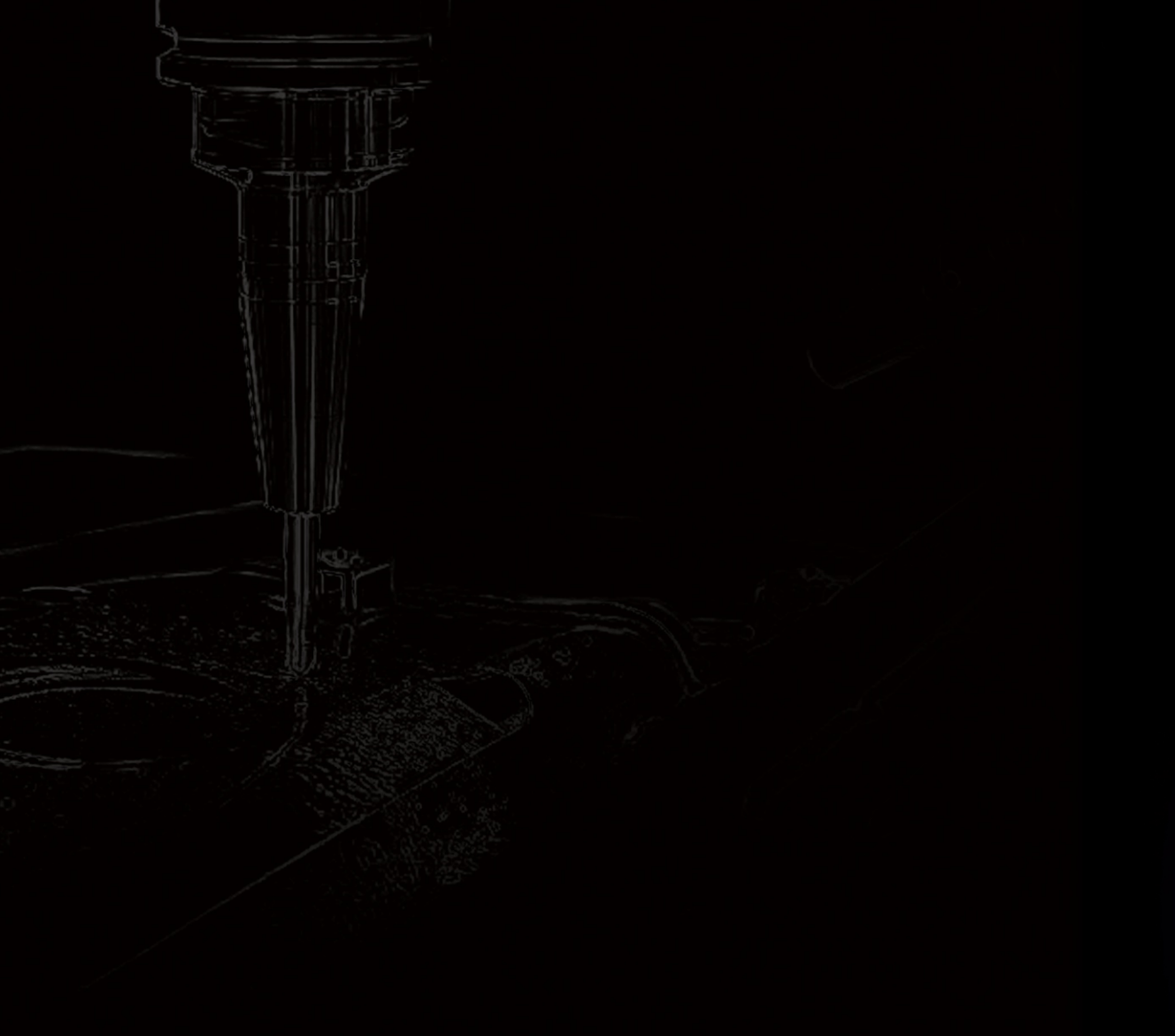




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A13a, 47807 Krefeld, Germany.
Email: info@sgso-europe.com

Oceania
Australia SGSO Pty.Ltd
Address: 92 Wellington Street, Kew,
VIC 3101
Tel: 0061 3 9988 3502
Mobile: 0452 366 558



www.sgso-europe.com

- Safety Notice
- Please do not touch the cutting edge with your hands.
 - Please use within the recommended range and replace the tool in advance.
 - Sometimes there may be high-temperature cutting flying out and elongated cutting discharged. Please use protective equipment such as safety covers and goggles.
 - When using non water soluble cutting fluid, fire prevention measures must be taken.
 - When using a rotating tool, it is necessary to conduct a trial run to confirm whether there is any oscillation, vibration, or abnormal sound.

SGSO U.2025

SGSO TECHNOLOGY EUROPE GMBH

SGSO MILLING TOOLS

V.2025



SGSO TECHNOLOGY EUROPE GMBH



Keep Advancing With You

Tools Crafted With Ingenuity,
With Unlimited Potential And Possibility.

SGSO CATALOG

01	COMPANY PROFILE	P2-3
02	GLOBAL SALES NETWORK	P4-5
03	DESCRIPTION OF ICONS	P7
04	INTRODUCTION OF COATING MATERIALS	P8
05	CUTTING TOOL TYPE MARKING GUIDELINES	P9
06	SERIES INDEX	P10-11
07	PRODUCT CATALOG	P12-129

Insert Series
Product Model

Cutting Parameters

HSX Series
Product Model

Cutting Parameters

HGX Series
Product Model

Cutting Parameters

HD Series
Product Model

Cutting Parameters

Technical Guidance

ABOUT US SGSO

Founded in 2013, SGSO, a National High-Tech Enterprise, is dedicated to the development and manufacture of high-performing nano-coated tools.

The company has a world-leading complete production line. The R&D team consists of 3 German senior engineers and several domestic engineers with more than ten years of practical skills. The company integrates scientific research and applied research and cooperates with foreign research institutes to establish an advanced coating tool research center, covering materials, geometric design, grinding process, surface treatment, nano coating, cutting application and efficient processing solutions. The high-performance coating tool developed and produced by the company are widely used in the automotive industry, national defense industry, aerospace and IT.

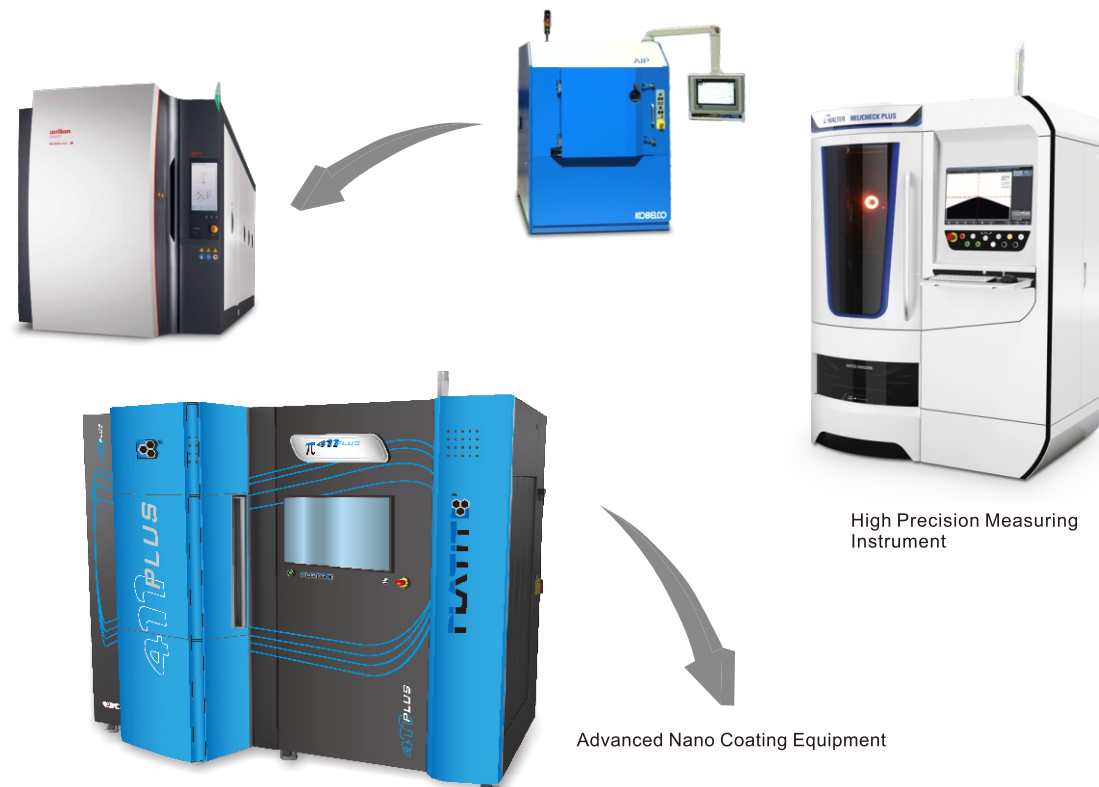
The newly established intelligent workshop of our company will serve global smart manufacturing with higher quality and standards.



High precision grinding equipment

Testing EQUIPMENT

We have a full range of advanced tooling lines, from the full process of 'grinding-edge processing-detection-coating' to the world's top R&D equipment.



