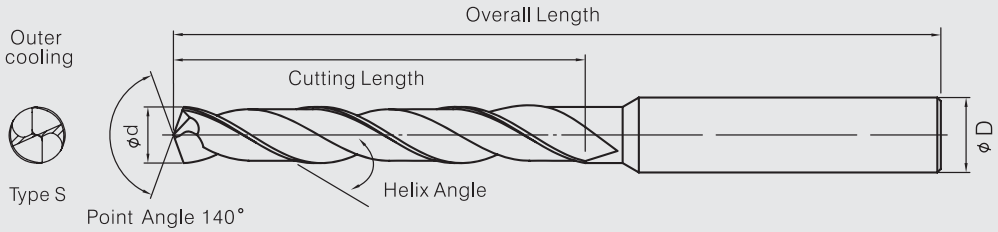
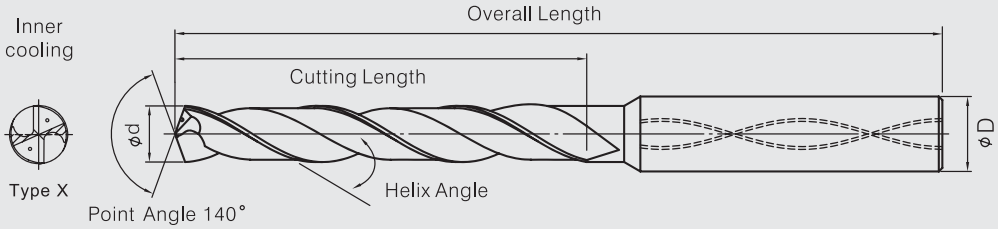
Solid Carbide Drill

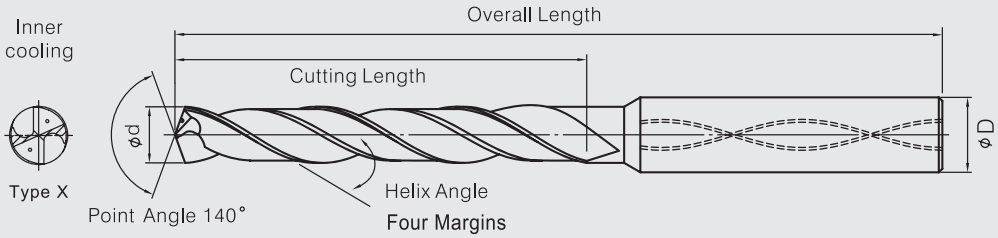
Appearance	Series	Code No.	ØRange	Degree Tip Angle	Page
G400 Series High Performance Drills (EndMill Shank)					
	HIGH PERFORMANCE DRILLS - 3×D	DSTMA2, DSTNA2	Ø2~Ø20	140	C01~C03
	HIGH PERFORMANCE DRILLS - 5×D	DSFMA2, DSFNA2	Ø3~Ø20	140	C04~C06
	HIGH PERFORMANCE DRILLS - 3×D With Coolant Hole	DSTCA2, DSTHA2	Ø2~Ø20	140	C07~C09
	HIGH PERFORMANCE DRILLS - 5×D With Coolant Hole	DSFCA2, DSFHA2	Ø3~Ø20	140	C10~C12
	HIGH PERFORMANCE DRILLS - 7×D With Coolant Hole	DSSCF2, DSSHF2	Ø3~Ø16	140	C13~C14
	HIGH PERFORMANCE DRILLS - 12×D With Coolant Hole	DSZHF2	Ø3~Ø12	140	C15~C16
G300 Series General Drills (Straight Shank)					
	GENERAL PURPOSE DRILLS - 3×D	DGTNA2	Ø2~Ø16	130	C17~C18
	GENERAL PURPOSE DRILLS - 5×D	DGFNA2	Ø5~Ø16	130	C19~C20
Micro Series MICRO DRILLS (Endmill Shank)					
	MICRO DRILLS - Shank Dia. 3mm	DGMNB2	Ø0.5~Ø3	130	C21
DT Series Spotting Drills					
	SPOTTING DRILLS	DTTNA2	Ø3~Ø16	90 120	C22
	CARBIDE SPOTTING DRILLS - LONG SHANK	DTLNA2	Ø4~Ø16	90 120	C22
DC Series Center Drills					
	CENTER DRILLS (60°&90° Point Angle)	DCTNA2	Ø1~Ø5	120	C23
DR Series Straight Flute Drills					
	STRAIGHT FLUTE DRILLS - 3×D	DRTNA2	Ø4~Ø16	130	C24
	STRAIGHT FLUTE DRILLS - 5×D	DRFNA2	Ø4~Ø16	130	C24
RS Series Machine Reamers					
	MACHINE REAMERS	RSTNA4, RSTNA6	Ø3~Ø12	0	C25

Endmill Shank

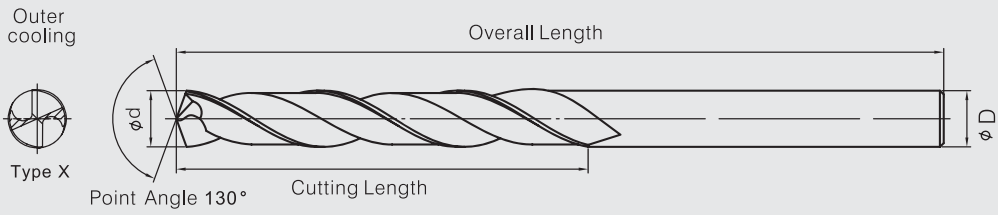








Straight Shank



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MICRO GRAIN CARBIDE HIGH PERFORMANCE DRILLS (Endmill Shank) - 3×D

DSTMA2
DSTNA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DSTMA202006U	2.00	20.0	50	4
DSTMA202106U	2.10	20.0	50	4
DSTMA202206U	2.20	20.0	50	4
DSTMA202306U	2.30	20.0	50	4
DSTMA202406U	2.40	20.0	50	4
DSTMA202506U	2.50	20.0	50	4
DSTMA202606U	2.60	20.0	50	4
DSTMA202706U	2.70	20.0	50	4
DSTMA202806U	2.80	20.0	50	4
DSTMA202906U	2.90	20.0	50	4
DSTMA203006U	3.00	20.0	60	4
DSTMA203106U	3.10	20.0	60	4
DSTMA203176U	3.175	20.0	60	4
DSTMA203206U	3.20	20.0	60	4
DSTMA203256U	3.25	20.0	60	4
DSTMA203306U	3.30	20.0	60	4
DSTMA203406U	3.40	20.0	60	4
DSTMA203506U	3.50	20.0	60	4
DSTMA203606U	3.60	20.0	60	4
DSTMA203706U	3.70	20.0	60	4
DSTMA203806U	3.80	24.0	60	4
DSTMA203906U	3.90	24.0	60	4
DSTMA203976U	3.97	24.0	60	4
DSTNA203006U	3.00	20.0	60	6
DSTNA203106U	3.10	20.0	60	6
DSTNA203176U	3.175	20.0	60	6
DSTNA203206U	3.20	20.0	60	6
DSTNA203256U	3.25	20.0	60	6
DSTNA203306U	3.30	20.0	60	6
DSTNA203406U	3.40	20.0	60	6
DSTNA203506U	3.50	20.0	60	6
DSTNA203606U	3.60	20.0	60	6
DSTNA203706U	3.70	20.0	60	6
DSTNA203806U	3.80	24.0	60	6
DSTNA203906U	3.90	24.0	60	6
DSTNA203976U	3.97	24.0	60	6
DSTNA204006U	4.00	24.0	60	6
DSTNA204106U	4.10	24.0	60	6
DSTNA204206U	4.20	24.0	60	6
DSTNA204306U	4.30	24.0	60	6
DSTNA204406U	4.40	24.0	60	6
DSTNA204506U	4.50	24.0	60	6
DSTNA204606U	4.60	24.0	60	6
DSTNA204656U	4.65	24.0	60	6
DSTNA204706U	4.70	24.0	60	6
DSTNA204806U	4.80	28.0	60	6
DSTNA204906U	4.90	28.0	60	6

Cutting Effected Length = 3×D

Dimension

- Sim. SIN6537
- 140 Degree Tip Angle
- 25~35 Degree Helix Angle
- Without Coolant Hole
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON
- TITANIUM STEELS

Recommend Cutting Condition

- Table 1 (Page:C26)

WINSTAR

MICRO GRAIN CARBIDE HIGH PERFORMANCE DRILLS (Endmill Shank) - 3×D

DSTMA2
DSTNA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐

Cutting Effected Length = 3×D

Dimension

- Sim. SIN6537
- 140 Degree Tip Angle
- 25~35 Degree Helix Angle
- Without Coolant Hole
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON
- TITANIUM STEELS

Recommend Cutting Condition

- Table 1 (Page:C26)

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DSTNA205006U	5.00	28.0	60	6
DSTNA205106U	5.10	28.0	60	6
DSTNA205206U	5.20	28.0	60	6
DSTNA205306U	5.30	28.0	60	6
DSTNA205406U	5.40	28.0	60	6
DSTNA205506U	5.50	28.0	60	6
DSTNA205566U	5.56	28.0	60	6
DSTNA205606U	5.60	28.0	60	6
DSTNA205706U	5.70	28.0	60	6
DSTNA205806U	5.80	28.0	60	6
DSTNA205906U	5.90	28.0	60	6
DSTNA206006U	6.00	28.0	60	6
DSTNA206106U	6.10	34.0	75	8
DSTNA206206U	6.20	34.0	75	8
DSTNA206306U	6.30	34.0	75	8
DSTNA206356U	6.35	34.0	75	8
DSTNA206406U	6.40	34.0	75	8
DSTNA206506U	6.50	34.0	75	8
DSTNA206606U	6.60	34.0	75	8
DSTNA206706U	6.70	34.0	75	8
DSTNA206806U	6.80	34.0	75	8
DSTNA206906U	6.90	34.0	75	8
DSTNA207006U	7.00	34.0	75	8
DSTNA207106U	7.10	41.0	75	8
DSTNA207206U	7.20	41.0	75	8
DSTNA207306U	7.30	41.0	75	8
DSTNA207406U	7.40	41.0	75	8
DSTNA207506U	7.50	41.0	75	8
DSTNA207606U	7.60	41.0	75	8
DSTNA207706U	7.70	41.0	75	8
DSTNA207806U	7.80	41.0	75	8
DSTNA207906U	7.90	41.0	75	8
DSTNA208006U	8.00	41.0	75	8
DSTNA208106U	8.10	47.0	89	10
DSTNA208206U	8.20	47.0	89	10
DSTNA208306U	8.30	47.0	89	10
DSTNA208406U	8.40	47.0	89	10
DSTNA208506U	8.50	47.0	89	10
DSTNA208606U	8.60	47.0	89	10
DSTNA208706U	8.70	47.0	89	10
DSTNA208806U	8.80	47.0	89	10
DSTNA208906U	8.90	47.0	89	10
DSTNA209006U	9.00	47.0	89	10
DSTNA209106U	9.10	47.0	89	10
DSTNA209206U	9.20	47.0	89	10
DSTNA209256U	9.25	47.0	89	10
DSTNA209306U	9.30	47.0	89	10
DSTNA209406U	9.40	47.0	89	10
DSTNA209506U	9.50	47.0	89	10
DSTNA209606U	9.60	47.0	89	10
DSTNA209706U	9.70	47.0	89	10
DSTNA209806U	9.80	47.0	89	10
DSTNA209906U	9.90	47.0	89	10

WINSTAR

MICRO GRAIN CARBIDE HIGH PERFORMANCE DRILLS (Endmill Shank) - 3×D

DSTMA2
DSTNA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐

Cutting Effected Length = 3×D

Dimension

- Sim. SIN6537
- 140 Degree Tip Angle
- 25~35 Degree Helix Angle
- Without Coolant Hole
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON
- TITANIUM STEELS

Recommend Cutting Condition

- Table 1 (Page:C26)

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DSTNA210006U	10.00	47.0	89	10
DSTNA210106U	10.10	55.0	100	12
DSTNA210206U	10.20	55.0	100	12
DSTNA210306U	10.30	55.0	100	12
DSTNA210406U	10.40	55.0	100	12
DSTNA210506U	10.50	55.0	100	12
DSTNA210606U	10.60	55.0	100	12
DSTNA210706U	10.70	55.0	100	12
DSTNA210806U	10.80	55.0	100	12
DSTNA210906U	10.90	55.0	100	12
DSTNA211006U	11.00	55.0	100	12
DSTNA211106U	11.10	55.0	100	12
DSTNA211206U	11.20	55.0	100	12
DSTNA211306U	11.30	55.0	100	12
DSTNA211406U	11.40	55.0	100	12
DSTNA211506U	11.50	55.0	100	12
DSTNA211606U	11.60	55.0	100	12
DSTNA211706U	11.70	55.0	100	12
DSTNA211806U	11.80	55.0	100	12
DSTNA211906U	11.90	55.0	100	12
DSTNA212006U	12.00	55.0	100	12
DSTNA212106U	12.10	60.0	100	14
DSTNA212206U	12.20	60.0	100	14
DSTNA212306U	12.30	60.0	100	14
DSTNA212406U	12.40	60.0	100	14
DSTNA212506U	12.50	60.0	100	14
DSTNA212606U	12.60	60.0	100	14
DSTNA212706U	12.70	60.0	100	14
DSTNA212806U	12.80	60.0	100	14
DSTNA212906U	12.90	60.0	100	14
DSTNA213006U	13.00	60.0	100	14
DSTNA213206U	13.20	60.0	100	14
DSTNA213306U	13.30	60.0	100	14
DSTNA213506U	13.50	60.0	100	14
DSTNA213706U	13.70	60.0	100	14
DSTNA213806U	13.80	60.0	100	14
DSTNA214006U	14.00	60.0	100	14
DSTNA214206U	14.20	65.0	107	16
DSTNA214306U	14.30	65.0	107	16
DSTNA214406U	14.40	65.0	107	16
DSTNA214506U	14.50	65.0	107	16
DSTNA214706U	14.70	65.0	107	16
DSTNA215006U	15.00	65.0	107	16
DSTNA215206U	15.20	65.0	107	16
DSTNA215506U	15.50	65.0	107	16
DSTNA215606U	15.60	65.0	107	16
DSTNA215706U	15.70	65.0	107	16
DSTNA215806U	15.80	65.0	107	16
DSTNA216006U	16.00	65.0	107	16
DSTNA216506U	16.50	73.0	123	18
DSTNA217006U	17.00	73.0	123	18
DSTNA217506U	17.50	73.0	123	18
DSTNA218006U	18.00	73.0	123	18
DSTNA218506U	18.50	79.0	130	20
DSTNA219006U	19.00	79.0	130	20
DSTNA219506U	19.50	79.0	130	20
DSTNA220006U	20.00	79.0	130	20

WINSTAR

MICRO GRAIN CARBIDE HIGH PERFORMANCE DRILLS (Endmill Shank) - 5×D

DSFMA2
DSFNA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐

Cutting Effected Length = 5×D

Dimension

- Sim. SIN6537
- 140 Degree Tip Angle
- 25~35 Degree Helix Angle
- Without Coolant Hole
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON
- TITANIUM STEELS

Recommend Cutting Condition

- Table 2 (Page:C26)

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DSFMA203006U	3.00	28.0	60	4
DSFMA203176U	3.175	28.0	60	4
DSFMA203256U	3.25	28.0	60	4
DSFMA203306U	3.30	28.0	60	4
DSFMA203406U	3.40	28.0	60	4
DSFMA203506U	3.50	28.0	60	4
DSFMA203576U	3.57	28.0	60	4
DSFMA203706U	3.70	36.0	75	4
DSFMA203806U	3.80	36.0	75	4
DSFMA203976U	3.97	36.0	75	4
DSFNA203006U	3.00	28.0	60	6
DSFNA203176U	3.175	28.0	60	6
DSFNA203256U	3.25	28.0	60	6
DSFNA203306U	3.30	28.0	60	6
DSFNA203406U	3.40	28.0	60	6
DSFNA203506U	3.50	28.0	60	6
DSFNA203576U	3.57	28.0	60	6
DSFNA203706U	3.70	36.0	75	6
DSFNA203806U	3.80	36.0	75	6
DSFNA203976U	3.97	36.0	75	6
DSFNA204006U	4.00	36.0	75	6
DSFNA204106U	4.10	36.0	75	6
DSFNA204206U	4.20	36.0	75	6
DSFNA204306U	4.30	36.0	75	6
DSFNA204406U	4.40	36.0	75	6
DSFNA204506U	4.50	36.0	75	6
DSFNA204606U	4.60	36.0	75	6
DSFNA204656U	4.65	36.0	75	6
DSFNA204706U	4.70	36.0	75	6
DSFNA204806U	4.80	44.0	75	6
DSFNA204906U	4.90	44.0	75	6
DSFNA205006U	5.00	44.0	75	6
DSFNA205106U	5.10	44.0	75	6
DSFNA205206U	5.20	44.0	75	6
DSFNA205306U	5.30	44.0	75	6
DSFNA205406U	5.40	44.0	75	6
DSFNA205506U	5.50	44.0	75	6
DSFNA205556U	5.55	44.0	75	6
DSFNA205606U	5.60	44.0	75	6
DSFNA205706U	5.70	44.0	75	6
DSFNA205806U	5.80	44.0	75	6
DSFNA205906U	5.90	44.0	75	6
DSFNA206006U	6.00	44.0	75	6
DSFNA206106U	6.10	53.0	91	8
DSFNA206206U	6.20	53.0	91	8
DSFNA206306U	6.30	53.0	91	8
DSFNA206406U	6.40	53.0	91	8
DSFNA206506U	6.50	53.0	91	8
DSFNA206606U	6.60	53.0	91	8
DSFNA206706U	6.70	53.0	91	8
DSFNA206806U	6.80	53.0	91	8
DSFNA206906U	6.90	53.0	91	8

WINSTAR

MICRO GRAIN CARBIDE HIGH PERFORMANCE DRILLS (Endmill Shank) - 5×D

DSFMA2
DSFNA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐

Cutting Effected Length = 5×D

Dimension

- Sim. SIN6537
- 140 Degree Tip Angle
- 25~35 Degree Helix Angle
- Without Coolant Hole
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON
- TITANIUM STEELS

Recommend Cutting Condition

- Table 2 (Page:C26)

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DSFNA207006U	7.00	53.0	91	8
DSFNA207106U	7.10	53.0	91	8
DSFNA207206U	7.20	53.0	91	8
DSFNA207306U	7.30	53.0	91	8
DSFNA207406U	7.40	53.0	91	8
DSFNA207506U	7.50	53.0	91	8
DSFNA207606U	7.60	53.0	91	8
DSFNA207706U	7.70	53.0	91	8
DSFNA207806U	7.80	53.0	91	8
DSFNA207906U	7.90	53.0	91	8
DSFNA208006U	8.00	53.0	91	8
DSFNA208106U	8.10	61.0	100	10
DSFNA208206U	8.20	61.0	100	10
DSFNA208306U	8.30	61.0	100	10
DSFNA208406U	8.40	61.0	100	10
DSFNA208506U	8.50	61.0	100	10
DSFNA208606U	8.60	61.0	100	10
DSFNA208706U	8.70	61.0	100	10
DSFNA208806U	8.80	61.0	100	10
DSFNA208906U	8.90	61.0	100	10
DSFNA209006U	9.00	61.0	100	10
DSFNA209106U	9.10	61.0	100	10
DSFNA209206U	9.20	61.0	100	10
DSFNA209256U	9.25	61.0	100	10
DSFNA209306U	9.30	61.0	100	10
DSFNA209406U	9.40	61.0	100	10
DSFNA209506U	9.50	61.0	100	10
DSFNA209606U	9.60	61.0	100	10
DSFNA209706U	9.70	61.0	100	10
DSFNA209806U	9.80	61.0	100	10
DSFNA209906U	9.90	61.0	100	10
DSFNA210006U	10.00	61.0	100	10
DSFNA210106U	10.10	71.0	118	12
DSFNA210206U	10.20	71.0	118	12
DSFNA210306U	10.30	71.0	118	12
DSFNA210406U	10.40	71.0	118	12
DSFNA210506U	10.50	71.0	118	12
DSFNA210606U	10.60	71.0	118	12
DSFNA210706U	10.70	71.0	118	12
DSFNA210806U	10.80	71.0	118	12
DSFNA210906U	10.90	71.0	118	12
DSFNA211006U	11.00	71.0	118	12
DSFNA211106U	11.10	71.0	118	12
DSFNA211206U	11.20	71.0	118	12
DSFNA211306U	11.30	71.0	118	12
DSFNA211406U	11.40	71.0	118	12
DSFNA211506U	11.50	71.0	118	12
DSFNA211606U	11.60	71.0	118	12
DSFNA211706U	11.70	71.0	118	12
DSFNA211806U	11.80	71.0	118	12
DSFNA211906U	11.90	71.0	118	12

WINSTAR

MICRO GRAIN CARBIDE HIGH PERFORMANCE DRILLS (Endmill Shank) - 5×D

DSFMA2
DSFNA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DSFNA212006U	12.00	71.0	118	12
DSFNA212106U	12.10	77.0	125	14
DSFNA212206U	12.20	77.0	125	14
DSFNA212306U	12.30	77.0	125	14
DSFNA212406U	12.40	77.0	125	14
DSFNA212506U	12.50	77.0	125	14
DSFNA212606U	12.60	77.0	125	14
DSFNA212706U	12.70	77.0	125	14
DSFNA212806U	12.80	77.0	125	14
DSFNA212906U	12.90	77.0	125	14
DSFNA213006U	13.00	77.0	125	14
DSFNA213106U	13.10	77.0	125	14
DSFNA213306U	13.30	77.0	125	14
DSFNA213406U	13.40	77.0	125	14
DSFNA213506U	13.50	77.0	125	14
DSFNA213606U	13.60	77.0	125	14
DSFNA213706U	13.70	77.0	125	14
DSFNA213806U	13.80	77.0	125	14
DSFNA213906U	13.90	77.0	125	14
DSFNA214006U	14.00	77.0	125	14
DSFNA214106U	14.10	83.0	125	16
DSFNA214206U	14.20	83.0	125	16
DSFNA214306U	14.30	83.0	125	16
DSFNA214406U	14.40	83.0	125	16
DSFNA214506U	14.50	83.0	125	16
DSFNA214606U	14.60	83.0	125	16
DSFNA214706U	14.70	83.0	125	16
DSFNA214806U	14.80	83.0	125	16
DSFNA214906U	14.90	83.0	125	16
DSFNA215006U	15.00	83.0	125	16
DSFNA215106U	15.10	83.0	125	16
DSFNA215206U	15.20	83.0	125	16
DSFNA215306U	15.30	83.0	125	16
DSFNA215406U	15.40	83.0	125	16
DSFNA215506U	15.50	83.0	125	16
DSFNA215606U	15.60	83.0	125	16
DSFNA215706U	15.70	83.0	125	16
DSFNA215806U	15.80	83.0	125	16
DSFNA215906U	15.90	83.0	125	16
DSFNA216006U	16.00	83.0	125	16
DSFNA216506U	16.50	93.0	150	18
DSFNA217006U	17.00	93.0	150	18
DSFNA217506U	17.50	93.0	150	18
DSFNA218006U	18.00	93.0	150	18
DSFNA218506U	18.50	101.0	150	20
DSFNA219006U	19.00	101.0	150	20
DSFNA219506U	19.50	101.0	150	20
DSFNA220006U	20.00	101.0	150	20

Cutting Effected Length = 5×D

Dimension

- Sim. SIN6537
- 140 Degree Tip Angle
- 25~35 Degree Helix Angle
- Without Coolant Hole
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON
- TITANIUM STEELS

Recommend Cutting Condition

- Table 2 (Page:C26)

WINSTAR

MICRO GRAIN CARBIDE HIGH PERFORMANCE DRILLS (Endmill Shank) - 3×D

With Coolant Hole

DSTCA2
DSTNA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DSTCA202006U	2.00	20.0	50	3
DSTCA203006U	3.00	20.0	50	4
DSTCA203106U	3.10	20.0	50	4
DSTCA203176U	3.175	20.0	50	4
DSTCA203206U	3.20	20.0	50	4
DSTCA203256U	3.25	20.0	50	4
DSTCA203306U	3.30	20.0	50	4
DSTCA203406U	3.40	20.0	50	4
DSTCA203506U	3.50	20.0	50	4
DSTCA203606U	3.60	20.0	50	4
DSTCA203706U	3.70	20.0	50	4
DSTCA203806U	3.80	24.0	60	4
DSTCA203906U	3.90	24.0	60	4
DSTCA203976U	3.97	24.0	60	4
DSTCA204006U	4.00	24.0	60	4
DSTHA204106U	4.10	24.0	60	6
DSTHA204206U	4.20	24.0	60	6
DSTHA204306U	4.30	24.0	60	6
DSTHA204406U	4.40	24.0	60	6
DSTHA204506U	4.50	24.0	60	6
DSTHA204606U	4.60	24.0	60	6
DSTHA204656U	4.65	24.0	60	6
DSTHA204706U	4.70	24.0	60	6
DSTHA204806U	4.80	28.0	60	6
DSTHA204906U	4.90	28.0	60	6
DSTHA205006U	5.00	28.0	60	6
DSTHA205106U	5.10	28.0	60	6
DSTHA205206U	5.20	28.0	60	6
DSTHA205306U	5.30	28.0	60	6
DSTHA205406U	5.40	28.0	60	6
DSTHA205506U	5.50	28.0	60	6
DSTHA205566U	5.56	28.0	60	6
DSTHA205606U	5.60	28.0	60	6
DSTHA205706U	5.70	28.0	60	6
DSTHA205806U	5.80	28.0	60	6
DSTHA205906U	5.90	28.0	60	6
DSTHA206006U	6.00	28.0	60	6
DSTHA206106U	6.10	34.0	75	8
DSTHA206206U	6.20	34.0	75	8
DSTHA206306U	6.30	34.0	75	8
DSTHA206356U	6.35	34.0	75	8
DSTHA206406U	6.40	34.0	75	8
DSTHA206506U	6.50	34.0	75	8
DSTHA206606U	6.60	34.0	75	8
DSTHA206706U	6.70	34.0	75	8
DSTHA206806U	6.80	34.0	75	8
DSTHA206906U	6.90	34.0	75	8

Cutting Effected Length = 3×D

Dimension

- Sim. SIN6537
- 140 Degree Tip Angle
- 25~35 Degree Helix Angle
- With Coolant Hole
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON
- TITANIUM STEELS

Recommend Cutting Condition

- Table 3 (Page:C27)