High Precision Measuring Instrument

Advanced Nano Coating Equipment



GLOBAL Sales Network

Europe Germany

SGSO Technology Europe GmbH
Address: Europark Fichtenhain A13a,
47807 Krefeld, Germany.
Email: info@sgso-europe.com

Taizhou China

SGSO Technology Co.,Ltd
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Tel: +86-576-84116878

Australia branch

SGSO Technology Australia(PTE.LTD.)
Address: 92 Wellington Street,Kew,Vic
3101,Australia
Tel: +0061 3 9988 3502

Description Of Icon

Materials

UMG

Ultra Fine Grain Solid Carbide

MG

Fine Grain Solid Carbide

Coating

AHX

TiSiN+X

ATX

AlCrSiN

OD Relief Angle Type

Arc Angle Relief Type

Straight Line Relief Angle

Machining Hardness

<55 HRC

< 55HRC

<65 HRC

< 65HRC

Number of Flutes

2

2 Flutes

3

3 Flutes

4

4 Flutes

6

6 Flutes

Corner Shape

Protection Edge

Sharp Edge

Corner Radius

Helix Angle

-9°
Spiral Angle

-9° Helix Angle

30°
Spiral Angle

30° Helix Angle

45°
Spiral Angle

45° Helix Angle

52°
Spiral Angle

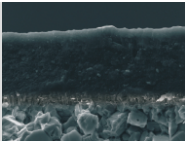
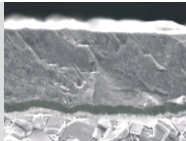
52° Helix Angle

SGSO Keep Advancing With You

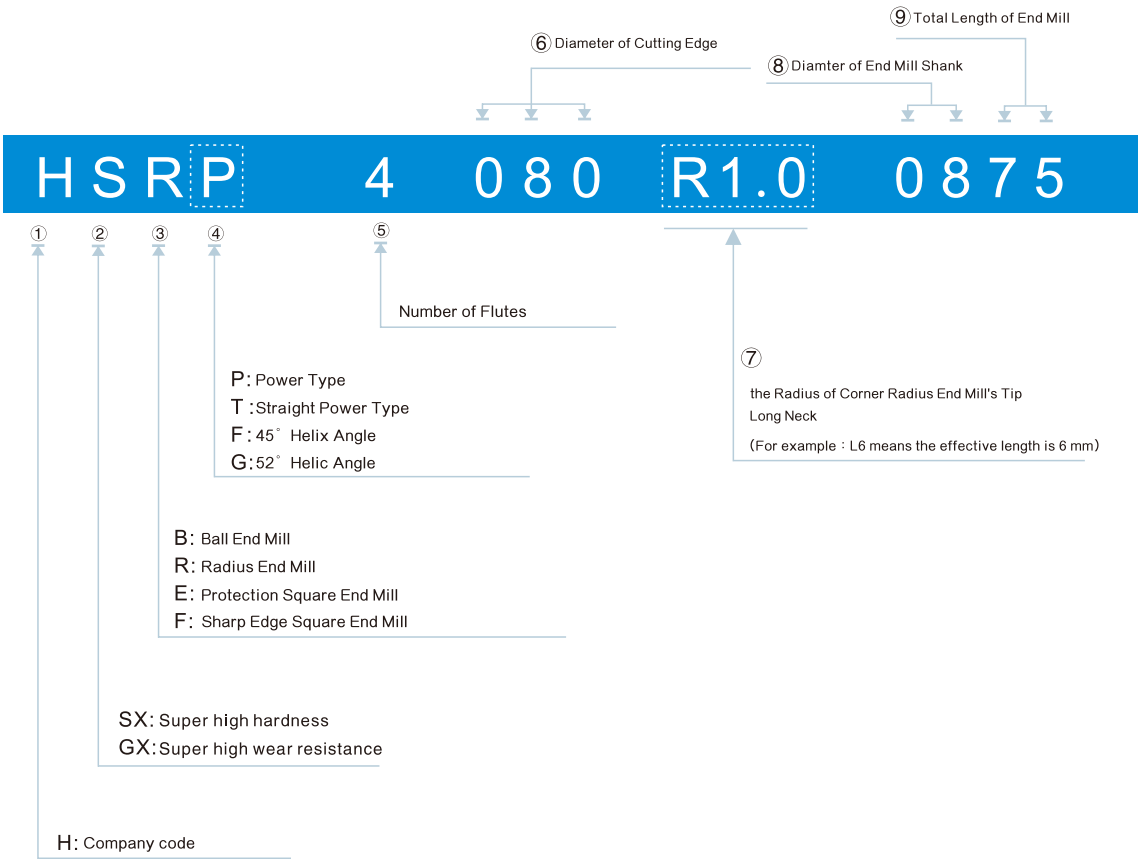
- Low vibration and high stability.
- Smooth chip removal.
- High removal rate and low stickness.
- High speed cutting.

Coating Materials

Feature Of Coating Layer

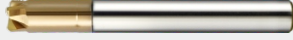
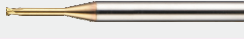
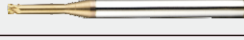
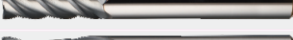
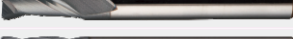
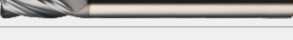
NEW PRODUCT NEW PRODUCT		
Coating Series	HSX	HGX
Components	TiSiN+X	AlCrSi
Color	Gold	Black and Grey
Coating structure		
Features	Super Hardness, Super Oxidation Resistance, High Adhesion	Super Oxidation Resistance, Low Friction
Hardness	3550(HV)	3200(HV)
Coefficeient of friction	0.36	0.32
Oxidation start temperature	1200	1100
Coating thickness	2-4um	2-4um

Cutting Tools Type Marking
Guidelines

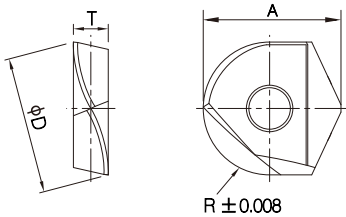


SERIES INDEX

Product Series		Product Name	∅ D
Insert Series	VSB	VSB Finishing Ball Nose Insert	16-30
	MSB	MSB Finishing Ball Nose Insert	12-30
HSX Series	HSXB2	2-Flute Ball End Mill	0.1-12
	HSXEF4	4-Flute End Mill-45°	1-20
	HSXEG6	6-Flute End Mill-52°	6-20
	HSXR4	4-Flute Corner Radius End Mill	0.8-16
	HSXRP4	4-Flute Short Corner Radius End Mill	0.8-12
	HSXRT4	4-Flute Power Corner Radius End Mill	3-12
HSX Long Neck Series	HSXB2L	2-Flute Long Neck Ball End Mill	0.1-6
	HSXE2L	2-Flute Long Neck End Mill	0.1-6
	HSXE4L	4-Flute Long Neck End Mill	0.8-4
	HSXR2L	2-Flute Long Neck Corner Radius End Mill	0.2-6
	HSXR4L	4-Flute Long Neck Corner Radius End Mill	0.8-4
HGX Series	HGXB2	2-Flute Ball End Mill	0.1-12
	HGXE2	2-Flute End Mill	0.1-20
	HGXE4	4-Flute End Mill	0.8-20
	HGXEF4	4-Flute End Mill-45°	1-20
	HGXR2	2-Flute Corner Radius End Mill	0.2-12
	HGXR4	4-Flute Corner Radius End Mill	0.8-12
HGX Long Neck Series	HGXB2L	2-Flute Long Neck Ball End Mill	0.1-5

Shape	Coating	Size List	Cutting Parameter
	涂层 AHX	P12	P13
	涂层 AHX	P12	P13
	涂层 AHX	P15-16	P62
	涂层 AHX	P17-18	P63
	涂层 AHX	P19	P64
	涂层 AHX	P20-23	P65-66
	涂层 AHX	P24-27	P67
	涂层 AHX	P28	P68
	涂层 AHX	P29-34	P69-74
	涂层 AHX	P35-40	P75-80
	涂层 AHX	P41-43	P81-83
	涂层 AHX	P44-53	P84-88
	涂层 AHX	P54-61	P89-93
	涂层 ATX	P95-96	P117
	涂层 ATX	P97-98	P118
	涂层 ATX	P99-100	P119
	涂层 ATX	P101-102	P120
	涂层 ATX	P103-105	P121
	涂层 ATX	P106-109	P122-123
	涂层 ATX	P110-116	P124-129

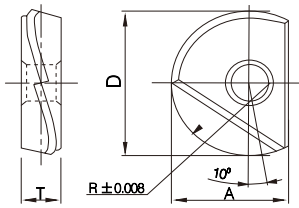
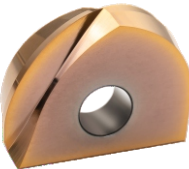
VSB Finishing Ball Nose Insert



Unit : mm

Type No.	D	R	A	T
VSB160-BS-R 9105-B	16	8	16.6	4.2
VSB200-BS-R 9105-B	20	10	20.2	5.2
VSB250-BS-R 9105-B	25	12.5	24.3	6.2
VSB300-BS-R 9105-B	30	15	29.2	7.2

MSB Finishing Ball Nose Insert



Unit : mm

Type No.	D	R	A	T
MSB120-S-R 9105-B	12	6	10	3
MSB160-S-R 9105-B	16	8	12	4
MSB200-S-R 9105-B	20	10	15	5
MSB250-S-R 9105-B	25	12.5	18.5	6
MSB300-S-R 9105-B	30	15	22.5	7

Cutting Parameter

VSB Finishing Ball Nose Insert

Workpiece	Pre-Hardened Steels (HB200-55HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
	Type No.	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm
VSB160-BS-R 9105-B	6000-10000	6000-10000	0.05-0.1	0.2	5500-6000	2500-3000	0.05-0.1	0.2	5500-6000	2500-3000	0.05-0.1	0.2
VSB200-BS-R 9105-B	6000-10000	6000-10000	0.05-0.12	0.25	5500-6000	3000-3600	0.05-0.12	0.25	5500-6000	3000-3600	0.05-0.12	0.25
VSB250-BS-R 9105-B	6000-8000	6000-8000	0.05-0.12	0.25	5000-5500	3000-4500	0.05-0.12	0.25	5000-5500	3000-4500	0.05-0.12	0.25
VSB300-BS-R 9105-B	5000-8000	5000-8000	0.05-0.2	0.3	4500-5000	3000-6000	0.05-0.2	0.3	4500-5000	3000-6000	0.05-0.2	0.3

MSB Finishing Ball Nose Insert

Workpiece	Pre-Hardened Steels (HB200-55HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
	Type No.	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm
MSB120-S-R 9105-B	8000-10000	2500-5000	0.05-0.1	0.2	6000-6500	2500-3000	0.05-0.1	0.2	6000-6500	2500-3000	0.05-0.1	0.2
MSB160-S-R 9105-B	6000-10000	6000-10000	0.05-0.1	0.2	5500-6000	2500-3000	0.05-0.1	0.2	5500-6000	2500-3000	0.05-0.1	0.2
MSB200-S-R 9105-B	6000-10000	6000-10000	0.05-0.12	0.25	5500-6000	3000-3600	0.05-0.12	0.25	5500-6000	3000-3600	0.05-0.12	0.25
MSB250-S-R 9105-B	6000-8000	6000-8000	0.05-0.12	0.25	5000-5500	3000-4500	0.05-0.12	0.25	5000-5500	3000-4500	0.05-0.12	0.25
MSB300-S-R 9105-B	5000-8000	5000-8000	0.05-0.2	0.3	4500-5000	3000-6000	0.05-0.2	0.3	4500-5000	3000-6000	0.05-0.2	0.3

HSX SERIES

Adversary of Quenched Materials

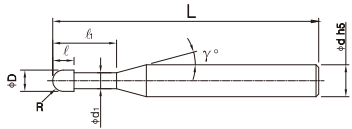
The Speciality of HSX Serie

- We use 0.3 µm ultra fine carbide substrates to ensure high wear resistance.
- AHX coating is a composite multilayer coating based on TiSiN. It is suitable for micro lubrication cutting.
- It is suitable for quenched steels (55-65HRC) and alloy materials.

55-65HRC



HSXB 2-Flute Ball End Mill

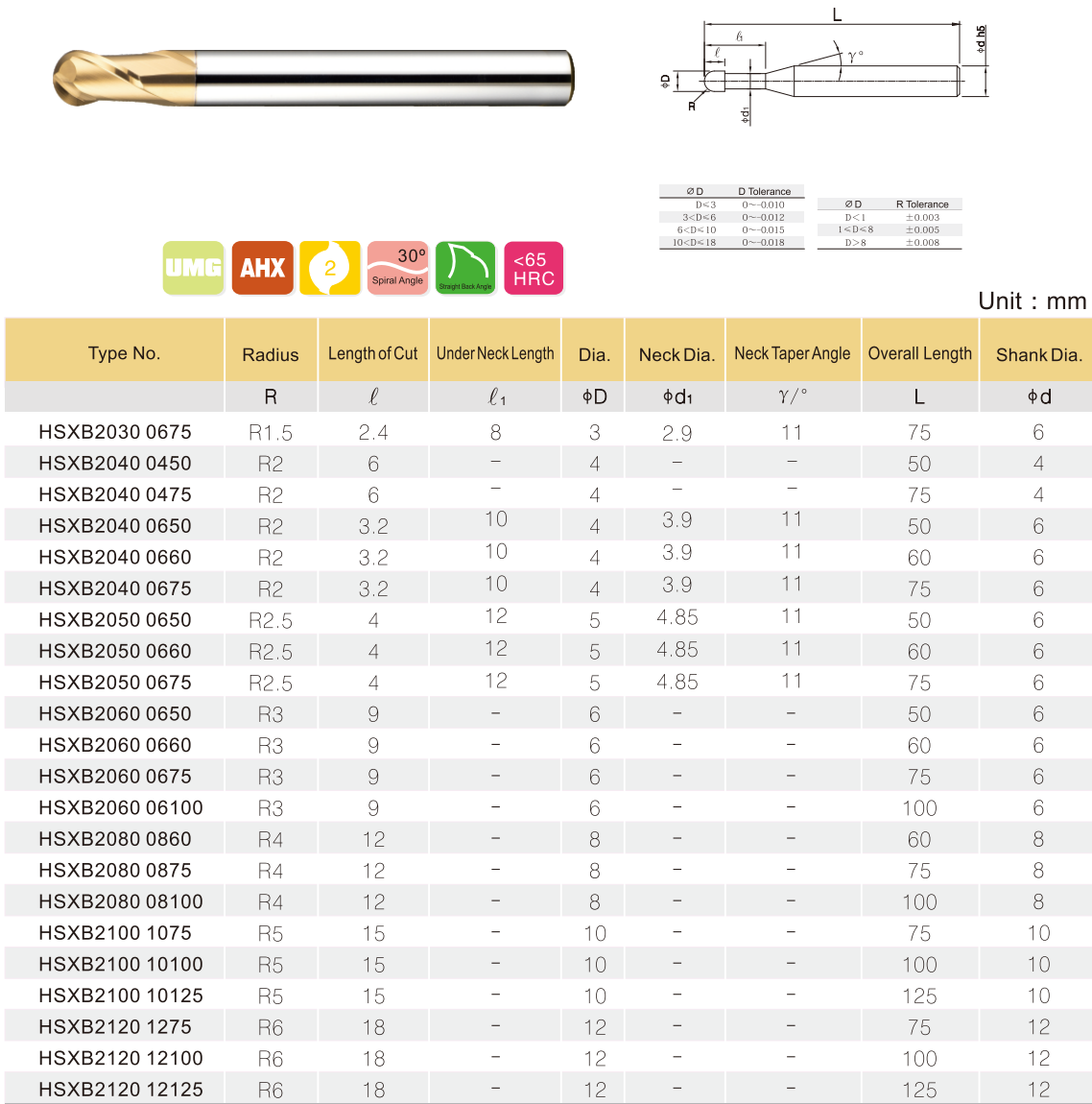


Ø D	D Tolerance	Ø D	R Tolerance
D < 3	0 ~ -0.010	D < 1	± 0.003
3 < D ≤ 6	0 ~ -0.012	1 < D ≤ 8	± 0.005
6 < D < 10	0 ~ -0.015	D > 8	± 0.008
10 < D < 18	0 ~ -0.018		

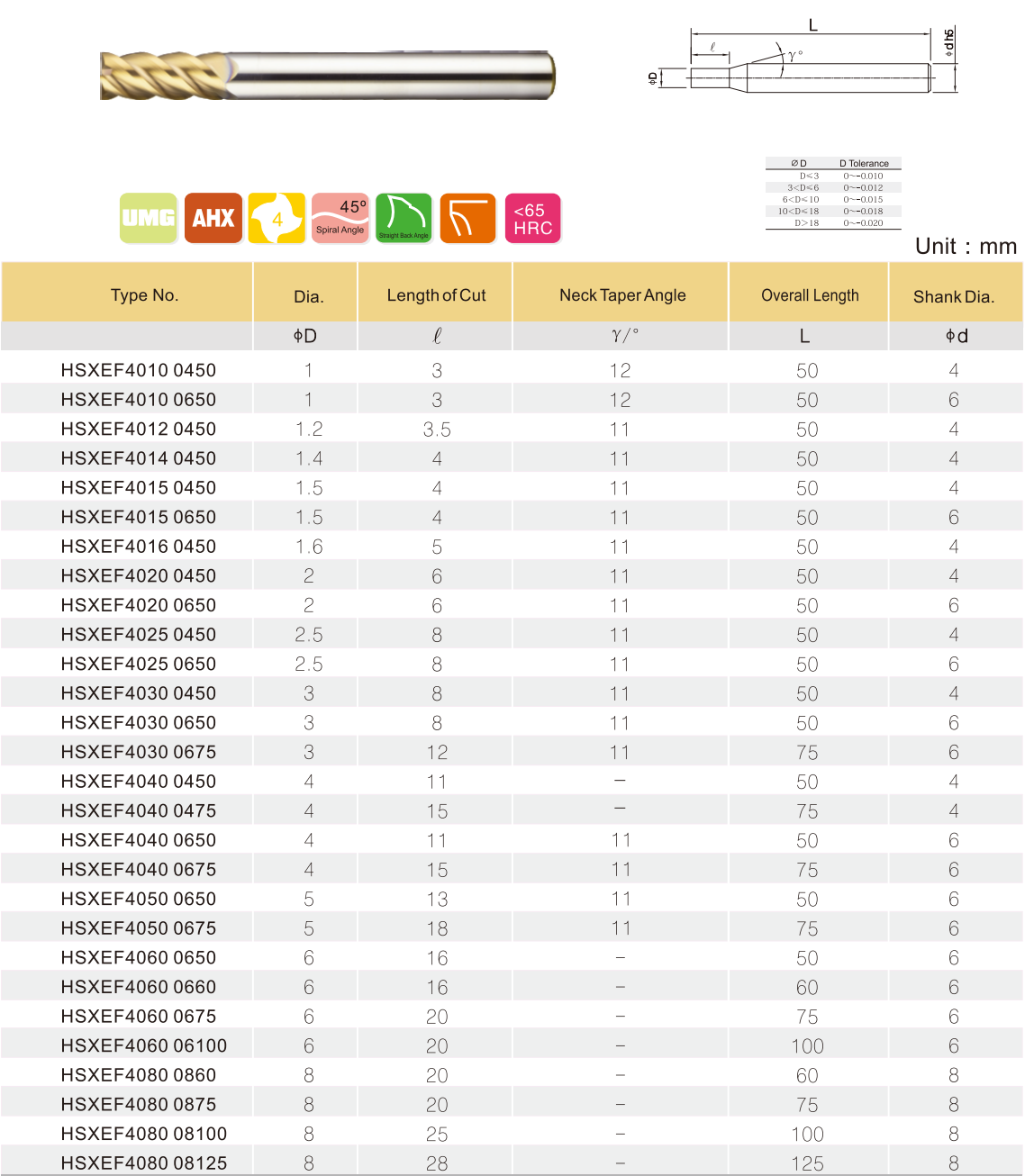
Unit : mm

Type No.	Radius	Length of Cut	Under Neck Length	Dia.	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	R	ℓ	ℓ ₁	φD	φd ₁	γ/°	L	φd
HSXB2001 0450	R0.05	0.1	—	0.1	—	12	50	4
HSXB20015 0450	R0.075	0.15	—	0.15	—	12	50	4
HSXB2002 0450	R0.1	0.2	—	0.2	—	12	50	4
HSXB2003 0450	R0.15	0.3	—	0.3	—	12	50	4
HSXB2004 0450	R0.2	0.6	—	0.4	—	12	50	4
HSXB2005 0450	R0.25	0.8	—	0.5	—	12	50	4
HSXB2006 0450	R0.3	0.9	—	0.6	—	12	50	4
HSXB2008 0450	R0.4	1.2	—	0.8	—	12	50	4
HSXB2010 0450	R0.5	0.75	2	1	0.95	12	50	4
HSXB2010 0650	R0.5	0.75	2.5	1	0.95	12	50	6
HSXB2010 0660	R0.5	0.75	2.5	1	0.95	12	60	6
HSXB2010 0675	R0.5	0.75	2.5	1	0.95	12	75	6
HSXB2012 0450	R0.6	0.9	2.4	1.2	1.14	11	50	4
HSXB2015 0450	R0.75	1.2	3	1.5	1.42	11	50	4
HSXB2015 0650	R0.75	1.2	4	1.5	1.42	11	50	6
HSXB2015 0660	R0.75	1.2	4	1.5	1.42	11	60	6
HSXB2015 0675	R0.75	1.2	4	1.5	1.42	11	75	6
HSXB2020 0450	R1	1.6	4	2	1.9	11	50	4
HSXB2020 0650	R1	1.6	6	2	1.9	11	50	6
HSXB2020 0660	R1	1.6	6	2	1.9	11	60	6
HSXB2020 0675	R1	1.6	6	2	1.9	11	75	6
HSXB2025 0450	R1.25	2	5	2.5	2.4	11	50	4
HSXB2025 0650	R1.25	2	7	2.5	2.4	11	50	6
HSXB2025 0660	R1.25	2	7	2.5	2.4	11	60	6
HSXB2025 0675	R1.25	2	7	2.5	2.4	11	75	6
HSXB2030 0450	R1.5	2.4	6	3	2.9	11	50	4
HSXB2030 0650	R1.5	2.4	8	3	2.9	11	50	6
HSXB2030 0660	R1.5	2.4	8	3	2.9	11	60	6