WINSTAR

MICRO GRAIN CARBIDE HIGH PERFORMANCE DRILLS (Endmill Shank) - 3×D

With Coolant Hole

DSTCA2
DSTNA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DSTHA207006U	7.00	34.0	75	8
DSTHA207106U	7.10	41.0	75	8
DSTHA207206U	7.20	41.0	75	8
DSTHA207306U	7.30	41.0	75	8
DSTHA207406U	7.40	41.0	75	8
DSTHA207506U	7.50	41.0	75	8
DSTHA207606U	7.60	41.0	75	8
DSTHA207706U	7.70	41.0	75	8
DSTHA207806U	7.80	41.0	75	8
DSTHA207906U	7.90	41.0	75	8
DSTHA208006U	8.00	41.0	75	8
DSTHA208106U	8.10	47.0	89	10
DSTHA208206U	8.20	47.0	89	10
DSTHA208306U	8.30	47.0	89	10
DSTHA208406U	8.40	47.0	89	10
DSTHA208506U	8.50	47.0	89	10
DSTHA208606U	8.60	47.0	89	10
DSTHA208706U	8.70	47.0	89	10
DSTHA208806U	8.80	47.0	89	10
DSTHA208906U	8.90	47.0	89	10
DSTHA209006U	9.00	47.0	89	10
DSTHA209106U	9.10	47.0	89	10
DSTHA209206U	9.20	47.0	89	10
DSTHA209256U	9.25	47.0	89	10
DSTHA209306U	9.30	47.0	89	10
DSTHA209406U	9.40	47.0	89	10
DSTHA209506U	9.50	47.0	89	10
DSTHA209606U	9.60	47.0	89	10
DSTHA209706U	9.70	47.0	89	10
DSTHA209806U	9.80	47.0	89	10
DSTHA209906U	9.90	47.0	89	10
DSTHA210006U	10.00	47.0	89	10
DSTHA210106U	10.10	55.0	100	12
DSTHA210206U	10.20	55.0	100	12
DSTHA210306U	10.30	55.0	100	12
DSTHA210406U	10.40	55.0	100	12
DSTHA210506U	10.50	55.0	100	12
DSTHA210606U	10.60	55.0	100	12
DSTHA210706U	10.70	55.0	100	12
DSTHA210806U	10.80	55.0	100	12
DSTHA210906U	10.90	55.0	100	12
DSTHA211006U	11.00	55.0	100	12
DSTHA211106U	11.10	55.0	100	12
DSTHA211206U	11.20	55.0	100	12
DSTHA211306U	11.30	55.0	100	12
DSTHA211406U	11.40	55.0	100	12
DSTHA211506U	11.50	55.0	100	12
DSTHA211606U	11.60	55.0	100	12
DSTHA211706U	11.70	55.0	100	12
DSTHA211806U	11.80	55.0	100	12
DSTHA211906U	11.90	55.0	100	12

Cutting Effected Length = 3×D

Dimension

- Sim. SIN6537
- 140 Degree Tip Angle
- 25~35 Degree Helix Angle
- With Coolant Hole
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON
- TITANIUM STEELS

Recommend Cutting Condition

- Table 3 (Page:C27)

WINSTAR

MICRO GRAIN CARBIDE HIGH PERFORMANCE DRILLS (Endmill Shank) - 3×D

With Coolant Hole

DSTCA2
DSTNA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DSTHA212006U	12.00	55.0	100	12
DSTHA212106U	12.10	60.0	100	14
DSTHA212206U	12.20	60.0	100	14
DSTHA212306U	12.30	60.0	100	14
DSTHA212406U	12.40	60.0	100	14
DSTHA212506U	12.50	60.0	100	14
DSTHA212606U	12.60	60.0	100	14
DSTHA212706U	12.70	60.0	100	14
DSTHA212806U	12.80	60.0	100	14
DSTHA212906U	12.90	60.0	100	14
DSTHA213006U	13.00	60.0	100	14
DSTHA213206U	13.20	60.0	100	14
DSTHA213306U	13.30	60.0	100	14
DSTHA213506U	13.50	60.0	100	14
DSTHA213706U	13.70	60.0	100	14
DSTHA213806U	13.80	60.0	100	14
DSTHA214006U	14.00	60.0	100	14
DSTHA214206U	14.20	65.0	100	16
DSTHA214306U	14.30	65.0	100	16
DSTHA214406U	14.40	65.0	100	16
DSTHA214506U	14.50	65.0	100	16
DSTHA214706U	14.70	65.0	100	16
DSTHA215006U	15.00	65.0	100	16
DSTHA215206U	15.20	65.0	100	16
DSTHA215506U	15.50	65.0	100	16
DSTHA215606U	15.60	65.0	100	16
DSTHA215706U	15.70	65.0	100	16
DSTHA215806U	15.80	65.0	100	16
DSTHA216006U	16.00	65.0	100	16
DSTHA216506U	16.50	73.0	150	18
DSTHA217006U	17.00	73.0	150	18
DSTHA217506U	17.50	73.0	150	18
DSTHA218006U	18.00	73.0	150	18
DSTHA218506U	18.50	79.0	150	20
DSTHA219006U	19.00	79.0	150	20
DSTHA219506U	19.50	79.0	150	20
DSTHA220006U	20.00	79.0	150	20

Cutting Effected Length = 3×D

Dimension

- Sim. SIN6537
- 140 Degree Tip Angle
- 25~35 Degree Helix Angle
- With Coolant Hole
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON
- TITANIUM STEELS

Recommend Cutting Condition

- Table 3 (Page:C27)

WINSTAR

MICRO GRAIN CARBIDE HIGH PERFORMANCE DRILLS (Endmill Shank) - 5×D

With Coolant Hole

DSFCA2
DSFHA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DSFCA203006U	3.00	28.0	60	4
DSFCA203176U	3.175	28.0	60	4
DSFCA203256U	3.25	28.0	60	4
DSFCA203306U	3.30	28.0	60	4
DSFCA203406U	3.40	28.0	60	4
DSFCA203506U	3.50	28.0	60	4
DSFCA203576U	3.57	28.0	60	4
DSFCA203706U	3.70	36.0	75	4
DSFCA203806U	3.80	36.0	75	4
DSFCA203976U	3.97	36.0	75	4
DSFCA204006U	4.00	36.0	75	4
DSFHA204106U	4.10	36.0	75	6
DSFHA204206U	4.20	36.0	75	6
DSFHA204306U	4.30	36.0	75	6
DSFHA204406U	4.40	36.0	75	6
DSFHA204506U	4.50	36.0	75	6
DSFHA204606U	4.60	36.0	75	6
DSFHA204656U	4.65	36.0	75	6
DSFHA204706U	4.70	36.0	75	6
DSFHA204806U	4.80	44.0	75	6
DSFHA204906U	4.90	44.0	75	6
DSFHA205006U	5.00	44.0	75	6
DSFHA205106U	5.10	44.0	75	6
DSFHA205206U	5.20	44.0	75	6
DSFHA205306U	5.30	44.0	75	6
DSFHA205406U	5.40	44.0	75	6
DSFHA205506U	5.50	44.0	75	6
DSFHA205556U	5.55	44.0	75	6
DSFHA205606U	5.60	44.0	75	6
DSFHA205706U	5.70	44.0	75	6
DSFHA205806U	5.80	44.0	75	6
DSFHA205906U	5.90	44.0	75	6
DSFHA206006U	6.00	44.0	75	6
DSFHA206106U	6.10	53.0	91	8
DSFHA206206U	6.20	53.0	91	8
DSFHA206306U	6.30	53.0	91	8
DSFHA206406U	6.40	53.0	91	8
DSFHA206506U	6.50	53.0	91	8
DSFHA206606U	6.60	53.0	91	8
DSFHA206706U	6.70	53.0	91	8
DSFHA206806U	6.80	53.0	91	8
DSFHA206906U	6.90	53.0	91	8

Cutting Effected Length = 5×D

Dimension

- Sim. SIN6537
- 140 Degree Tip Angle
- 25~35 Degree Helix Angle
- With Coolant Hole
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON
- TITANIUM STEELS

Recommend Cutting Condition

- Table 4 (Page:C27)

WINSTAR

MICRO GRAIN CARBIDE HIGH PERFORMANCE DRILLS (Endmill Shank) - 5×D

With Coolant Hole

DSFCA2
DSFHA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DSFHA207006U	7.00	53.0	91	8
DSFHA207106U	7.10	53.0	91	8
DSFHA207206U	7.20	53.0	91	8
DSFHA207306U	7.30	53.0	91	8
DSFHA207406U	7.40	53.0	91	8
DSFHA207506U	7.50	53.0	91	8
DSFHA207606U	7.60	53.0	91	8
DSFHA207706U	7.70	53.0	91	8
DSFHA207806U	7.80	53.0	91	8
DSFHA207906U	7.90	53.0	91	8
DSFHA208006U	8.00	53.0	91	8
DSFHA208106U	8.10	61.0	100	10
DSFHA208206U	8.20	61.0	100	10
DSFHA208306U	8.30	61.0	100	10
DSFHA208406U	8.40	61.0	100	10
DSFHA208506U	8.50	61.0	100	10
DSFHA208606U	8.60	61.0	100	10
DSFHA208706U	8.70	61.0	100	10
DSFHA208806U	8.80	61.0	100	10
DSFHA208906U	8.90	61.0	100	10
DSFHA209006U	9.00	61.0	100	10
DSFHA209106U	9.10	61.0	100	10
DSFHA209206U	9.20	61.0	100	10
DSFHA209256U	9.25	61.0	100	10
DSFHA209306U	9.30	61.0	100	10
DSFHA209406U	9.40	61.0	100	10
DSFHA209506U	9.50	61.0	100	10
DSFHA209606U	9.60	61.0	100	10
DSFHA209706U	9.70	61.0	100	10
DSFHA209806U	9.80	61.0	100	10
DSFHA209906U	9.90	61.0	100	10
DSFHA210006U	10.00	61.0	100	10
DSFHA210106U	10.10	71.0	118	12
DSFHA210206U	10.20	71.0	118	12
DSFHA210306U	10.30	71.0	118	12
DSFHA210406U	10.40	71.0	118	12
DSFHA210506U	10.50	71.0	118	12
DSFHA210606U	10.60	71.0	118	12
DSFHA210706U	10.70	71.0	118	12
DSFHA210806U	10.80	71.0	118	12
DSFHA210906U	10.90	71.0	118	12

Cutting Effected Length = 5×D

Dimension

- Sim. SIN6537
- 140 Degree Tip Angle
- 25~35 Degree Helix Angle
- With Coolant Hole
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON
- TITANIUM STEELS

Recommend Cutting Condition

- Table 4 (Page:C27)

WINSTAR

MICRO GRAIN CARBIDE HIGH PERFORMANCE DRILLS (Endmill Shank) - 5×D

With Coolant Hole

DSFCA2
DSFHA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DSFHA211006U	11.00	71.0	118	12
DSFHA211106U	11.10	71.0	118	12
DSFHA211206U	11.20	71.0	118	12
DSFHA211306U	11.30	71.0	118	12
DSFHA211406U	11.40	71.0	118	12
DSFHA211506U	11.50	71.0	118	12
DSFHA211606U	11.60	71.0	118	12
DSFHA211706U	11.70	71.0	118	12
DSFHA211806U	11.80	71.0	118	12
DSFHA211906U	11.90	71.0	118	12
DSFHA212006U	12.00	71.0	118	12
DSFHA212106U	12.10	77.0	125	14
DSFHA212206U	12.20	77.0	125	14
DSFHA212306U	12.30	77.0	125	14
DSFHA212406U	12.40	77.0	125	14
DSFHA212506U	12.50	77.0	125	14
DSFHA212606U	12.60	77.0	125	14
DSFHA212706U	12.70	77.0	125	14
DSFHA212806U	12.80	77.0	125	14
DSFHA212906U	12.90	77.0	125	14
DSFHA213006U	13.00	77.0	125	14
DSFHA213106U	13.10	77.0	125	14
DSFHA213306U	13.30	77.0	125	14
DSFHA213406U	13.40	77.0	125	14
DSFHA213506U	13.50	77.0	125	14
DSFHA213606U	13.60	77.0	125	14
DSFHA213706U	13.70	77.0	125	14
DSFHA213806U	13.80	77.0	125	14
DSFHA213906U	13.90	77.0	125	14
DSFHA214006U	14.00	77.0	125	14
DSFHA214106U	14.10	83.0	125	16
DSFHA214206U	14.20	83.0	125	16
DSFHA214306U	14.30	83.0	125	16
DSFHA214406U	14.40	83.0	125	16
DSFHA214506U	14.50	83.0	125	16
DSFHA214606U	14.60	83.0	125	16
DSFHA214706U	14.70	83.0	125	16
DSFHA214806U	14.80	83.0	125	16
DSFHA214906U	14.90	83.0	125	16
DSFHA215006U	15.00	83.0	125	16
DSFHA215106U	15.10	83.0	125	16
DSFHA215206U	15.20	83.0	125	16
DSFHA215306U	15.30	83.0	125	16
DSFHA215406U	15.40	83.0	125	16
DSFHA215506U	15.50	83.0	125	16
DSFHA215606U	15.60	83.0	125	16
DSFHA215706U	15.70	83.0	125	16
DSFHA215806U	15.80	83.0	125	16
DSFHA215906U	15.90	83.0	125	16
DSFHA216006U	16.00	83.0	125	16
DSFHA216506U	16.50	93.0	150	18
DSFHA217006U	17.00	93.0	150	18
DSFHA217506U	17.50	93.0	150	18
DSFHA218006U	18.00	93.0	150	18
DSFHA218506U	18.50	101.0	150	20
DSFHA219006U	19.00	101.0	150	20
DSFHA219506U	19.50	101.0	150	20
DSFHA220006U	20.00	101.0	150	20

Cutting Effected Length = 5×D

Dimension

- Sim. SIN6537
- 140 Degree Tip Angle
- 25~35 Degree Helix Angle
- With Coolant Hole
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON
- TITANIUM STEELS

Recommend Cutting Condition

- Table 4 (Page:C27)

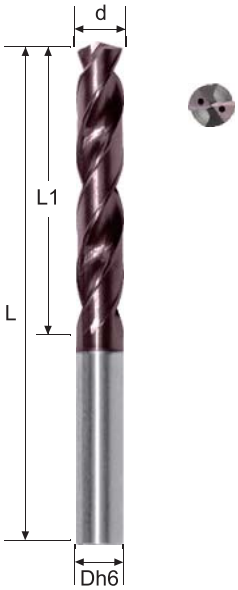
WINSTAR

MICRO GRAIN CARBIDE HIGH PERFORMANCE DRILLS (Endmill Shank) - 7×D

With Coolant Hole

DSSCF2
DSSHF2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DSSCF203006U	3.00	30	70	4
DSSCF203106U	3.10	30	70	4
DSSCF203206U	3.20	30	70	4
DSSCF203256U	3.25	30	70	4
DSSCF203306U	3.30	30	70	4
DSSCF203406U	3.40	36	75	4
DSSCF203506U	3.50	36	75	4
DSSCF203606U	3.60	36	75	4
DSSCF203706U	3.70	36	75	4
DSSCF203806U	3.80	38	75	4
DSSCF203906U	3.90	38	75	4
DSSCF204006U	4.00	38	75	4
DSSHF204106U	4.10	38	75	6
DSSHF204206U	4.20	38	75	6
DSSHF204306U	4.30	45	85	6
DSSHF204406U	4.40	45	85	6
DSSHF204506U	4.50	45	85	6
DSSHF204606U	4.60	45	85	6
DSSHF204656U	4.65	45	85	6
DSSHF204706U	4.70	45	85	6
DSSHF204806U	4.80	50	90	6
DSSHF204906U	4.90	50	90	6
DSSHF205006U	5.00	50	90	6
DSSHF205106U	5.10	50	90	6
DSSHF205206U	5.20	50	90	6
DSSHF205306U	5.30	50	90	6
DSSHF205406U	5.40	57	97	6
DSSHF205506U	5.50	57	97	6
DSSHF205706U	5.70	57	97	6
DSSHF205806U	5.80	57	97	6
DSSHF205906U	5.90	57	97	6
DSSHF206006U	6.00	57	97	6
DSSHF206206U	6.20	66	106	8
DSSHF206306U	6.30	66	106	8
DSSHF206356U	6.35	66	106	8
DSSHF206506U	6.50	66	106	8
DSSHF206606U	6.60	66	106	8
DSSHF206706U	6.70	66	106	8
DSSHF206806U	6.80	66	106	8
DSSHF206906U	6.90	76	116	8
DSSHF207006U	7.00	76	116	8
DSSHF207106U	7.10	76	116	8
DSSHF207206U	7.20	76	116	8
DSSHF207506U	7.50	76	116	8
DSSHF207606U	7.60	76	116	8
DSSHF207706U	7.70	76	116	8
DSSHF207806U	7.80	76	116	8

Cutting Effected Length = 7×D

Dimension

- Win 407
- 140 Degree Tip Angle
- 25~35 Degree Helix Angle
- With Coolant Hole
- Four Margins
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON
- TITANIUM STEELS

Recommend Cutting Condition

- Table 5 (Page:C28)

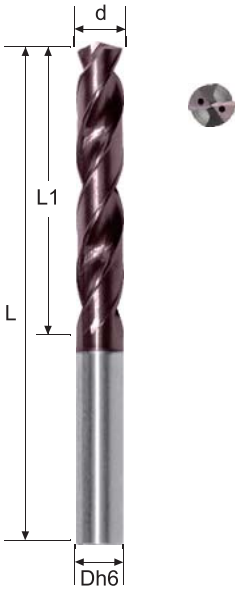
WINSTAR

MICRO GRAIN CARBIDE HIGH PERFORMANCE DRILLS (Endmill Shank) - 7×D

With Coolant Hole

DSSCF2
DSSHF2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DSSHF208006U	8.00	76	116	8
DSSHF208106U	8.10	87	131	10
DSSHF208206U	8.20	87	131	10
DSSHF208406U	8.40	87	131	10
DSSHF208506U	8.50	87	131	10
DSSHF208606U	8.60	87	131	10
DSSHF208706U	8.70	87	131	10
DSSHF208806U	8.80	87	131	10
DSSHF208906U	9.00	87	131	10
DSSHF209006U	9.10	95	139	10
DSSHF209106U	9.20	95	139	10
DSSHF209206U	9.30	95	139	10
DSSHF209306U	9.40	95	139	10
DSSHF209506U	9.50	95	139	10
DSSHF209526U	9.52	95	139	10
DSSHF209706U	9.70	95	139	10
DSSHF209806U	9.80	95	139	10
DSSHF210006U	10.00	95	139	10
DSSHF210206U	10.20	106	155	12
DSSHF210306U	10.30	106	155	12
DSSHF210506U	10.50	106	155	12
DSSHF210726U	10.72	106	155	12
DSSHF210806U	10.80	106	155	12
DSSHF211006U	11.00	106	155	12
DSSHF211206U	11.20	114	155	12
DSSHF211506U	11.50	114	155	12
DSSHF211806U	11.80	114	155	12
DSSHF212006U	12.00	114	155	12
DSSHF212106U	12.10	133	182	14
DSSHF212206U	12.20	133	182	14
DSSHF212306U	12.30	133	182	14
DSSHF212506U	12.50	133	182	14
DSSHF212706U	12.70	133	182	14
DSSHF213006U	13.00	133	182	14
DSSHF213506U	13.50	133	182	14
DSSHF214006U	14.00	133	182	14
DSSHF214106U	14.10	152	200	16
DSSHF214206U	14.20	152	200	16
DSSHF214506U	14.50	152	200	16
DSSHF215006U	15.00	152	200	16
DSSHF215506U	15.50	152	200	16
DSSHF215876U	15.87	152	200	16
DSSHF216006U	16.00	152	200	16

Cutting Effected Length = 7×D

Dimension

- Win 407
- 140 Degree Tip Angle
- 25~35 Degree Helix Angle
- With Coolant Hole
- Four Margins
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON
- TITANIUM STEELS

Recommend Cutting Condition

- Table 5 (Page:C28)

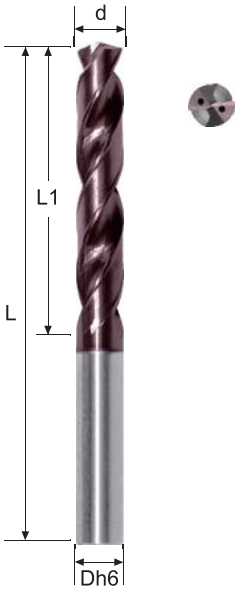
WINSTAR

MICRO GRAIN CARBIDE HIGH PERFORMANCE DRILLS (Endmill Shank) - 12×D

With Coolant Hole

DSZHF2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DSZHF203006U	3.00	50	90	6
DSZHF203106U	3.10	50	90	6
DSZHF203176U	3.17	50	90	6
DSZHF203206U	3.20	50	90	6
DSZHF203306U	3.30	50	90	6
DSZHF203406U	3.40	50	90	6
DSZHF203506U	3.50	50	90	6
DSZHF203606U	3.60	50	90	6
DSZHF203706U	3.70	50	90	6
DSZHF203806U	3.80	64	102	6
DSZHF203906U	3.90	64	102	6
DSZHF204006U	4.00	64	102	6
DSZHF204106U	4.10	64	102	6
DSZHF204206U	4.20	64	102	6
DSZHF204306U	4.30	64	102	6
DSZHF204406U	4.40	64	102	6
DSZHF204506U	4.50	64	102	6
DSZHF204606U	4.60	64	102	6
DSZHF204706U	4.70	64	102	6
DSZHF204806U	4.80	78	116	6
DSZHF204906U	4.90	78	116	6
DSZHF205006U	5.00	78	116	6
DSZHF205106U	5.10	78	116	6
DSZHF205206U	5.20	78	116	6
DSZHF205306U	5.30	78	116	6
DSZHF205406U	5.40	78	116	6
DSZHF205506U	5.50	78	116	6
DSZHF205606U	5.60	78	116	6
DSZHF205706U	5.70	78	116	6
DSZHF205806U	5.80	78	116	6
DSZHF205906U	5.90	78	116	6
DSZHF206006U	6.00	78	116	6
DSZHF206106U	6.10	108	146	8
DSZHF206206U	6.20	108	146	8
DSZHF206306U	6.30	108	146	8
DSZHF206356U	6.35	108	146	8
DSZHF206406U	6.40	108	146	8
DSZHF206506U	6.50	108	146	8
DSZHF206606U	6.60	108	146	8
DSZHF206706U	6.70	108	146	8
DSZHF206806U	6.80	108	146	8
DSZHF206906U	6.90	108	146	8
DSZHF207006U	7.00	108	146	8
DSZHF207106U	7.10	108	146	8
DSZHF207206U	7.20	108	146	8
DSZHF207306U	7.30	108	146	8
DSZHF207406U	7.40	108	146	8
DSZHF207506U	7.50	108	146	8
DSZHF207606U	7.60	108	146	8
DSZHF207706U	7.70	108	146	8
DSZHF207806U	7.80	108	146	8
DSZHF207906U	7.90	108	146	8

Cutting Effected Length = 12×D

Dimension

- Win 412
- 140 Degree Tip Angle
- 25~35 Degree Helix Angle
- With Coolant Hole
- Four Margins
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON
- TITANIUM STEELS

Recommend Cutting Condition

- Table 5 (Page:C28)

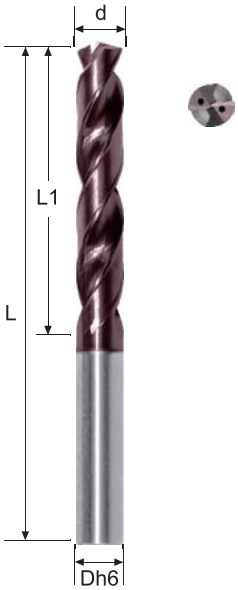
WINSTAR

MICRO GRAIN CARBIDE HIGH PERFORMANCE DRILLS (Endmill Shank) - 12×D

With Coolant Hole

DSZHF2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DSZHF208006U	8.00	108	146	8
DSZHF208106U	8.10	120	162	10
DSZHF208206U	8.20	120	162	10
DSZHF208306U	8.30	120	162	10
DSZHF208406U	8.40	120	162	10
DSZHF208506U	8.50	120	162	10
DSZHF208606U	8.60	120	162	10
DSZHF208706U	8.70	120	162	10
DSZHF208806U	8.80	120	162	10
DSZHF208906U	8.90	120	162	10
DSZHF209006U	9.00	120	162	10
DSZHF209106U	9.10	120	162	10
DSZHF209206U	9.20	120	162	10
DSZHF209306U	9.30	120	162	10
DSZHF209406U	9.40	120	162	10
DSZHF209506U	9.50	120	162	10
DSZHF209526U	9.52	120	162	10
DSZHF209606U	9.60	120	162	10
DSZHF209706U	9.70	120	162	10
DSZHF209806U	9.80	120	162	10
DSZHF209906U	9.90	120	162	10
DSZHF210006U	10.00	120	162	10
DSZHF210206U	10.20	156	204	12
DSZHF210506U	10.50	156	204	12
DSZHF211006U	11.00	156	204	12
DSZHF211506U	11.50	156	204	12
DSZHF212006U	12.00	156	204	12

Cutting Effected Length = 12×D

Dimension

- Win 412
- 140 Degree Tip Angle
- 25~35 Degree Helix Angle
- With Coolant Hole
- Four Margins
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON
- TITANIUM STEELS

Recommend Cutting Condition

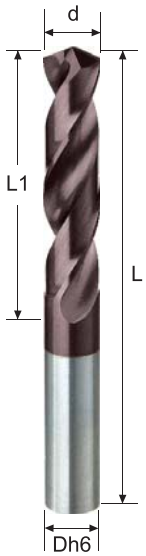
- Table 5 (Page:C28)

WINSTAR

MICRO GRAIN CARBIDE GENERAL PURPOSE DRILLS (Straight Shank) - 3×D

DGTNA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐



Cutting Effected Length = 3×D

Dimension

- Sim. SIN6539
- 130 Degree Tip Angle
- 25~35 Degree Helix Angle
- Without Coolant Hole
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON

Recommend Cutting Condition

- Table 6 (Page:C28)

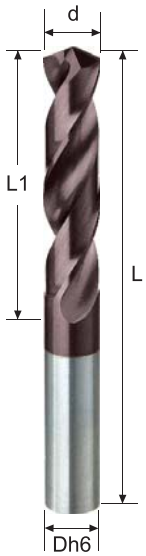
Order No.	Dia. (d)	CL (L1)	OAL (L)
DGTNA202005U	2.00	12	38
DGTNA202105U	2.10	12	38
DGTNA202205U	2.20	13	40
DGTNA202305U	2.30	13	40
DGTNA202385U	2.38	14	43
DGTNA202405U	2.40	14	43
DGTNA202505U	2.50	14	43
DGTNA202605U	2.60	14	43
DGTNA202705U	2.70	16	46
DGTNA202785U	2.78	16	46
DGTNA202805U	2.80	16	46
DGTNA202905U	2.90	16	46
DGTNA203005U	3.00	16	46
DGTNA203105U	3.10	18	49
DGTNA203175U	3.17	18	49
DGTNA203205U	3.20	18	49
DGTNA203305U	3.30	18	49
DGTNA203405U	3.40	20	52
DGTNA203505U	3.50	20	52
DGTNA203575U	3.57	20	52
DGTNA203605U	3.60	20	52
DGTNA203705U	3.70	20	52
DGTNA203805U	3.80	22	55
DGTNA203905U	3.90	22	55
DGTNA203975U	3.97	22	55
DGTNA204005U	4.00	22	55
DGTNA204105U	4.10	22	55
DGTNA204205U	4.20	24	58
DGTNA204305U	4.30	24	58
DGTNA204375U	4.37	24	58
DGTNA204405U	4.40	24	58
DGTNA204505U	4.50	24	58
DGTNA204605U	4.60	24	58
DGTNA204705U	4.70	24	58
DGTNA204765U	4.76	26	62
DGTNA204805U	4.80	26	62
DGTNA204905U	4.90	26	62
DGTNA205005U	5.00	26	62
DGTNA205105U	5.10	26	62
DGTNA205205U	5.20	26	62
DGTNA205305U	5.30	26	62
DGTNA205405U	5.40	28	66
DGTNA205505U	5.50	28	66
DGTNA205605U	5.60	28	66
DGTNA205705U	5.70	28	66
DGTNA205805U	5.80	28	66
DGTNA205905U	5.90	28	66
DGTNA206005U	6.00	28	66
DGTNA206105U	6.10	31	70
DGTNA206205U	6.20	31	70
DGTNA206305U	6.30	31	70
DGTNA206355U	6.35	31	70
DGTNA206405U	6.40	31	70
DGTNA206505U	6.50	31	70
DGTNA206605U	6.60	31	70
DGTNA206705U	6.70	31	70
DGTNA206805U	6.80	34	74
DGTNA206905U	6.90	34	74