HSXB 2-Flute Ball End Mill



HSXEF 4-Flute End Mill-45°



HSXEF 4-Flute End Mill-45°



∅ D	D Tolerance
D≤3	0~-0.010
3<D≤6	0~-0.012
6<D≤10	0~-0.015
10<D≤18	0~-0.018
D>18	0~-0.020

Unit : mm

Type No.	Dia.	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	ℓ	γ/°	L	φd
HSXEF4100 1075	10	25	—	75	10
HSXEF4100 10100	10	30	—	100	10
HSXEF4100 10125	10	35	—	125	10
HSXEF4120 1275	12	30	—	75	12
HSXEF4120 12100	12	35	—	100	12
HSXEF4120 12125	12	42	—	125	12
HSXEF4160 16100	16	45	—	100	16
HSXEF4160 16150	16	50	—	150	16
HSXEF4200 20100	20	45	—	100	20
HSXEF4200 20150	20	55	—	150	20

TABLE OF RECOMMENDED MILLING MATERIALS

○ Very suitable ○ Suitable

CARBON STEELS	ALLOY STEELS	PREHARDENED STEELS, HARDENED STEELS				STAINLESS STEELS	CAST IRON	COPPER ALLOYS	ALUMINUM ALLOY	GRAPHITE	TITANIUM ALLOY	HEAT RESISTANT ALLOYS	PLASTIC
PREHARDENED STEELS	TOOL STEELS						DUCTILE CAST IRON						
~40HRC	~45HRC	~55HRC	~60HRC	~65HRC	~35HRC	~350HB							
○	○	○	○	○	○	○	○	○			○	○	

HSXEG 6-Flute End Mill-52°



∅ D	D Tolerance
6<D≤10	0~-0.015
10<D≤18	0~-0.018
D>18	0~-0.020

Unit : mm

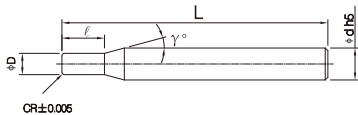
Type No.	Dia.	Length of Cut	Overall Length	Shank Dia.
	φD	ℓ	L	φd
HSXEG6060 0660	6	18	60	6
HSXEG6060 0675	6	24	75	6
HSXEG6080 0860	8	20	60	8
HSXEG6080 0875	8	32	75	8
HSXEG6100 1075	10	30	75	10
HSXEG6100 10100	10	40	100	10
HSXEG6120 1275	12	32	75	12
HSXEG6120 12100	12	45	100	12
HSXEG6160 16100	16	40	100	16
HSXEG6160 16150	16	64	150	16
HSXEG6200 20100	20	45	100	20
HSXEG6200 20150	20	75	150	20

TABLE OF RECOMMENDED MILLING MATERIALS

○ Very suitable ○ Suitable

CARBON STEELS	ALLOY STEELS	PREHARDENED STEELS, HARDENED STEELS				STAINLESS STEELS	CAST IRON	COPPER ALLOYS	ALUMINUM ALLOY	GRAPHITE	TITANIUM ALLOY	HEAT RESISTANT ALLOYS	PLASTIC
PREHARDENED STEELS	TOOL STEELS						DUCTILE CAST IRON						
~40HRC	~45HRC	~55HRC	~60HRC	~65HRC	~35HRC	~350HB							
○	○	○	○	○	○	○	○	○			○	○	

HSXR 4-Flute Corner Radius End Mill



φD	D Tolerance
D<3	0~-0.010
3<D<6	0~-0.012
6<D<10	0~-0.015
10<D<18	0~-0.018



Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	γ/°	L	φd
HSXR4008R0.05 0450	0.8	R0.05	1.6	12	50	4
HSXR4008R0.1 0450	0.8	R0.1	1.6	12	50	4
HSXR4010R0.05 0450	1	R0.05	2	12	50	4
HSXR4010R0.1 0450	1	R0.1	2	12	50	4
HSXR4010R0.2 0450	1	R0.2	2	12	50	4
HSXR4010R0.3 0450	1	R0.3	2	12	50	4
HSXR4015R0.05 0450	1.5	R0.05	3	11	50	4
HSXR4015R0.1 0450	1.5	R0.1	3	11	50	4
HSXR4015R0.2 0450	1.5	R0.2	3	11	50	4
HSXR4015R0.3 0450	1.5	R0.3	3	11	50	4
HSXR4020R0.05 0450	2	R0.05	4	11	50	4
HSXR4020R0.1 0450	2	R0.1	4	11	50	4
HSXR4020R0.2 0450	2	R0.2	4	11	50	4
HSXR4020R0.3 0450	2	R0.3	4	11	50	4
HSXR4020R0.5 0450	2	R0.5	4	11	50	4
HSXR4025R0.1 0450	2.5	R0.1	5	11	50	4
HSXR4025R0.2 0450	2.5	R0.2	5	11	50	4
HSXR4025R0.3 0450	2.5	R0.3	5	11	50	4
HSXR4025R0.5 0450	2.5	R0.5	5	11	50	4
HSXR4030R0.1 0450	3	R0.1	6	11	50	4
HSXR4030R0.1 0660	3	R0.1	6	11	60	6
HSXR4030R0.1 0675	3	R0.1	6	11	75	6
HSXR4030R0.2 0450	3	R0.2	6	11	50	4
HSXR4030R0.2 0660	3	R0.2	6	11	60	6
HSXR4030R0.2 0675	3	R0.2	6	11	75	6
HSXR4030R0.3 0450	3	R0.3	6	11	50	4
HSXR4030R0.3 0660	3	R0.3	6	11	60	6
HSXR4030R0.3 0675	3	R0.3	6	11	75	6

HSXR 4-Flute Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	γ/°	L	φd
HSXR4030R0.5 0450	3	R0.5	6	11	50	4
HSXR4030R0.5 0660	3	R0.5	6	11	60	6
HSXR4030R0.5 0675	3	R0.5	6	11	75	6
HSXR4040R0.1 0450	4	R0.1	8	-	50	4
HSXR4040R0.1 0475	4	R0.1	8	-	75	4
HSXR4040R0.1 0660	4	R0.1	8	11	60	6
HSXR4040R0.1 0675	4	R0.1	8	11	75	6
HSXR4040R0.2 0450	4	R0.2	8	-	50	4
HSXR4040R0.2 0475	4	R0.2	8	-	75	4
HSXR4040R0.2 0660	4	R0.2	8	11	60	6
HSXR4040R0.2 0675	4	R0.2	8	11	75	6
HSXR4040R0.3 0450	4	R0.3	8	-	50	4
HSXR4040R0.3 0475	4	R0.3	8	-	75	4
HSXR4040R0.3 0660	4	R0.3	8	11	60	6
HSXR4040R0.3 0675	4	R0.3	8	11	75	6
HSXR4040R0.5 0450	4	R0.5	8	-	50	4
HSXR4040R0.5 0475	4	R0.5	8	-	75	4
HSXR4040R0.5 0660	4	R0.5	8	11	60	6
HSXR4040R0.5 0675	4	R0.5	8	11	75	6
HSXR4040R1.0 0450	4	R1	8	-	50	4
HSXR4040R1.0 0475	4	R1	8	-	75	4
HSXR4040R1.0 0660	4	R1	8	11	60	6
HSXR4040R1.0 0675	4	R1	8	11	75	6
HSXR4060R0.1 0650	6	R0.1	12	-	50	6
HSXR4060R0.1 0660	6	R0.1	12	-	60	6
HSXR4060R0.1 0675	6	R0.1	12	-	75	6
HSXR4060R0.1 06100	6	R0.1	12	-	100	6
HSXR4060R0.2 0650	6	R0.2	12	-	50	6
HSXR4060R0.2 0660	6	R0.2	12	-	60	6
HSXR4060R0.2 0675	6	R0.2	12	-	75	6
HSXR4060R0.2 06100	6	R0.2	12	-	100	6
HSXR4060R0.3 0650	6	R0.3	12	-	50	6
HSXR4060R0.3 0660	6	R0.3	12	-	60	6
HSXR4060R0.3 0675	6	R0.3	12	-	75	6