WINSTAR

MICRO GRAIN CARBIDE GENERAL PURPOSE DRILLS (Straight Shank) - 3×D

DGTNA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐



Cutting Effected Length = 3×D

Dimension

- Sim. SIN6539
- 130 Degree Tip Angle
- 25~35 Degree Helix Angle
- Without Coolant Hole
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON

Recommend Cutting Condition

- Table 6 (Page:C28)

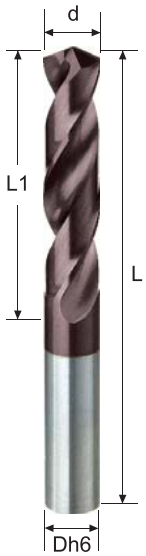
Order No.	Dia. (d)	CL (L1)	OAL (L)
DGTNA207005U	7.00	34	74
DGTNA207105U	7.10	34	74
DGTNA207145U	7.14	34	74
DGTNA207205U	7.20	34	74
DGTNA207305U	7.30	34	74
DGTNA207405U	7.40	34	74
DGTNA207505U	7.50	34	74
DGTNA207605U	7.60	37	79
DGTNA207705U	7.70	37	79
DGTNA207805U	7.80	37	79
DGTNA207905U	7.90	37	79
DGTNA207945U	7.94	37	79
DGTNA208005U	8.00	37	79
DGTNA208105U	8.10	37	79
DGTNA208205U	8.20	37	79
DGTNA208305U	8.30	37	79
DGTNA208405U	8.40	37	79
DGTNA208505U	8.50	37	79
DGTNA208605U	8.60	37	79
DGTNA208705U	8.70	37	79
DGTNA208735U	8.73	40	84
DGTNA208805U	8.80	40	84
DGTNA208905U	8.90	40	84
DGTNA209005U	9.00	40	84
DGTNA209105U	9.10	40	84
DGTNA209205U	9.20	40	84
DGTNA209305U	9.30	40	84
DGTNA209405U	9.40	40	84
DGTNA209505U	9.50	40	84
DGTNA209705U	9.70	43	89
DGTNA209805U	9.80	43	89
DGTNA209905U	9.90	43	89
DGTNA210005U	10.00	43	89
DGTNA210105U	10.10	43	89
DGTNA210205U	10.20	43	89
DGTNA210305U	10.30	43	89
DGTNA210405U	10.40	43	89
DGTNA210505U	10.50	43	89
DGTNA210605U	10.60	43	89
DGTNA210805U	10.80	47	95
DGTNA210905U	10.90	47	95
DGTNA211005U	11.00	47	95
DGTNA211105U	11.10	47	95
DGTNA211205U	11.20	47	95
DGTNA211505U	11.50	47	95
DGTNA211605U	11.60	47	95
DGTNA211805U	11.80	47	95
DGTNA211905U	11.90	51	102
DGTNA212005U	12.00	51	102
DGTNA212505U	12.50	51	102
DGTNA212705U	12.70	51	102
DGTNA213005U	13.00	51	102
DGTNA213505U	13.50	54	107
DGTNA214005U	14.00	54	107
DGTNA214505U	14.50	56	111
DGTNA215005U	15.00	56	111
DGTNA215505U	15.50	58	115
DGTNA216005U	16.00	58	115

WINSTAR

MICRO GRAIN CARBIDE GENERAL PURPOSE DRILLS (Straight Shank) - 5×D

DGFNA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)
DGFNA205005U	5.00	34	73
DGFNA205105U	5.10	38	76
DGFNA205205U	5.20	38	76
DGFNA205305U	5.30	38	76
DGFNA205405U	5.40	38	76
DGFNA205505U	5.50	38	76
DGFNA205605U	5.60	41	81
DGFNA205705U	5.70	41	81
DGFNA205805U	5.80	41	81
DGFNA205905U	5.90	41	81
DGFNA206005U	6.00	41	81
DGFNA206105U	6.10	41	81
DGFNA206205U	6.20	41	81
DGFNA206305U	6.30	41	81
DGFNA206405U	6.40	41	81
DGFNA206505U	6.50	41	81
DGFNA206605U	6.60	43	83
DGFNA206705U	6.70	43	83
DGFNA206805U	6.80	43	83
DGFNA206905U	6.90	43	83
DGFNA207005U	7.00	43	83
DGFNA207105U	7.10	45	87
DGFNA207205U	7.20	45	87
DGFNA207305U	7.30	45	87
DGFNA207405U	7.40	45	87
DGFNA207505U	7.50	45	87
DGFNA207605U	7.60	48	90
DGFNA207705U	7.70	48	90
DGFNA207805U	7.80	48	90
DGFNA207905U	7.90	48	90
DGFNA208005U	8.00	48	90
DGFNA208105U	8.10	53	96
DGFNA208205U	8.20	53	96
DGFNA208305U	8.30	53	96
DGFNA208405U	8.40	53	96
DGFNA208505U	8.50	53	96
DGFNA208605U	8.60	55	98
DGFNA208705U	8.70	55	98

Cutting Effected Length = 5×D

Dimension

- Sim. SIN6539
- 130 Degree Tip Angle
- 25~35 Degree Helix Angle
- Without Coolant Hole
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON

Recommend Cutting Condition

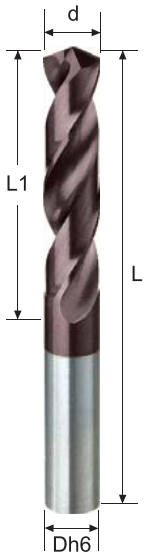
- Table 7 (Page:C29)

WINSTAR

MICRO GRAIN CARBIDE GENERAL PURPOSE DRILLS (Straight Shank) - 5×D

DGFNA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)
DGFNA208805U	8.80	55	98
DGFNA209005U	9.00	55	98
DGFNA209105U	9.10	58	102
DGFNA209205U	9.20	58	102
DGFNA209305U	9.30	58	102
DGFNA209505U	9.50	58	102
DGFNA209605U	9.60	60	105
DGFNA209705U	9.70	60	105
DGFNA209805U	9.80	60	105
DGFNA210005U	10.00	60	105
DGFNA210205U	10.20	66	112
DGFNA210305U	10.30	66	112
DGFNA210405U	10.40	66	112
DGFNA210505U	10.50	66	112
DGFNA210605U	10.60	68	114
DGFNA210705U	10.70	68	114
DGFNA210805U	10.80	68	114
DGFNA210905U	10.90	68	114
DGFNA211005U	11.00	68	114
DGFNA211105U	11.10	71	118
DGFNA211205U	11.20	71	118
DGFNA211405U	11.40	71	118
DGFNA211505U	11.50	71	118
DGFNA211605U	11.60	73	121
DGFNA211705U	11.70	73	121
DGFNA211805U	11.80	73	121
DGFNA211905U	11.90	73	121
DGFNA212005U	12.00	73	121
DGFNA212505U	12.50	76	135
DGFNA212705U	12.70	78	137
DGFNA213005U	13.00	78	137
DGFNA213505U	13.50	84	144
DGFNA214005U	14.00	86	147
DGFNA214505U	14.50	89	151
DGFNA215005U	15.00	91	153
DGFNA215505U	15.50	94	157
DGFNA216005U	16.00	96	160

Cutting Effected Length = 5×D

Dimension

- Sim. SIN6539
- 130 Degree Tip Angle
- 25~35 Degree Helix Angle
- Without Coolant Hole
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON

Recommend Cutting Condition

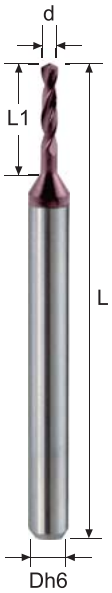
- Table 7 (Page:C29)

WINSTAR

MICRO GRAIN CARBIDE MICRO DRILLS (Endmill Shank) - Shank Dia. 3mm

DGMNB2

P	M	K	N	S	H
☑	☑	☐	☐	☐	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DGMNB200505U	0.50	3.0	38	3
DGMNB200605U	0.60	3.0	38	3
DGMNB200705U	0.70	3.0	38	3
DGMNB200805U	0.80	4.0	38	3
DGMNB200905U	0.90	4.0	38	3
DGMNB201005U	1.00	4.0	38	3
DGMNB201105U	1.10	6.0	38	3
DGMNB201205U	1.20	6.0	38	3
DGMNB201305U	1.30	6.0	38	3
DGMNB201405U	1.40	6.0	38	3
DGMNB201505U	1.50	6.0	38	3
DGMNB201605U	1.60	8.0	38	3
DGMNB201705U	1.70	8.0	38	3
DGMNB201805U	1.80	8.0	38	3
DGMNB201905U	1.90	8.0	38	3
DGMNB202005U	2.00	8.0	38	3
DGMNB202105U	2.10	8.0	38	3
DGMNB202205U	2.20	8.0	38	3
DGMNB202305U	2.30	8.0	38	3
DGMNB202405U	2.40	8.0	38	3
DGMNB202505U	2.50	8.0	38	3
DGMNB202605U	2.60	8.0	38	3
DGMNB202705U	2.70	8.0	38	3
DGMNB202805U	2.80	8.0	38	3
DGMNB202905U	2.90	8.0	38	3
DGMNB203005U	3.00	8.0	38	3

Dimension

- Win 038B
- 130 Degree Tip Angle
- 25~35 Degree Helix Angle
- S-Fire Coating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS

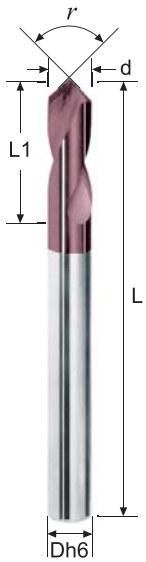
Recommend Cutting Condition

- Table 8 (Page:C29)

MICRO GRAIN CARBIDE SPOTTING DRILLS

DTTNA2
DTLNA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐



(r) 90 Degree Order No.	(r) 120 Degree Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DTTNA203002U	DTTNA203004U	3	8	50	3
DTTNA204002U	DTTNA204004U	4	10	50	4
DTTNA205002U	DTTNA205004U	5	13	50	5
DTTNA206002U	DTTNA206004U	6	15	50	6
DTTNA208002U	DTTNA208004U	8	20	60	8
DTTNA210002U	DTTNA210004U	10	25	75	10
DTTNA212002U	DTTNA212004U	12	30	75	12
DTTNA216002U	DTTNA216004U	16	35	100	16
DTTNA203002	DTTNA203004	3	8	50	3
DTTNA204002	DTTNA204004	4	10	50	4
DTTNA205002	DTTNA205004	5	13	50	5
DTTNA206002	DTTNA206004	6	15	50	6
DTTNA208002	DTTNA208004	8	20	60	8
DTTNA210002	DTTNA210004	10	25	75	10
DTTNA212002	DTTNA212004	12	30	75	12
DTTNA216002	DTTNA216004	16	35	100	16

MICRO GRAIN CARBIDE SPOTTING DRILLS - LONG SHANK

(r) 90 Degree Order No.	(r) 120 Degree Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DTLNA204002U	DTLNA204004U	4	10	75	4
DTLNA205002U	DTLNA205004U	5	13	75	5
DTLNA206002U	DTLNA206004U	6	15	100	6
DTLNA208002U	DTLNA208004U	8	20	100	8
DTLNA210002U	DTLNA210004U	10	25	150	10
DTLNA212002U	DTLNA212004U	12	30	150	12
DTLNA216002U	DTLNA216004U	16	35	150	16
DTLNA204002	DTLNA204004	4	10	75	4
DTLNA205002	DTLNA205004	5	13	75	5
DTLNA206000	DTLNA206004	6	15	100	6
DTLNA208002	DTLNA208004	8	20	100	8
DTLNA210002	DTLNA210004	10	25	150	10
DTLNA212002	DTLNA212004	12	30	150	12
DTLNA216002	DTLNA216004	16	35	150	16

Dimension

- 90 Degree Tip Angle
- 120 Degree Tip Angle
- S-Fire Coating
- Uncoating

Tolerance

- d h7
- D h6

Material

- ALLOY STEELS
- STAINLESS STEELS
- CAST IRON

Recommend Cutting Condition

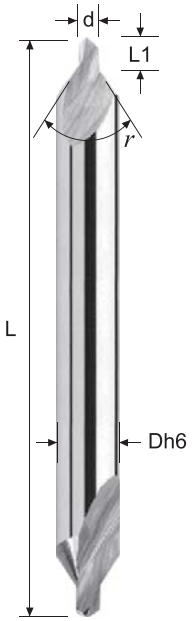
- Table 9 (Page:C30)

WINSTAR

MICRO GRAIN CARBIDE CENTER DRILLS

DTCNA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐



(r) 60 Degree Order No.	(r) 90 Degree Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DCTNA201001	DCTNA201002	1.00	1.6	32	3
DCTNA201251	DCTNA201252	1.25	1.9	32	3
DCTNA201601	DCTNA201602	1.60	2.4	32	4
DCTNA202001	DCTNA202002	2.00	2.9	40	5
DCTNA202501	DCTNA202502	2.50	3.6	45	6
DCTNA203001	DCTNA203002	3.00	3.9	60	8
DCTNA203151	DCTNA203152	3.15	3.9	60	8
DCTNA204001	DCTNA204002	4.00	5.0	75	10
DCTNA205001	DCTNA205002	5.00	6.3	75	12

Dimension

- 120 Degree Tip Angle
- 60 Point Angle
- 90 Point Angle
- Uncoating

Tolerance

- d h7
- D h6

Material

- STEEL ~ HRC 30
- CAST IRON

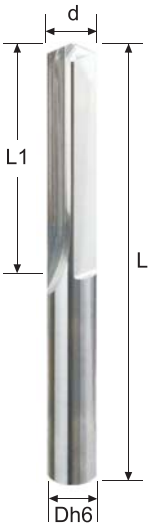
Recommend Cutting Condition

- Table 10 (Page:C30)

MICRO GRAIN CARBIDE STRAIGHT FLUTE DRILLS - 3×D

DRTNA2
DRFNA2

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐



Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DRTNA204005	4.00	22	66	4
DRTNA205005	5.00	26	66	5
DRTNA206005	6.00	28	66	6
DRTNA207005	7.00	34	79	7
DRTNA208005	8.00	37	79	8
DRTNA209005	9.00	40	89	9
DRTNA210005	10.00	43	89	10
DRTNA212005	12.00	51	102	12
DRTNA214005	14.00	54	107	14
DRTNA216005	16.00	56	115	16

MICRO GRAIN CARBIDE STRAIGHT FLUTE DRILLS - 5×D

Order No.	Dia. (d)	CL (L1)	OAL (L)	Shank (D)
DRFNA204005	4.00	36	74	4
DRFNA205005	5.00	44	82	5
DRFNA206005	6.00	44	82	6
DRFNA207005	7.00	53	91	7
DRFNA208005	8.00	53	91	8
DRFNA209005	9.00	61	102	9
DRFNA210005	10.00	61	102	10
DRFNA212005	12.00	71	118	12
DRFNA214005	14.00	77	124	14
DRFNA216005	16.00	83	130	16

Dimension

- 130 Degree Tip Angle
- Material : CO 10%, WC 90%

Tolerance

- d h7
- D h6

Material

- STEEL
- COPPER
- ALUMINUM

Recommend Cutting Condition

- Table 11 (Page:C31)

MICRO GRAIN CARBIDE MACHINE REAMERS - 4F & 6F

RSTNA4
RSTNA6

P	M	K	N	S	H
☑	☑	☑	☐	☐	☐

Dimension

- Material : CO 10%, WC 90%
- Left helix angle & counter clockwise

Tolerance

- d h7
- D h6

Material

- ALLOY STEEL
- CAST IRON
- STAINLESS STEELS

Order No.	Dia. (d)	CL (L1)	EL (L2)	OAL (L)	Shank (D)	Flutes (F)
RSTNA403000	3.0	15	35	60	4	4
RSTNA403100	3.1	15	35	60	4	4
RSTNA403200	3.2	15	35	60	4	4
RSTNA403300	3.3	15	35	60	4	4
RSTNA403400	3.4	15	35	60	4	4
RSTNA403500	3.5	18	35	60	4	4
RSTNA403600	3.6	18	35	60	4	4
RSTNA403700	3.7	18	35	60	4	4
RSTNA403800	3.8	18	35	60	4	4
RSTNA403900	3.9	18	35	60	4	4
RSTNA404000	4.0	19	50	75	4	4
RSTNA404100	4.1	19	50	75	6	4
RSTNA404200	4.2	19	50	75	6	4
RSTNA404300	4.3	19	50	75	6	4
RSTNA404400	4.4	19	50	75	6	4
RSTNA404500	4.5	21	50	75	6	4
RSTNA404600	4.6	21	50	75	6	4
RSTNA404700	4.7	21	50	75	6	4
RSTNA404800	4.8	21	50	75	6	4
RSTNA404900	4.9	21	50	75	6	4
RSTNA405000	5.0	23	50	75	6	4
RSTNA605000	5.0	23	50	75	6	6
RSTNA605100	5.1	23	50	75	6	6
RSTNA605200	5.2	23	50	75	6	6
RSTNA605300	5.3	23	50	75	6	6
RSTNA605400	5.4	23	50	75	6	6
RSTNA605500	5.5	26	50	75	6	6
RSTNA605600	5.6	26	50	75	6	6
RSTNA605700	5.7	26	50	75	6	6
RSTNA605800	5.8	26	50	75	6	6
RSTNA605900	5.9	26	50	75	6	6
RSTNA606000	6.0	26	65	100	6	6
RSTNA606500	6.5	28	65	100	8	6
RSTNA607000	7.0	31	70	109	8	6
RSTNA607500	7.5	31	70	109	8	6
RSTNA608000	8.0	33	80	109	8	6
RSTNA608500	8.5	33	80	125	10	6
RSTNA609000	9.0	36	85	125	10	6
RSTNA609500	9.5	36	85	125	10	6
RSTNA610000	10.0	38	85	125	10	6
RSTNA610500	10.5	38	85	125	12	6
RSTNA611000	11.0	41	100	150	12	6
RSTNA611500	11.5	41	100	150	12	6
RSTNA612000	12.0	44	100	150	12	6

RECOMMEND CUTTING CONDITION FOR DRILL

TABLE 1 G400 Series DSTMA, DSTNA

CUTTING EFFECTED LENGTH = 3×D

WORKING MATERIAL	MILD STEEL		CARBON STEEL / ALLOY STEEL		ALLOY STEEL		SG CAST IRON		CAST IRON		STAINLESS	
CODE	SS 400		S50C, SCM		SKD 61		FC 250		FCD 400		SUS 304	
HARDNESS	–		–		HRC 30~40		> HB 240		–		–	
Vc	108 M/min		81 M/min		54 M/min		111 M/min		100 M/min		45 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	11,500	1,040	8,600	770	5,700	510	11,680	1,970	10,640	1,800	4,800	290
5MM	6,900	780	5,200	590	3,400	380	7,040	1,490	6,400	1,350	2,900	220
8MM	4,300	720	3,200	540	2,100	350	4,400	1,390	4,000	1,260	1,800	200
10MM	3,400	640	2,600	490	1,700	320	3,520	1,240	3,200	1,130	1,400	180
12MM	2,900	600	2,100	430	1,400	290	2,880	1,110	2,640	1,020	1,200	160
16MM	2,100	490	1,600	380	1,100	260	2,160	950	2,000	880	900	140
Remarks	※ Uncoated Drills Reduce 30% RPM & FEED Form Coating One.											

The FEED & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

TABLE 2 G400 Series DSFMA, DSFNA

CUTTING EFFECTED LENGTH = 5×D

WORKING MATERIAL	MILD STEEL		CARBON STEEL / ALLOY STEEL		ALLOY STEEL		SG CAST IRON		CAST IRON		STAINLESS	
CODE	SS 400		S50C, SCM		SKD 61		FC 250		FCD 400		SUS 304	
HARDNESS	–		–		HRC 30~40		> HB 240		–		–	
Vc	97 M/min		73 M/min		49 M/min		99 M/min		90 M/min		41 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	10,300	930	7,700	690	5,200	470	10,480	1,770	9,520	1,610	4,300	260
5MM	6,200	700	4,600	520	3,100	350	6,320	1,330	5,760	1,220	2,600	200
8MM	3,900	660	2,900	490	1,900	320	3,920	1,230	3,600	1,130	1,600	180
10MM	3,100	580	2,300	430	1,500	280	3,120	1,100	2,880	1,010	1,300	160
12MM	2,600	530	1,900	390	1,300	270	2,640	1,020	2,400	920	1,100	150
16MM	1,900	450	1,500	350	1,000	240	2,000	880	1,760	780	810	130
Remarks	※ Uncoated Drills Reduce 30% RPM & FEED Form Coating One.											

The FEED & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

RECOMMEND CUTTING CONDITION FOR DRILL

TABLE 3 G400 Series DSTCF, DSTHF

CUTTING EFFECTED LENGTH = 3×D, WITH COOLANT

WORKING MATERIAL	MILD STEEL		CARBON STEEL / ALLOY STEEL		ALLOY STEEL		SG CAST IRON		CAST IRON		STAINLESS	
CODE	SS 400		S50C, SCM		SKD 61		FC 250		FCD 400		SUS 304	
HARDNESS	–		–		HRC 30~40		> HB 240		–		–	
Vc	119 M/min		89 M/min		59 M/min		121 M/min		111 M/min		50 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	12,600	1,130	9,500	860	6,300	570	12,880	2,170	11,680	1,970	5,300	320
5MM	7,600	860	5,700	640	3,800	430	7,680	1,620	7,040	1,490	3,200	240
8MM	4,700	790	3,500	590	2,400	400	4,800	1,510	4,400	1,390	2,000	220
10MM	3,800	710	2,800	530	1,900	360	3,840	1,350	3,520	1,240	1,600	200
12MM	3,200	660	2,400	490	1,600	330	3,200	1,230	2,880	1,110	1,300	180
16MM	2,400	560	1,800	420	1,200	280	2,400	1,060	2,160	950	990	160
Remarks	※ Uncoated Drills Reduce 30% RPM & FEED Form Coating One.											

The FEED & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

TABLE 4 G400 Series DSFCF, DSFHF

CUTTING EFFECTED LENGTH = 5×D, WITH COOLANT

WORKING MATERIAL	MILD STEEL		CARBON STEEL / ALLOY STEEL		ALLOY STEEL		SG CAST IRON		CAST IRON		STAINLESS	
CODE	SS 400		S50C, SCM		SKD 61		FC 250		FCD 400		SUS 304	
HARDNESS	–		–		HRC 30~40		> HB 240		–		–	
Vc	107 M/min		80 M/min		53 M/min		109 M/min		99 M/min		45 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	11,300	1,020	8,500	770	5,700	510	11,600	1,960	10,480	1,770	4,700	280
5MM	6,800	770	5,100	570	3,400	380	6,960	1,470	6,320	1,330	2,800	210
8MM	4,300	720	3,200	540	2,100	350	4,320	1,360	3,920	1,230	1,800	200
10MM	3,400	640	2,600	490	1,700	320	3,440	1,210	3,120	1,100	1,400	180
12MM	2,800	570	2,100	430	1,400	290	2,880	1,110	2,640	1,020	1,200	160
16MM	2,100	490	1,600	380	1,100	260	2,160	950	2,000	880	890	140
Remarks	※ Uncoated Drills Reduce 30% RPM & FEED Form Coating One.											

The FEED & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

RECOMMEND CUTTING CONDITION FOR DRILL

TABLE 5 G400 Series DSSCF, DSSHF, DSZHF

CUTTING EFFECTED LENGTH = 7×D, 12×D, WITH COOLANT

WORKING MATERIAL	MILD STEEL		CARBON STEEL / ALLOY STEEL		ALLOY STEEL		SG CAST IRON		CAST IRON		STAINLESS	
CODE	SS 400		S50C, SCM		SKD 61		FC 250		FCD 400		SUS 304	
HARDNESS	–		–		HRC 30~40		> HB 240		–		–	
Vc	95 M/min		71 M/min		48 M/min		96 M/min		88 M/min		40 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	10,100	910	7,600	680	5,000	450	10,240	1,730	9,360	1,580	4,200	250
5MM	6,100	690	4,500	510	3,000	340	6,160	1,300	5,600	1,180	2,500	190
8MM	3,800	640	2,800	470	1,900	320	3,840	1,210	3,520	1,110	1,600	180
10MM	3,000	560	2,300	430	1,500	280	3,120	1,100	2,800	980	1,300	160
12MM	2,500	510	1,900	390	1,300	270	2,560	980	2,320	890	1,100	150
16MM	1,900	450	1,400	330	900	210	1,920	850	1,760	780	790	120
Remarks	※ Uncoated Drills Reduce 30% RPM & FEED Form Coating One.											

The FEED & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

TABLE 6 G300 Series DGTNA

CUTTING EFFECTED LENGTH = 3×D

WORKING MATERIAL	MILD STEEL		CARBON STEEL / ALLOY STEEL		ALLOY STEEL		SG CAST IRON		CAST IRON		STAINLESS	
CODE	SS 400		S50C, SCM		SKD 61		FC 250		FCD 400		SUS 304	
HARDNESS	–		–		HRC 30~40		> HB 240		–		–	
Vc	97 M/min		73 M/min		49 M/min		99 M/min		90 M/min		41 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	10,300	930	7,700	690	5,200	470	10,480	1,770	9,520	1,610	4,300	260
5MM	6,200	700	4,600	520	3,100	350	6,320	1,330	5,760	1,220	2,600	200
8MM	3,900	660	2,900	490	1,900	320	3,920	1,230	3,600	1,130	1,600	180
10MM	3,100	580	2,300	430	1,500	280	3,120	1,100	2,880	1,010	1,300	160
12MM	2,600	530	1,900	390	1,300	270	2,640	1,020	2,400	920	1,100	150
16MM	1,900	450	1,500	350	1,000	240	2,000	880	1,760	780	810	130
Remarks	※ Uncoated Drills Reduce 30% RPM & FEED Form Coating One.											