HSXR 4-Flute Corner Radius End Mill



φD	D Tolerance
D<3	0~-0.010
3<D<6	0~-0.012
6<D<10	0~-0.015
10<D<18	0~-0.018

Unit : mm

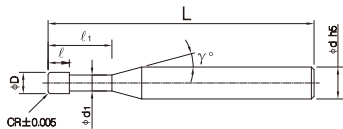
Type No.	Dia.	Corner Radius	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	γ/°	L	φd
HSXR4060R0.3 06100	6	R0.3	12	-	100	6
HSXR4060R0.5 0650	6	R0.5	12	-	50	6
HSXR4060R0.5 0660	6	R0.5	12	-	60	6
HSXR4060R0.5 0675	6	R0.5	12	-	75	6
HSXR4060R0.5 06100	6	R0.5	12	-	100	6
HSXR4060R1.0 0650	6	R1	12	-	50	6
HSXR4060R1.0 0660	6	R1	12	-	60	6
HSXR4060R1.0 0675	6	R1	12	-	75	6
HSXR4060R1.0 06100	6	R1	12	-	100	6
HSXR4080R0.1 0860	8	R0.1	16	-	60	8
HSXR4080R0.1 0875	8	R0.1	16	-	75	8
HSXR4080R0.1 08100	8	R0.1	16	-	100	8
HSXR4080R0.2 0860	8	R0.2	16	-	60	8
HSXR4080R0.2 0875	8	R0.2	16	-	75	8
HSXR4080R0.2 08100	8	R0.2	16	-	100	8
HSXR4080R0.3 0860	8	R0.3	16	-	60	8
HSXR4080R0.3 0875	8	R0.3	16	-	75	8
HSXR4080R0.3 08100	8	R0.3	16	-	100	8
HSXR4080R0.5 0860	8	R0.5	16	-	60	8
HSXR4080R0.5 0875	8	R0.5	16	-	75	8
HSXR4080R0.5 08100	8	R0.5	16	-	100	8
HSXR4080R0.5 08125	8	R0.5	20	-	125	8
HSXR4080R0.5 08150	8	R0.5	20	-	150	8
HSXR4080R1.0 0860	8	R1	16	-	60	8
HSXR4080R1.0 0875	8	R1	16	-	75	8
HSXR4080R1.0 08100	8	R1	16	-	100	8
HSXR4080R1.0 08125	8	R1	20	-	125	8
HSXR4080R1.0 08150	8	R1	20	-	150	8

HSXR 4-Flute Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	γ/°	L	φd
HSXR4100R0.2 1075	10	R0.2	20	-	75	10
HSXR4100R0.2 10100	10	R0.2	20	-	100	10
HSXR4100R0.5 1075	10	R0.5	20	-	75	10
HSXR4100R0.5 10100	10	R0.5	20	-	100	10
HSXR4100R0.5 10125	10	R0.5	25	-	125	10
HSXR4100R0.5 10150	10	R0.5	25	-	150	10
HSXR4100R1.0 1075	10	R1	20	-	75	10
HSXR4100R1.0 10100	10	R1	20	-	100	10
HSXR4100R1.0 10125	10	R1	25	-	125	10
HSXR4100R1.0 10150	10	R1	25	-	150	10
HSXR4120R0.5 1275	12	R0.5	24	-	75	12
HSXR4120R0.5 12100	12	R0.5	24	-	100	12
HSXR4120R0.5 12125	12	R0.5	30	-	125	12
HSXR4120R0.5 12150	12	R0.5	30	-	150	12
HSXR4120R1.0 1275	12	R1	24	-	75	12
HSXR4120R1.0 12100	12	R1	24	-	100	12
HSXR4120R1.0 12125	12	R1	30	-	125	12
HSXR4120R1.0 12150	12	R1	30	-	150	12
HSXR4120R2.0 1275	12	R2	24	-	75	12
HSXR4120R2.0 12100	12	R2	24	-	100	12
HSXR4120R2.0 12125	12	R2	30	-	125	12
HSXR4120R2.0 12150	12	R2	30	-	150	12
HSXR4160R0.5 16100	16	R0.5	32	-	100	16
HSXR4160R1.0 16100	16	R1	32	-	100	16
HSXR4160R2.0 16100	16	R2	32	-	100	16

HSXRP 4-Flute Short Corner Radius End Mill



φD	D Tolerance
D<3	0~-0.010
3<D<6	0~-0.012
6<D<10	0~-0.015
10<D<18	0~-0.018



Unit : mm

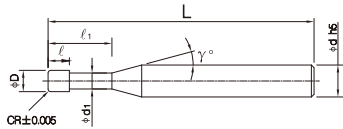
Type No.	Dia.	Corner Radius	Length of Cut	Under Neck Length	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HSXRP4008R0.05 0450	0.8	R0.05	0.8	2.4	0.76	12	50	4
HSXRP4008R0.1 0450	0.8	R0.1	0.8	2.4	0.76	12	50	4
HSXRP4010R0.05 0450	1	R0.05	1	3	0.95	12	50	4
HSXRP4010R0.1 0450	1	R0.1	1	3	0.95	12	50	4
HSXRP4010R0.2 0450	1	R0.2	1	3	0.95	12	50	4
HSXRP4010R0.3 0450	1	R0.3	1	3	0.95	12	50	4
HSXRP4015R0.05 0450	1.5	R0.05	1.5	4.5	1.42	11	50	4
HSXRP4015R0.1 0450	1.5	R0.1	1.5	4.5	1.42	11	50	4
HSXRP4015R0.2 0450	1.5	R0.2	1.5	4.5	1.42	11	50	4
HSXRP4015R0.3 0450	1.5	R0.3	1.5	4.5	1.42	11	50	4
HSXRP4020R0.05 0450	2	R0.05	2	6	1.9	11	50	4
HSXRP4020R0.1 0450	2	R0.1	2	6	1.9	11	50	4
HSXRP4020R0.2 0450	2	R0.2	2	6	1.9	11	50	4
HSXRP4020R0.3 0450	2	R0.3	2	6	1.9	11	50	4
HSXRP4020R0.5 0450	2	R0.5	2	6	1.9	11	50	4
HSXRP4030R0.1 0450	3	R0.1	3	9	2.9	11	50	4
HSXRP4030R0.1 0660	3	R0.1	3	9	2.9	11	60	6
HSXRP4030R0.1 0675	3	R0.1	3	9	2.9	11	75	6
HSXRP4030R0.2 0450	3	R0.2	3	9	2.9	11	50	4
HSXRP4030R0.2 0650	3	R0.2	3	9	2.9	11	50	6
HSXRP4030R0.2 0660	3	R0.2	3	9	2.9	11	60	6
HSXRP4030R0.2 0675	3	R0.2	3	9	2.9	11	75	6
HSXRP4030R0.3 0450	3	R0.3	3	9	2.9	11	50	4
HSXRP4030R0.3 0660	3	R0.3	3	9	2.9	11	60	6
HSXRP4030R0.3 0675	3	R0.3	3	9	2.9	11	75	6
HSXRP4030R0.5 0450	3	R0.5	3	9	2.9	11	50	4
HSXRP4030R0.5 0650	3	R0.5	3	9	2.9	11	50	6

HSXRP 4-Flute Short Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Under Neck Length	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HSXRP4030R0.5 0660	3	R0.5	3	9	2.9	11	60	6
HSXRP4030R0.5 0675	3	R0.5	3	9	2.9	11	75	6
HSXRP4040R0.1 0450	4	R0.1	4	12	3.9	-	50	4
HSXRP4040R0.1 0660	4	R0.1	4	12	3.9	11	60	6
HSXRP4040R0.1 0675	4	R0.1	4	12	3.9	11	75	6
HSXRP4040R0.2 0450	4	R0.2	4	12	3.9	-	50	4
HSXRP4040R0.2 0650	4	R0.2	4	12	3.9	11	50	6
HSXRP4040R0.2 0660	4	R0.2	4	12	3.9	11	60	6
HSXRP4040R0.2 0675	4	R0.2	4	12	3.9	11	75	6
HSXRP4040R0.3 0450	4	R0.3	4	12	3.9	-	50	4
HSXRP4040R0.3 0660	4	R0.3	4	12	3.9	11	60	6
HSXRP4040R0.3 0675	4	R0.3	4	12	3.9	11	75	6
HSXRP4040R0.5 0450	4	R0.5	4	12	3.9	-	50	4
HSXRP4040R0.5 0650	4	R0.5	4	12	3.9	11	50	6
HSXRP4040R0.5 0660	4	R0.5	4	12	3.9	11	60	6
HSXRP4040R0.5 0675	4	R0.5	4	12	3.9	11	75	6
HSXRP4040R1.0 0450	4	R1	4	12	3.9	-	50	4
HSXRP4040R1.0 0660	4	R1	4	12	3.9	11	60	6
HSXRP4040R1.0 0675	4	R1	4	12	3.9	11	75	6
HSXRP4060R0.1 0650	6	R0.1	6	18	5.85	-	50	6
HSXRP4060R0.1 0660	6	R0.1	6	18	5.85	-	60	6
HSXRP4060R0.1 0675	6	R0.1	6	18	5.85	-	75	6
HSXRP4060R0.2 0650	6	R0.2	6	18	5.85	-	50	6
HSXRP4060R0.2 0660	6	R0.2	6	18	5.85	-	60	6
HSXRP4060R0.2 0675	6	R0.2	6	18	5.85	-	75	6
HSXRP4060R0.2 06100	6	R0.2	6	18	5.85	-	100	6
HSXRP4060R0.3 0650	6	R0.3	6	18	5.85	-	50	6
HSXRP4060R0.3 0660	6	R0.3	6	18	5.85	-	60	6
HSXRP4060R0.3 0675	6	R0.3	6	18	5.85	-	75	6
HSXRP4060R0.3 06100	6	R0.3	6	18	5.85	-	100	6
HSXRP4060R0.5 0650	6	R0.5	6	18	5.85	-	50	6
HSXRP4060R0.5 0660	6	R0.5	6	18	5.85	-	60	6
HSXRP4060R0.5 0675	6	R0.5	6	18	5.85	-	75	6
HSXRP4060R0.5 06100	6	R0.5	6	18	5.85	-	100	6