The FEED & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

RECOMMEND CUTTING CONDITION FOR DRILL

TABLE 7 G300 Series DGFNA

CUTTING EFFECTED LENGTH = 5×D

WORKING MATERIAL	MILD STEEL		CARBON STEEL / ALLOY STEEL		ALLOY STEEL		SG CAST IRON		CAST IRON		STAINLESS	
CODE	SS 400		S50C, SCM		SKD 61		FC 250		FCD 400		SUS 304	
HARDNESS	–		–		HRC 30~40		> HB 240		–		–	
Vc	86 M/min		65 M/min		43 M/min		88 M/min		80 M/min		36 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
3MM	9,200	830	6,900	620	4,600	410	9,360	1,580	8,480	1,430	3,800	230
5MM	5,500	620	4,100	460	2,800	320	5,600	1,180	5,120	1,080	2,300	170
8MM	3,400	570	2,600	440	1,700	290	3,520	1,110	3,200	1,010	1,400	160
10MM	2,800	530	2,100	390	1,400	260	2,800	980	2,560	900	1,100	140
12MM	2,300	470	1,700	350	1,100	230	2,320	890	2,160	830	1,000	140
16MM	1,700	400	1,300	310	900	210	1,760	780	1,600	710	720	110
Remarks	※ Uncoated Drills Reduce 30% RPM & FEED Form Coating One.											

The FEED & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

TABLE 8 Micro Series DGMNB

WORKING MATERIAL	MILD STEEL		ALLOY STEEL		SG CAST IRON		SKD CAST IRON		STAINLESS	
CODE	45C, S50C, SCM		SCM, SKT, SKD		GG 25		GG 40		SUS 304	
HARDNESS	HRC < 20		HRC 20 ~30		> HB 240		> HB 300		–	
Vc	58 M/min		41 M/min		53 M/min		46 M/min		19 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
0.50MM	31,300	625	22,100	400	28,600	720	24,900	550	10,200	70
1.00MM	15,600	630	11,000	380	14,300	750	12,400	550	5,100	70
1.50MM	10,500	640	7,400	400	9,500	720	8,200	550	3,400	70
2.00MM	7,800	640	5,500	380	7,100	720	6,200	555	2,600	70
2.50MM	6,300	630	4,400	410	5,700	720	5,000	540	2,000	70
2.95MM	5,400	700	3,700	450	4,800	810	4,200	605	1,700	75
Remarks	※ Uncoated Drills Reduce 30% RPM & FEED Form Coating One.									

The FEED & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

RECOMMEND CUTTING CONDITION FOR DRILL

TABLE 9 DT Series DTTNA, DTLNA

WORKING MATERIAL	MILD STEEL		CARBON STEEL / ALLOY STEEL		SG CAST IRON		STAINLESS		ALLUMINUM ALLOY	
CODE	SS 400		S50C, SCM		FC 250		SUS 304		A 5052	
HARDNESS	–		HRC < 20		–		–		HRC < 20	
Vc	70 M/min		60 M/min		50 M/min		50 M/min		50 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
5MM	4,400	350	3,800	270	4,400	350	1,300	430	7,650	1,000
8MM	2,800	290	2,400	250	2,800	370	800	340	4,800	820
10MM	2,200	280	1,900	240	2,200	350	640	320	3,800	760
12MM	1,800	260	1,600	210	1,800	300	530	300	3,200	640
16MM	1,400	230	1,200	200	1,400	280	400	270	2,400	600
Remarks	※ Uncoated Drills Reduce 30% RPM & FEED Form Coating One.									

The FEED & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

TABLE 10 DC Series DCTNA

WORKING MATERIAL	CARBON STEEL / ALLOY STEEL		ALLOY STEEL		TITANIUM		CAST IRON		STAINLESS	
CODE	45C, S50C, SCM		SCM, SKT, SKD		–		FC / FCD		SUS 304	
HARDNESS	HRC < 20		HRC < 20		–		–		–	
Vc	60 M/min		50 M/min		50 M/min		50 M/min		50 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
1MM	19,100	382	15,900	206	15,900	239	15,900	205	15,900	255
2MM	9,550	382	7,960	207	7,960	239	7,960	240	7,960	315
3MM	9,370	382	5,300	207	5,300	239	5,300	210	5,300	210
5MM	3,820	382	3,180	207	3,180	239	3,180	255	3,180	315
Remarks	※ Uncoated Drills Reduce 30% RPM & FEED Form Coating One.									

The FEED & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

RECOMMEND CUTTING CONDITION FOR DRILL

TABLE 11 DR Series DRTNA, DRFNA

WORKING MATERIAL	BRONZE		SILICON-ALUMINUM ALLOY		CAST IRON	
CODE	–		Si > 10%		–	
HARDNESS	HRC ≦ 25		–		HRC ≦ 22	
Vc	80 M/min		140 M/min		120 M/min	
DIAMETER	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)	R.P.M	FEED (mm/min)
5MM	5,100	410	8,920	1,430	7,640	960
6MM	4,250	340	7,430	1,190	6,370	800
8MM	3,190	260	5,570	890	4,780	600
10MM	2,550	200	4,460	710	3,820	480
12MM	2,120	170	3,720	600	3,190	400
16MM	1,590	130	2,790	450	2,390	300
Remarks	※ Uncoated Drills Reduce 30% RPM & FEED Form Coating One.					

The FEED & RPM may be changed depending on the M/C Conditions, Lubricating & Cooling systems.

D

Drill Insert & Holder

DIW Series

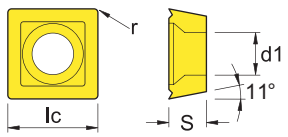
- Traditional design with three cutting corners.
- Suitable for Alloy Steel, Stainless Steel and Cast Iron, Hard Steel (Please refer to Catalog).

DDR Series

- New design with four cutting corners, for economical drill.
- With longer sides for prolonged surface of the hole.

SPMG, WCMT

SPMG



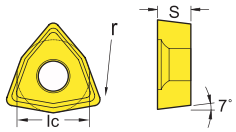
- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm) lc	S	r	d1	Grade	Application F	S	M	R	Material P	M	K	H
	SPMG	050204-MG	5.0	2.38	0.4	2.30	CP3020				★★★	◎	○	◎	
							CP3050				★★★	◎	○	◎	
	SPMG	060204-MG	6.0	2.38	0.4	2.65	CP3020				★★★	◎	○	◎	
							CP3050				★★★	◎	○	◎	

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : D02~D04

WCMT



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

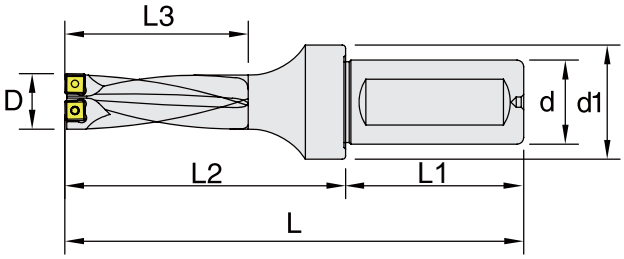
Type	Designation		Dimension (mm) lc	S	r	Grade	Application F	S	M	R	Material P	M	K	H
	WCMT	030208-MG	5.56	2.38	0.8	CP4020				★★★	◎	○	◎	
						CP4050				★★★	◎	○	◎	
		040208-MG	6.35	2.38	0.8	CP4020				★★★	◎	○	◎	
						CP4050				★★★	◎	○	◎	
		050308-MG	7.94	3.18	0.8	CP4020				★★★	◎	○	◎	
						CP4050				★★★	◎	○	◎	
		06T308-MG	9.53	3.97	0.8	CP4020				★★★	◎	○	◎	
						CP4050				★★★	◎	○	◎	
		080412-MG	12.7	4.76	1.2	CP4020				★★★	◎	○	◎	
						CP4050				★★★	◎	○	◎	

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

Cutter Page : D05~D07

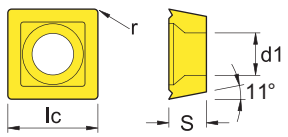
DDR 2×D HIGH SPEED DRILL HOLDER

DDR



Item Code	Dimensions, mm							Teeth	Insert	Screw	Wrench
	D	d	d1	L	L3	L2	L1				
IDDR2125-20T2-05	12.5	20	25	94	26	44	50	2	SPMG0502...	TS2003	TF6
IDDR2130-20T2-05	13							2			
IDDR2135-20T2-05	13.5			96	28	46		2			
IDDR2140-20T2-05	14							2			
IDDR2145-20T2-05	14.5			99	30	49		2			
IDDR2150-20T2-05	15							2			
IDDR2155-25T2-06	15.5	25	33	108	32	52	56	2	SPMG0602...	TS2202	TF6
IDDR2160-25T2-06	16							2			
IDDR2165-25T2-06	16.5			110	34	54		2			
IDDR2170-25T2-06	17							2			
IDDR2175-25T2-06	17.5			113	36	57		2			
IDDR2180-25T2-06	18							2			
IDDR2185-25T2-06	18.5			115	38	59		2			
IDDR2190-25T2-06	19							2			
IDDR2195-25T2-06	19.5			119	40	63		2			
IDDR2200-25T2-06	20							2			
IDDR2205-25T2-06	20.5			121	42	65		2			
IDDR2210-25T2-06	21							2			
IDDR2215-25T2-06	21.5			123	44	67		2			

SPMG



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel

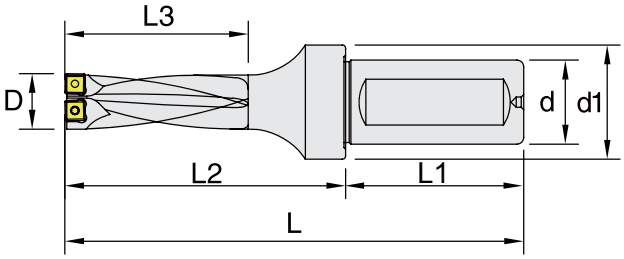
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)				Grade	Application				Material			
			lc	S	r	d1		F	S	M	R	P	M	K	H
	SPMG	050204-MG	5.0	2.38	0.4	2.30	CP3020				★★★	◎	○	◎	
							CP3050				★★★	◎	○	◎	
	SPMG	060204-MG	6.0	2.38	0.4	2.65	CP3020				★★★	◎	○	◎	
							CP3050				★★★	◎	○	◎	

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

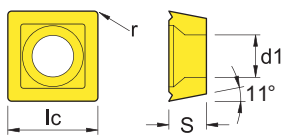
DDR 3×D HIGH SPEED DRILL HOLDER

DDR



Item Code	Dimensions, mm							Teeth	Insert	Screw	Wrench
	D	d	d1	L	L3	L2	L1				
IDDR3125-20T2-05	12.5	20	25	107	39	57	50	2	SPMG0502...	TS2003	TF6
IDDR3130-20T2-05	13							2			
IDDR3135-20T2-05	13.5			110	42	60		2			
IDDR3140-20T2-05	14							2			
IDDR3145-20T2-05	14.5			114	45	64		2			
IDDR3150-20T2-05	15							2			
IDDR3155-25T2-06	15.5	25	33	124	48	68	56	2	SPMG0602...	TS2202	TF6
IDDR3160-25T2-06	16							2			
IDDR3165-25T2-06	16.5			127	51	71		2			
IDDR3170-25T2-06	17							2			
IDDR3175-25T2-06	17.5			131	54	75		2			
IDDR3180-25T2-06	18							2			
IDDR3185-25T2-06	18.5			134	57	78		2			
IDDR3190-25T2-06	19							2			
IDDR3195-25T2-06	19.5			139	60	83		2			
IDDR3200-25T2-06	20							2			
IDDR3205-25T2-06	20.5			142	63	86		2			
IDDR3210-25T2-06	21							2			
IDDR3215-25T2-06	21.5			145	66	89		2			

SPMG



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel

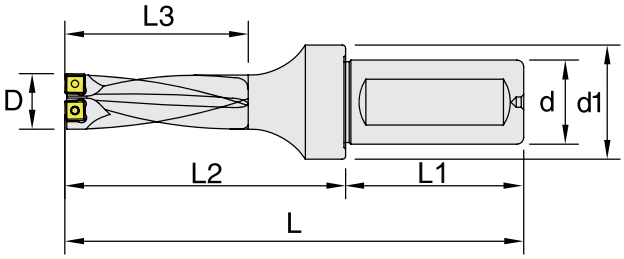
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)				Grade	Application				Material			
			Ic	S	r	d1		F	S	M	R	P	M	K	H
	SPMG	050204-MG	5.0	2.38	0.4	2.30	CP3020				★★★	◎	○	◎	
							CP3050				★★★	◎	○	◎	
	SPMG	060204-MG	6.0	2.38	0.4	2.65	CP3020				★★★	◎	○	◎	
							CP3050				★★★	◎	○	◎	

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

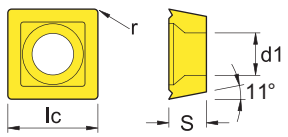
DDR 4×D HIGH SPEED DRILL HOLDER

DDR



Item Code	Dimensions, mm							Teeth	Insert	Screw	Wrench
	D	d	d1	L	L3	L2	L1				
IDDR4125-20T2-05	12.5	20	25	120	52	70	50	2	SPMG0502...	TS2003	TF6
IDDR4130-20T2-05	13							2			
IDDR4135-20T2-05	13.5			124	56	74		2			
IDDR4140-20T2-05	14							2			
IDDR4145-20T2-05	14.5			129	60	79		2			
IDDR4150-20T2-05	15							2			
IDDR4155-25T2-06	15.5	25	33	140	64	84	56	2	SPMG0602...	TS2202	TF6
IDDR4160-25T2-06	16							2			
IDDR4165-25T2-06	16.5			144	68	88		2			
IDDR4170-25T2-06	17							2			
IDDR4175-25T2-06	17.5			148	72	92		2			
IDDR4180-25T2-06	18							2			
IDDR4185-25T2-06	18.5			152	76	96		2			
IDDR4190-25T2-06	19							2			
IDDR4195-25T2-06	19.5			156	80	100		2			
IDDR4200-25T2-06	20							2			
IDDR4205-25T2-06	20.5			160	84	104		2			
IDDR4210-25T2-06	21							2			
IDDR4215-25T2-06	21.5			164	88	108		2			

SPMG



- P Alloy Steel
- M Stainless Steel
- K Cast Iron
- H Hard Steel

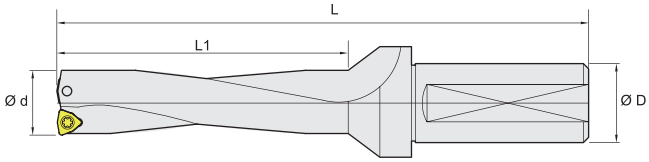
- F Finishing
- S Semi Finishing
- M Medium
- R Roughing

Type	Designation		Dimension (mm)				Grade	Application				Material			
			Ic	S	r	d1		F	S	M	R	P	M	K	H
	SPMG	050204-MG	5.0	2.38	0.4	2.30	CP3020				★★★	◎	○	◎	
							CP3050				★★★	◎	○	◎	
	SPMG	060204-MG	6.0	2.38	0.4	2.65	CP3020				★★★	◎	○	◎	
							CP3050				★★★	◎	○	◎	

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

DIW 2×D HIGH SPEED DRILL HOLDER

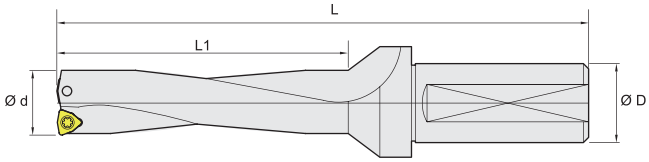
DIW



Item Code	Dimensions, mm			Teeth	Insert	Screw	Wrench
	d	L1	D				
IDIWHB215003	15	30	25	2	WCMT0302...	M256333	T8
IDIWHB216003	16	32	25	2	WCMT0302...	M256333	T8
IDIWHB217003	17	34	25	2	WCMT0302...	M256333	T8
IDIWHB218003	18	36	25	2	WCMT0302...	M256333	T8
IDIWHB219003	19	38	25	2	WCMT0302...	M256333	T8
IDIWHB220004	20	40	32	2	WCMT0402...	M256333	T8
IDIWHB221004	21	42	32	2	WCMT0402...	M256333	T8
IDIWHB222004	22	44	32	2	WCMT0402...	M256333	T8
IDIWHB223004	23	46	32	2	WCMT0402...	M256333	T8
IDIWHB224004	24	48	32	2	WCMT0402...	M256333	T8
IDIWHB225005	25	50	32	2	WCMT0503...	M308044	T10
IDIWHB226005	26	52	32	2	WCMT0503...	M308044	T10
IDIWHB227005	27	54	32	2	WCMT0503...	M308044	T10
IDIWHB228005	28	56	32	2	WCMT0503...	M308044	T10
IDIWHB229005	29	58	32	2	WCMT0503...	M308044	T10
IDIWHB230005	30	60	32	2	WCMT0503...	M308044	T10
IDIWHB231006	31	62	32	2	WCMT06T3...	M308050	T15
IDIWHB232006	32	64	32	2	WCMT06T3...	M308050	T15
IDIWHB233006	33	66	32	2	WCMT06T3...	M308050	T15
IDIWHB234006	34	68	32	2	WCMT06T3...	M308050	T15
IDIWHB235006	35	70	32	2	WCMT06T3...	M308050	T15
IDIWHB236006	36	72	32	2	WCMT06T3...	M308050	T15
IDIWHB237006	37	74	32	2	WCMT06T3...	M308050	T15
IDIWHB238006	38	76	32	2	WCMT06T3...	M308050	T15
IDIWHB239006	39	78	32	2	WCMT06T3...	M308050	T15
IDIWHB240006	40	80	32	2	WCMT06T3...	M308050	T15
IDIWHB241006	41	82	32	2	WCMT06T3...	M308050	T15
IDIWHB242006	42	84	32	2	WCMT06T3...	M308050	T15
IDIWHB245006	45	90	40	2	WCMT0804...	M40A055	T15
IDIWHB250006	50	100	40	2	WCMT0804...	M40A055	T15

DIW 3×D HIGH SPEED DRILL HOLDER

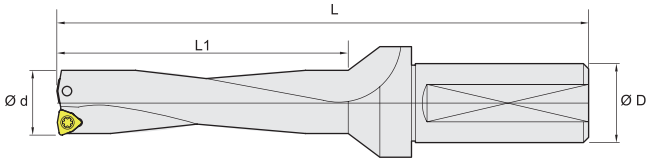
DIW



Item Code	Dimensions, mm			Teeth	Insert	Screw	Wrench
	d	L1	D				
IDIWHC215003	15	45	25	2	WCMT0302...	M256333	T8
IDIWHC216003	16	48	25	2	WCMT0302...	M256333	T8
IDIWHC217003	17	51	25	2	WCMT0302...	M256333	T8
IDIWHC218003	18	54	25	2	WCMT0302...	M256333	T8
IDIWHC219003	19	57	25	2	WCMT0302...	M256333	T8
IDIWHC220004	20	60	32	2	WCMT0402...	M256333	T8
IDIWHC221004	21	63	32	2	WCMT0402...	M256333	T8
IDIWHC222004	22	66	32	2	WCMT0402...	M256333	T8
IDIWHC223004	23	69	32	2	WCMT0402...	M256333	T8
IDIWHC224004	24	72	32	2	WCMT0402...	M256333	T8
IDIWHC225005	25	75	32	2	WCMT0503...	M308044	T10
IDIWHC226005	26	78	32	2	WCMT0503...	M308044	T10
IDIWHC227005	27	81	32	2	WCMT0503...	M308044	T10
IDIWHC228005	28	84	32	2	WCMT0503...	M308044	T10
IDIWHC229005	29	87	32	2	WCMT0503...	M308044	T10
IDIWHC230005	30	90	32	2	WCMT0503...	M308044	T10
IDIWHC231006	31	93	32	2	WCMT06T3...	M308050	T15
IDIWHC232006	32	96	32	2	WCMT06T3...	M308050	T15
IDIWHC233006	33	99	32	2	WCMT06T3...	M308050	T15
IDIWHC234006	34	102	32	2	WCMT06T3...	M308050	T15
IDIWHC235006	35	105	32	2	WCMT06T3...	M308050	T15
IDIWHC236006	36	108	32	2	WCMT06T3...	M308050	T15
IDIWHC237006	37	111	32	2	WCMT06T3...	M308050	T15
IDIWHC238006	38	114	32	2	WCMT06T3...	M308050	T15
IDIWHC239006	39	117	32	2	WCMT06T3...	M308050	T15
IDIWHC240006	40	120	32	2	WCMT06T3...	M308050	T15
IDIWHC241006	41	123	32	2	WCMT06T3...	M308050	T15
IDIWHC242006	42	126	32	2	WCMT06T3...	M308050	T15
IDIWHC245006	45	135	32	2	WCMT0804...	M40A055	T15
IDIWHC250006	50	150	32	2	WCMT0804...	M40A055	T15

DIW 4×D HIGH SPEED DRILL HOLDER

DIW



Item Code	Dimensions, mm			Teeth	Insert	Screw	Wrench
	d	L1	D				
IDIWHD217003	17	68	25	2	WCMT0302...	M256333	T8
IDIWHD218003	18	72	25	2	WCMT0302...	M256334	T8
IDIWHD219003	19	76	25	2	WCMT0302...	M256335	T8
IDIWHD220004	20	80	32	2	WCMT0402...	M256336	T8
IDIWHD221004	21	84	32	2	WCMT0402...	M256337	T8
IDIWHD222004	22	88	32	2	WCMT0402...	M256338	T8
IDIWHD223004	23	92	32	2	WCMT0402...	M256339	T8
IDIWHD224004	24	96	32	2	WCMT0402...	M256340	T8
IDIWHD225005	25	100	32	2	WCMT0503...	M308044	T10
IDIWHD226005	26	104	32	2	WCMT0503...	M308045	T10
IDIWHD227005	27	108	32	2	WCMT0503...	M308046	T10
IDIWHD228005	28	112	32	2	WCMT0503...	M308047	T10
IDIWHD229005	29	116	32	2	WCMT0503...	M308048	T10
IDIWHD230005	30	120	32	2	WCMT0503...	M308049	T10
IDIWHD231006	31	124	32	2	WCMT06T3...	M308050	T15
IDIWHD232006	32	128	32	2	WCMT06T3...	M308051	T15
IDIWHD233006	33	132	32	2	WCMT06T3...	M308052	T15
IDIWHD234006	34	136	32	2	WCMT06T3...	M308053	T15
IDIWHD235006	35	140	32	2	WCMT06T3...	M308054	T15

Type	Designation		Dimension (mm)			Grade	Application				Material			
			lc	S	r		F	S	M	R	P	M	K	H
	WCMT	030208-MG	5.56	2.38	0.8	CP4020				★★★	◎	○	◎	
						CP4050				★★★	◎	○	◎	
		040208-MG	6.35	2.38	0.8	CP4020				★★★	◎	○	◎	
						CP4050				★★★	◎	○	◎	
		050308-MG	7.94	3.18	0.8	CP4020				★★★	◎	○	◎	
						CP4050				★★★	◎	○	◎	
		06T308-MG	9.53	3.97	0.8	CP4020				★★★	◎	○	◎	
						CP4050				★★★	◎	○	◎	
		080412-MG	12.7	4.76	1.2	CP4020				★★★	◎	○	◎	
						CP4050				★★★	◎	○	◎	

★ Acceptable ★★ Recommended ★★★ Excellent ◎ First Recommend ○ Second Recommend

E

Technical Data

***Troubleshooting in milling*.....F01**

***Troubleshooting in drilling*.....F02~F03**

TROUBLESHOOTING IN MILLING

Trouble	Occurrences	Countermeasures
Chipping	Too high feed	Reduce feed
	Up milling	Change down milling
	Sharp cutting edge	Honing at the cutting edge-chamfering or rounding if needed
	Chattering	Check spindle speed down
	Too much overhang	Adjust to minimize overhang
	Unfixed chucking of Endmill	Check the precision of chuck and collet
Wear	High Cutting speed	Decrease cutting speed
	Low feed	Increase feed
	Up milling	Down milling
	High-hardened work piece	Choosing special coating endmill
Tool Breakage	Too much cutting amount	Decrease cutting amount
	High cutting force	Feed down; spindle speed up
	Too much overhang	Adjust to minimize overhang
Surface Roughness	Chattering	Change the cutting condition
	Generation of built-up edge	Increasing cutting speed & Feed rate or down milling
	high feed, low speed	Reduce feed & Increase speed
Accuracy of finished work piece	Incorrect Numbers of flute	Replace more flutes Endmill
	Deflection of Tool	Using big diameter tool & Minimize the overhang

TROUBLESHOOTING IN DRILLING

Trouble	Occurrences	Countermeasures
Deformation of hole	Becoming thread scratch in the hole	1.Check for Suitable Guide-Bush 2.Reduce relief angle 3.Check for proper point angle & length of lips
	Generation of chattering & vibration	1.Reduce relief angle 2.Grind web thinning 3.Shortening length of drill 4.Check for proper drill 5.Check for chuck & collet & socket 6.Pre-centering 7.Inspect rigidity of the Drill Machine
	Poor chip evacuation	1.Increase Feed 2.Check for proper helix angle 3.Check for proper chip space 4.Using Step feed
Deflection of hole	Drill won't enter work	1.Check for Suitable Guide-Bush 2.Reduce Feed 3.Pre-centering
	Insufficient rigidity of drill	Shortening length of drill
	Unsuitable angle	Regrinding
Excessive wear of cutting edge	Cutting speed too high	1.Reduce cutting speed 2.Check Lip Relief 3.Increase Coolant Flow 4.Check for proper material

TROUBLESHOOTING IN DRILLING

Trouble	Occurrences	Countermeasures
Poor surface conditions of work piece	Excessive wear of cutting edge	Regrinding
	Too much Feed	Decrease feed
	Chips clog in hole	Add number of exit
	the others	1.Thin Web 2.Check for Proper Guide-bush 3.Use the highly rigid spindle
Breakage	Feed too heavy	Decrease feed rate
	Chips clog in hole	1.Check for proper chip space 2.Check for proper helix angle
	Insufficient rigidity of drill	1.Reduce feed 2.Shortening length of drill 3.Increasing Web thickness
	Unstable in throughout hole drilling	1.Reduce feed while throughout drilling 2.Check Set Up Rigidity 3.Use the highly rigid spindle
Chipping	Feed speed too high	Decrease feed rate
	Tool High Lip relief Angle	1.Reduce Lip Relief Angle 2.Reduce feed in drilling 3.Check Set up Rigidity
	During oversize operation	1.Properly grind point angle 2.Reduce cutting speed
Hole oversize	Point angle is not properly, large chip of one flute; small chip of other flute	1.Regrinding 2.Thin Web 3.Properly grind point angle 4.Guide-bush

WINSTAR

Endmills · Inserts · Drills

WINSTAR CUTTING TECHNOLOGIES CORP.

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Tainan City 709, Taiwan

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E-mail: info@winstarcutting.com