HSXRP 4-Flute Short Corner Radius End Mill



φD	D Tolerance
D<3	0~-0.010
3<D<6	0~-0.012
6<D<10	0~-0.015
10<D<18	0~-0.018



Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Under Neck Length	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HSXRP4060R1.0 0650	6	R1	6	18	5.85	-	50	6
HSXRP4060R1.0 0660	6	R1	6	18	5.85	-	60	6
HSXRP4060R1.0 0675	6	R1	6	18	5.85	-	75	6
HSXRP4060R1.0 06100	6	R1	6	18	5.85	-	100	6
HSXRP4080R0.1 0860	8	R0.1	8	24	7.8	-	60	8
HSXRP4080R0.1 0875	8	R0.1	8	24	7.8	-	75	8
HSXRP4080R0.1 08100	8	R0.1	8	24	7.8	-	100	8
HSXRP4080R0.2 0860	8	R0.2	8	24	7.8	-	60	8
HSXRP4080R0.2 0875	8	R0.2	8	24	7.8	-	75	8
HSXRP4080R0.2 08100	8	R0.2	8	24	7.8	-	100	8
HSXRP4080R0.3 0860	8	R0.3	8	24	7.8	-	60	8
HSXRP4080R0.3 0875	8	R0.3	8	24	7.8	-	75	8
HSXRP4080R0.3 08100	8	R0.3	8	24	7.8	-	100	8
HSXRP4080R0.5 0860	8	R0.5	8	24	7.8	-	60	8
HSXRP4080R0.5 0875	8	R0.5	8	24	7.8	-	75	8
HSXRP4080R0.5 08100	8	R0.5	8	24	7.8	-	100	8
HSXRP4080R0.5 08125	8	R0.5	8	24	7.8	-	125	8
HSXRP4080R1.0 0860	8	R1	8	24	7.8	-	60	8
HSXRP4080R1.0 0875	8	R1	8	24	7.8	-	75	8
HSXRP4080R1.0 08100	8	R1	8	24	7.8	-	100	8
HSXRP4080R1.0 08125	8	R1	8	24	7.8	-	125	8
HSXRP4100R0.2 1075	10	R0.2	10	30	9.8	-	75	10
HSXRP4100R0.2 10100	10	R0.2	10	30	9.8	-	100	10
HSXRP4100R0.5 1075	10	R0.5	10	30	9.8	-	75	10
HSXRP4100R0.5 10100	10	R0.5	10	30	9.8	-	100	10
HSXRP4100R0.5 10125	10	R0.5	10	30	9.8	-	125	10
HSXRP4100R1.0 1075	10	R1	10	30	9.8	-	75	10

HSXRP 4-Flute Short Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Under Neck Length	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	ℓ ₁	φd ₁	γ/°	L	φd
HSXRP4100R1.0 10100	10	R1	10	30	9.8	-	100	10
HSXRP4100R1.0 10125	10	R1	10	30	9.8	-	125	10
HSXRP4100R2.0 1075	10	R2	10	30	9.8	-	75	10
HSXRP4120R0.5 1275	12	R0.5	12	36	11.7	-	75	12
HSXRP4120R0.5 12100	12	R0.5	12	36	11.7	-	100	12
HSXRP4120R0.5 12125	12	R0.5	12	36	11.7	-	125	12
HSXRP4120R1.0 1275	12	R1	12	36	11.7	-	75	12
HSXRP4120R1.0 12100	12	R1	12	36	11.7	-	100	12
HSXRP4120R1.0 12125	12	R1	12	36	11.7	-	125	12
HSXRP4120R2.0 1275	12	R2	12	36	11.7	-	75	12
HSXRP4120R2.0 12100	12	R2	12	36	11.7	-	100	12
HSXRP4120R2.0 12125	12	R2	12	36	11.7	-	125	12

TABLE OF RECOMMENDED MILLING MATERIALS

○ Very suitable ○ Suitable

CARBON STEELS	ALLOY STEELS	PREHARDENED STEELS, HARDENED STEELS				STAINLESS STEELS	CAST IRON	COPPER ALLOYS	ALUMINUM ALLOY	GRAPHITE	TITANIUM ALLOY	HEAT RESISTANT ALLOYS	PLASTIC
PREHARDENED STEELS	TOOL STEELS						DUCTILE CAST IRON						
~40HRC		~45HRC	~55HRC	~60HRC	~65HRC	~35HRC	~350HB						
○		○	○	○	○	○	○	○			○	○	

HSXRT 4-Flute Power Corner Radius End Mill



∅ D	D Tolerance
D ≤ 3	0 ~ -0.010
3 < D ≤ 6	0 ~ -0.012
6 < D ≤ 10	0 ~ -0.015
10 < D ≤ 18	0 ~ -0.018

Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Under Neck Length	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	∅ D	CR	l	l ₁	∅ d ₁	γ/°	L	∅ d
HSXRT4030R0.5 0650	3	R0.5	1.2	9	2.8	11	50	6
HSXRT4030R0.5 0675	3	R0.5	1.2	9	2.8	11	75	6
HSXRT4030R1.0 0650	3	R1.0	1.2	9	2.8	11	50	6
HSXRT4030R1.0 0675	3	R1.0	1.2	9	2.8	11	75	6
HSXRT4040R0.5 0650	4	R0.5	1.6	12	3.8	11	50	6
HSXRT4040R0.5 0675	4	R0.5	1.6	12	3.8	11	75	6
HSXRT4040R1.0 0650	4	R1.0	1.6	12	3.8	11	50	6
HSXRT4040R1.0 0675	4	R1.0	1.6	12	3.8	11	75	6
HSXRT4050R1.0 0650	5	R1.0	2	15	4.7	11	50	6
HSXRT4050R1.0 0675	5	R1.0	2	15	4.7	11	75	6
HSXRT4060R1.0 0650	6	R1.0	2.5	18	5.6	-	50	6
HSXRT4060R1.0 0675	6	R1.0	2.5	18	5.6	-	75	6
HSXRT4060R1.5 0650	6	R1.5	2.5	18	5.6	-	50	6
HSXRT4060R1.5 0675	6	R1.5	2.5	18	5.6	-	75	6
HSXRT4080R1.0 0875	8	R1.0	3.5	24	7.6	-	75	8
HSXRT4080R1.0 08100	8	R1.0	3.5	24	7.6	-	100	8
HSXRT4080R2.0 0875	8	R2.0	3.5	24	7.6	-	75	8
HSXRT4080R2.0 08100	8	R2.0	3.5	24	7.6	-	100	8
HSXRT4100R1.0 1075	10	R1.0	4	30	9.5	-	75	10
HSXRT4100R1.0 10100	10	R1.0	4	30	9.5	-	100	10
HSXRT4100R2.0 1075	10	R2.0	4	30	9.5	-	75	10
HSXRT4100R2.0 10100	10	R2.0	4	30	9.5	-	100	10
HSXRT4120R2.0 1275	12	R2.0	5	36	11.5	-	75	12
HSXRT4120R2.0 12100	12	R2.0	5	36	11.5	-	100	12
HSXRT4120R3.0 1275	12	R3.0	5	36	11.5	-	75	12
HSXRT4120R3.0 12100	12	R3.0	5	36	11.5	-	100	12

HSXB2L 2-Flute Long Neck Ball End Mill



∅ D	D Tolerance	∅ D	R Tolerance
D ≤ 3	0 ~ -0.010	D ≤ 1	± 0.003
3 < D ≤ 6	0 ~ -0.012	1 < D ≤ 8	± 0.005
6 < D ≤ 10	0 ~ -0.015	D > 8	± 0.008
10 < D ≤ 18	0 ~ -0.018		

Unit : mm

Type No.	Radius	Under Neck Length	Length of Cut	Dia.	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	R	l ₁	l	∅ D	∅ d ₁	γ/°	L	∅ d
HSXB2001L0.2 0450	R0.05	0.2	0.07	0.1	0.085	12	50	4
HSXB2001L0.3 0450	R0.05	0.3	0.07	0.1	0.085	12	50	4
HSXB2001L0.5 0450	R0.05	0.5	0.07	0.1	0.085	12	50	4
HSXB2001L0.75 0450	R0.05	0.75	0.07	0.1	0.085	12	50	4
HSXB2001L1 0450	R0.05	1	0.07	0.1	0.085	12	50	4
HSXB20015L0.3 0450	R0.075	0.3	0.1	0.15	0.13	12	50	4
HSXB20015L0.5 0450	R0.075	0.5	0.1	0.15	0.13	12	50	4
HSXB20015L0.75 0450	R0.075	0.75	0.1	0.15	0.13	12	50	4
HSXB20015L1 0450	R0.075	1	0.1	0.15	0.13	12	50	4
HSXB20015L1.5 0450	R0.075	1.5	0.1	0.15	0.13	12	50	4
HSXB2002L0.3 0450	R0.1	0.3	0.15	0.2	0.18	12	50	4
HSXB2002L0.5 0450	R0.1	0.5	0.15	0.2	0.18	12	50	4
HSXB2002L0.75 0450	R0.1	0.75	0.15	0.2	0.18	12	50	4
HSXB2002L1 0450	R0.1	1	0.15	0.2	0.18	12	50	4
HSXB2002L1.25 0450	R0.1	1.25	0.15	0.2	0.18	12	50	4
HSXB2002L1.5 0450	R0.1	1.5	0.15	0.2	0.18	12	50	4
HSXB2002L1.75 0450	R0.1	1.75	0.15	0.2	0.18	12	50	4
HSXB2002L2 0450	R0.1	2	0.15	0.2	0.18	12	50	4
HSXB2002L2.5 0450	R0.1	2.5	0.15	0.2	0.18	12	50	4
HSXB2003L0.6 0450	R0.15	0.6	0.2	0.3	0.28	12	50	4
HSXB2003L0.75 0450	R0.15	0.75	0.2	0.3	0.28	12	50	4
HSXB2003L1 0450	R0.15	1	0.2	0.3	0.28	12	50	4
HSXB2003L1.25 0450	R0.15	1.25	0.2	0.3	0.28	12	50	4
HSXB2003L1.5 0450	R0.15	1.5	0.2	0.3	0.28	12	50	4
HSXB2003L1.75 0450	R0.15	1.75	0.2	0.3	0.28	12	50	4
HSXB2003L2 0450	R0.15	2	0.2	0.3	0.28	12	50	4

HSXB2L 2-Flute Long Neck Ball End Mill



∅ D	D Tolerance	∅ D	R Tolerance
D<3	0~-0.010	D<1	±0.003
3<D<6	0~-0.012	1<D<8	±0.005
6<D<10	0~-0.015	D>8	±0.008
10<D<18	0~-0.018		

Unit : mm

Type No.	Radius	Under Neck Length	Length of Cut	Dia.	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	R	ℓ ₁	ℓ	φD	φd ₁	γ/°	L	φd
HSXB2003L2.25 0450	R0.15	2.25	0.2	0.3	0.28	12	50	4
HSXB2003L2.5 0450	R0.15	2.5	0.2	0.3	0.28	12	50	4
HSXB2003L3 0450	R0.15	3	0.2	0.3	0.28	12	50	4
HSXB2004L0.5 0450	R0.2	0.5	0.3	0.4	0.37	12	50	4
HSXB2004L0.8 0450	R0.2	0.8	0.3	0.4	0.37	12	50	4
HSXB2004L1 0450	R0.2	1	0.3	0.4	0.37	12	50	4
HSXB2004L1.5 0450	R0.2	1.5	0.3	0.4	0.37	12	50	4
HSXB2004L2 0450	R0.2	2	0.3	0.4	0.37	12	50	4
HSXB2004L2.5 0450	R0.2	2.5	0.3	0.4	0.37	12	50	4
HSXB2004L3 0450	R0.2	3	0.3	0.4	0.37	12	50	4
HSXB2004L3.5 0450	R0.2	3.5	0.3	0.4	0.37	12	50	4
HSXB2004L4 0450	R0.2	4	0.3	0.4	0.37	12	50	4
HSXB2005L1 0450	R0.25	1	0.35	0.5	0.46	12	50	4
HSXB2005L1.5 0450	R0.25	1.5	0.35	0.5	0.46	12	50	4
HSXB2005L2 0450	R0.25	2	0.35	0.5	0.46	12	50	4
HSXB2005L2.5 0450	R0.25	2.5	0.35	0.5	0.46	12	50	4
HSXB2005L3 0450	R0.25	3	0.35	0.5	0.46	12	50	4
HSXB2005L4 0450	R0.25	4	0.35	0.5	0.46	12	50	4
HSXB2005L5 0450	R0.25	5	0.35	0.5	0.46	12	50	4
HSXB2005L6 0450	R0.25	6	0.35	0.5	0.46	12	50	4
HSXB2006L1 0450	R0.3	1	0.45	0.6	0.56	12	50	4
HSXB2006L1.5 0450	R0.3	1.5	0.45	0.6	0.56	12	50	4
HSXB2006L2 0450	R0.3	2	0.45	0.6	0.56	12	50	4
HSXB2006L3 0450	R0.3	3	0.45	0.6	0.56	12	50	4
HSXB2006L4 0450	R0.3	4	0.45	0.6	0.56	12	50	4
HSXB2006L6 0450	R0.3	6	0.45	0.6	0.56	12	50	4
HSXB2006L8 0450	R0.3	8	0.45	0.6	0.56	12	50	4
HSXB2007L2 0450	R0.35	2	0.5	0.7	0.66	12	50	4

HSXB2L 2-Flute Long Neck Ball End Mill

Unit : mm								
Type No.	Radius	Under Neck Length	Length of Cut	Dia.	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	R	ℓ ₁	ℓ	φD	φd ₁	γ/°	L	φd
HSXB2007L3 0450	R0.35	3	0.5	0.7	0.66	12	50	4
HSXB2007L4 0450	R0.35	4	0.5	0.7	0.66	12	50	4
HSXB2007L6 0450	R0.35	6	0.5	0.7	0.66	12	50	4
HSXB2008L2 0450	R0.4	2	0.6	0.8	0.76	12	50	4
HSXB2008L2.5 0450	R0.4	2.5	0.6	0.8	0.76	12	50	4
HSXB2008L3 0450	R0.4	3	0.6	0.8	0.76	12	50	4
HSXB2008L4 0450	R0.4	4	0.6	0.8	0.76	12	50	4
HSXB2008L6 0450	R0.4	6	0.6	0.8	0.76	12	50	4
HSXB2008L8 0450	R0.4	8	0.6	0.8	0.76	12	50	4
HSXB2008L10 0450	R0.4	10	0.6	0.8	0.76	12	50	4
HSXB2009L2 0450	R0.45	2	0.65	0.9	0.86	12	50	4
HSXB2009L4 0450	R0.45	4	0.65	0.9	0.86	12	50	4
HSXB2009L6 0450	R0.45	6	0.65	0.9	0.86	12	50	4
HSXB2009L8 0450	R0.45	8	0.65	0.9	0.86	12	50	4
HSXB2010L2.5 0450	R0.5	2.5	0.75	1	0.95	12	50	4
HSXB2010L3 0450	R0.5	3	0.75	1	0.95	12	50	4
HSXB2010L4 0450	R0.5	4	0.75	1	0.95	12	50	4
HSXB2010L4 0660	R0.5	4	0.75	1	0.95	12	60	6
HSXB2010L5 0450	R0.5	5	0.75	1	0.95	12	50	4
HSXB2010L6 0450	R0.5	6	0.75	1	0.95	12	50	4
HSXB2010L6 0660	R0.5	6	0.75	1	0.95	12	60	6
HSXB2010L7 0450	R0.5	7	0.75	1	0.95	12	50	4
HSXB2010L8 0450	R0.5	8	0.75	1	0.95	12	50	4
HSXB2010L8 0660	R0.5	8	0.75	1	0.95	12	60	6
HSXB2010L9 0450	R0.5	9	0.75	1	0.95	12	50	4
HSXB2010L10 0450	R0.5	10	0.75	1	0.95	12	50	4
HSXB2010L10 0660	R0.5	10	0.75	1	0.95	12	60	6
HSXB2010L12 0450	R0.5	12	0.75	1	0.95	12	50	4
HSXB2010L14 0450	R0.5	14	0.75	1	0.95	12	50	4
HSXB2010L16 0450	R0.5	16	0.75	1	0.95	12	50	4
HSXB2010L18 0460	R0.5	18	0.75	1	0.95	12	60	4
HSXB2010L20 0460	R0.5	20	0.75	1	0.95	12	60	4
HSXB2010L22 0460	R0.5	22	0.75	1	0.95	12	60	4
HSXB2012L4 0450	R0.6	4	1	1.2	1.14	11	50	4
HSXB2012L6 0450	R0.6	6	1	1.2	1.14	11	50	4
HSXB2012L8 0450	R0.6	8	1	1.2	1.14	11	50	4

HSXB2L 2-Flute Long Neck Ball End Mill



φD	D Tolerance	φD	R Tolerance
D<3	0~-0.010	D<1	±0.003
3<D<6	0~-0.012	1<D<8	±0.005
6<D<10	0~-0.015	D>8	±0.008
10<D<18	0~-0.018		

Unit : mm

Type No.	Radius	Under Neck Length	Length of Cut	Dia.	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	R	ℓ ₁	ℓ	φD	φd ₁	γ/°	L	φd
HSXB2012L10 0450	R0.6	10	1	1.2	1.14	11	50	4
HSXB2012L12 0450	R0.6	12	1	1.2	1.14	11	50	4
HSXB2012L14 0450	R0.6	14	1	1.2	1.14	11	50	4
HSXB2014L8 0450	R0.7	8	1.1	1.4	1.34	11	50	4
HSXB2014L12 0450	R0.7	12	1.1	1.4	1.34	11	50	4
HSXB2015L4 0450	R0.75	4	1.2	1.5	1.42	11	50	4
HSXB2015L6 0450	R0.75	6	1.2	1.5	1.42	11	50	4
HSXB2015L6 0660	R0.75	6	1.2	1.5	1.42	11	60	6
HSXB2015L8 0450	R0.75	8	1.2	1.5	1.42	11	50	4
HSXB2015L8 0660	R0.75	8	1.2	1.5	1.42	11	60	6
HSXB2015L10 0450	R0.75	10	1.2	1.5	1.42	11	50	4
HSXB2015L10 0660	R0.75	10	1.2	1.5	1.42	11	60	6
HSXB2015L12 0450	R0.75	12	1.2	1.5	1.42	11	50	4
HSXB2015L12 0660	R0.75	12	1.2	1.5	1.42	11	60	6
HSXB2015L14 0450	R0.75	14	1.2	1.5	1.42	11	50	4
HSXB2015L16 0450	R0.75	16	1.2	1.5	1.42	11	50	4
HSXB2015L18 0460	R0.75	18	1.2	1.5	1.42	11	60	4
HSXB2016L8 0450	R0.8	8	1.3	1.6	1.52	11	50	4
HSXB2016L12 0450	R0.8	12	1.3	1.6	1.52	11	50	4
HSXB2016L16 0450	R0.8	16	1.3	1.6	1.52	11	50	4
HSXB2020L3 0450	R1	3	1.6	2	1.9	11	50	4
HSXB2020L4 0450	R1	4	1.6	2	1.9	11	50	4
HSXB2020L6 0450	R1	6	1.6	2	1.9	11	50	4
HSXB2020L8 0450	R1	8	1.6	2	1.9	11	50	4
HSXB2020L8 0660	R1	8	1.6	2	1.9	11	60	6
HSXB2020L10 0450	R1	10	1.6	2	1.9	11	50	4
HSXB2020L10 0660	R1	10	1.6	2	1.9	11	60	6
HSXB2020L12 0450	R1	12	1.6	2	1.9	11	50	4

HSXB2L 2-Flute Long Neck Ball End Mill

Unit : mm								
Type No.	Radius	Under Neck Length	Length of Cut	Dia.	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	R	ℓ ₁	ℓ	φD	φd ₁	γ/°	L	φd
HSXB2020L12 0660	R1	12	1.6	2	1.9	11	60	6
HSXB2020L14 0450	R1	14	1.6	2	1.9	11	50	4
HSXB2020L16 0450	R1	16	1.6	2	1.9	11	50	4
HSXB2020L16 0660	R1	16	1.6	2	1.9	11	60	6
HSXB2020L18 0460	R1	18	1.6	2	1.9	11	60	4
HSXB2020L20 0460	R1	20	1.6	2	1.9	11	60	4
HSXB2020L22 0460	R0	22	1.6	2	1.9	11	60	4
HSXB2020L25 0460	R1	25	1.6	2	1.9	11	60	4
HSXB2020L30 0475	R1	30	1.6	2	1.9	11	75	4
HSXB2025L6 0450	R1.25	6	2	2.5	2.4	11	50	4
HSXB2025L8 0450	R1.25	8	2	2.5	2.4	11	50	4
HSXB2025L10 0450	R1.25	10	2	2.5	2.4	11	50	4
HSXB2025L12 0450	R1.25	12	2	2.5	2.4	11	50	4
HSXB2025L16 0450	R1.25	16	2	2.5	2.4	11	50	4
HSXB2025L20 0460	R1.25	20	2	2.5	2.4	11	60	4
HSXB2025L25 0460	R1.25	25	2	2.5	2.4	11	60	4
HSXB2030L8 0450	R1.5	8	2.4	3	2.9	11	50	4
HSXB2030L8 0660	R1.6	8	2.4	3	2.9	11	60	6
HSXB2030L10 0450	R1.5	10	2.4	3	2.9	11	50	4
HSXB2030L10 0660	R1.5	10	2.4	3	2.9	11	60	6
HSXB2030L12 0450	R1.5	12	2.4	3	2.9	11	50	4
HSXB2030L12 0660	R1.5	12	2.4	3	2.9	11	60	6
HSXB2030L14 0450	R1.5	14	2.4	3	2.9	11	50	4
HSXB2030L14 0660	R1.5	14	2.4	3	2.9	11	60	6
HSXB2030L16 0450	R1.5	16	2.4	3	2.9	11	50	4
HSXB2030L16 0660	R1.5	16	2.4	3	2.9	11	60	6
HSXB2030L20 0660	R1.5	20	2.4	3	2.9	11	60	6
HSXB2030L25 0675	R1.5	25	2.4	3	2.9	11	75	6
HSXB2030L30 0675	R1.5	30	2.4	3	2.9	11	75	6
HSXB2030L35 0675	R1.5	35	2.4	3	2.9	11	75	6
HSXB2030L40 06100	R1.5	40	2.4	3	2.9	11	100	6
HSXB2035L16 0660	R1.75	16	2.8	3.5	3.4	11	60	6
HSXB2035L20 0660	R1.75	20	2.8	3.5	3.4	11	60	6
HSXB2035L25 0675	R1.75	25	2.8	3.5	3.4	11	75	6
HSXB2035L30 0675	R1.75	30	2.8	3.5	3.4	11	75	6
HSXB2035L35 0675	R1.75	35	2.8	3.5	3.4	11	75	6

HSXB2L 2-Flute Long Neck Ball End Mill



φD	D Tolerance	φD	R Tolerance
D<3	0~-0.010	D<1	±0.003
3<D<6	0~-0.012	1<D<8	±0.005
6<D<10	0~-0.015	D>8	±0.008
10<D<18	0~-0.018		

Unit : mm

Type No.	Radius	Under Neck Length	Length of Cut	Dia.	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	R	l ₁	l	φD	φd ₁	γ/°	L	φd
HSXB2040L10 0450	R2	10	3.2	4	3.9	11	50	4
HSXB2040L10 0660	R2	10	3.2	4	3.9	11	60	6
HSXB2040L12 0660	R2	12	3.2	4	3.9	11	60	6
HSXB2040L14 0660	R2	14	3.2	4	3.9	11	60	6
HSXB2040L16 0660	R2	16	3.2	4	3.9	11	60	6
HSXB2040L20 0660	R2	20	3.2	4	3.9	11	60	6
HSXB2040L25 0675	R2	25	3.2	4	3.9	11	75	6
HSXB2040L30 0675	R2	30	3.2	4	3.9	11	75	6
HSXB2040L35 0675	R2	35	3.2	4	3.9	11	75	6
HSXB2040L40 06100	R2	40	3.2	4	3.9	11	100	6
HSXB2050L16 0660	R2.5	16	4	5	4.85	11	60	6
HSXB2050L20 0660	R2.5	20	4	5	4.85	11	60	6
HSXB2050L30 0675	R2.5	30	4	5	4.85	11	75	6
HSXB2050L40 06100	R2.5	40	4	5	4.85	11	100	6
HSXB2060L12 0660	R3	12	4.8	6	5.85	11	60	6
HSXB2060L20 0675	R3	20	4.8	6	5.85	11	75	6
HSXB2060L30 0675	R3	30	4.8	6	5.85	11	75	6
HSXB2060L40 06100	R3	40	4.8	6	5.85	11	100	6

TABLE OF RECOMMENDED MILLING MATERIALS

Very suitable Suitable

CARBON STEELS	ALLOY STEELS	PREHARDENED STEELS, HARDENED STEELS				STAINLESS STEELS	CAST IRON	COPPER ALLOYS	ALUMINUM ALLOY	GRAPHITE	TITANIUM ALLOY	HEAT RESISTANT ALLOYS	PLASTIC
PREHARDENED STEELS	TOOL STEELS						DUCTILE CAST IRON						
~40HRC	~45HRC	~55HRC	~60HRC	~65HRC	~35HRC	~350HB							
○	○	○	○	○	○	○	○	○			○	○	

HSXE2L 2-Flute Long Neck End Mill



φD	D Tolerance
D<3	0~-0.010
3<D<6	0~-0.012

Unit : mm

Type No.	Dia.	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	l ₁	l	φd ₁	γ/°	L	φd
HSXE2001L0.3 0450	0.1	0.3	0.07	0.085	12	50	4
HSXE2001L0.5 0450	0.1	0.5	0.07	0.085	12	50	4
HSXE2001L0.75 0450	0.1	0.75	0.07	0.085	12	50	4
HSXE2001L1 0450	0.1	1	0.07	0.085	12	50	4
HSXE20015L0.3 0450	0.15	0.3	0.1	0.13	12	50	4
HSXE20015L0.5 0450	0.15	0.5	0.1	0.13	12	50	4
HSXE20015L0.75 0450	0.15	0.75	0.1	0.13	12	50	4
HSXE20015L1 0450	0.15	1	0.1	0.13	12	50	4
HSXE20015L1.5 0450	0.15	1.5	0.1	0.13	12	50	4
HSXE2002L0.5 0450	0.2	0.5	0.15	0.18	12	50	4
HSXE2002L1 0450	0.2	1	0.15	0.18	12	50	4
HSXE2002L1.5 0450	0.2	1.5	0.15	0.18	12	50	4
HSXE2002L2 0450	0.2	2	0.15	0.18	12	50	4
HSXE2002L2.5 0450	0.2	2.5	0.15	0.18	12	50	4
HSXE2002L3 0450	0.2	3	0.15	0.18	12	50	4
HSXE2003L1 0450	0.3	1	0.2	0.28	12	50	4
HSXE2003L1.5 0450	0.3	1.5	0.2	0.28	12	50	4
HSXE2003L2 0450	0.3	2	0.2	0.28	12	50	4
HSXE2003L2.5 0450	0.3	2.5	0.2	0.28	12	50	4
HSXE2003L3 0450	0.3	3	0.2	0.28	12	50	4
HSXE2003L3.5 0450	0.3	3.5	0.2	0.28	12	50	4
HSXE2003L4 0450	0.3	4	0.2	0.28	12	50	4
HSXE2004L1 0450	0.4	1	0.3	0.37	12	50	4
HSXE2004L1.5 0450	0.4	1.5	0.3	0.37	12	50	4
HSXE2004L2 0450	0.4	2	0.3	0.37	12	50	4
HSXE2004L2.5 0450	0.4	2.5	0.3	0.37	12	50	4
HSXE2004L3 0450	0.4	3	0.3	0.37	12	50	4
HSXE2004L3.5 0450	0.4	3.5	0.3	0.37	12	50	4

HSXE2L 2-Flute Long Neck End Mill



φD	D Tolerance
D≤3	0—-0.010
3<D≤6	0—-0.012

Unit : mm

Type No.	Dia.	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXE2004L4 0450	0.4	4	0.3	0.37	12	50	4
HSXE2004L5 0450	0.4	5	0.3	0.37	12	50	4
HSXE2004L6 0450	0.4	6	0.3	0.37	12	50	4
HSXE2004L8 0450	0.4	8	0.3	0.37	12	50	4
HSXE2004L10 0450	0.4	10	0.3	0.37	12	50	4
HSXE2005L1 0450	0.5	1	0.35	0.46	12	50	4
HSXE2005L1.5 0450	0.5	1.5	0.35	0.46	12	50	4
HSXE2005L2 0450	0.5	2	0.35	0.46	12	50	4
HSXE2005L2.5 0450	0.5	2.5	0.35	0.46	12	50	4
HSXE2005L3 0450	0.5	3	0.35	0.46	12	50	4
HSXE2005L3.5 0450	0.5	3.5	0.35	0.46	12	50	4
HSXE2005L4 0450	0.5	4	0.35	0.46	12	50	4
HSXE2005L4.5 0450	0.5	4.5	0.35	0.46	12	50	4
HSXE2005L5 0450	0.5	5	0.35	0.46	12	50	4
HSXE2005L6 0450	0.5	6	0.35	0.46	12	50	4
HSXE2005L7 0450	0.5	7	0.35	0.46	12	50	4
HSXE2005L8 0450	0.5	8	0.35	0.46	12	50	4
HSXE2005L9 0450	0.5	9	0.35	0.46	12	50	4
HSXE2005L10 0450	0.5	10	0.35	0.46	12	50	4
HSXE2006L1.5 0450	0.6	1.5	0.45	0.56	12	50	4
HSXE2006L2 0450	0.6	2	0.45	0.56	12	50	4
HSXE2006L2.5 0450	0.6	2.5	0.45	0.56	12	50	4
HSXE2006L3 0450	0.6	3	0.45	0.56	12	50	4
HSXE2006L3.5 0450	0.6	3.5	0.45	0.56	12	50	4
HSXE2006L4 0450	0.6	4	0.45	0.56	12	50	4
HSXE2006L4.5 0450	0.6	4.5	0.45	0.56	12	50	4
HSXE2006L5 0450	0.6	5	0.45	0.56	12	50	4
HSXE2006L6 0450	0.6	6	0.45	0.56	12	50	4

HSXE2L 2-Flute Long Neck End Mill

Unit : mm							
Type No.	Dia.	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXE2006L7 0450	0.6	7	0.45	0.56	12	50	4
HSXE2006L8 0450	0.6	8	0.45	0.56	12	50	4
HSXE2006L9 0450	0.6	9	0.45	0.56	12	50	4
HSXE2006L10 0450	0.6	10	0.45	0.56	12	50	4
HSXE2006L12 0450	0.6	12	0.45	0.56	12	50	4
HSXE2007L2 0450	0.7	2	0.5	0.66	12	50	4
HSXE2007L4 0450	0.7	4	0.5	0.66	12	50	4
HSXE2007L6 0450	0.7	6	0.5	0.66	12	50	4
HSXE2007L8 0450	0.7	8	0.5	0.66	12	50	4
HSXE2007L10 0450	0.7	10	0.5	0.66	12	50	4
HSXE2008L2 0450	0.8	2	0.6	0.76	12	50	4
HSXE2008L3 0450	0.8	3	0.6	0.76	12	50	4
HSXE2008L4 0450	0.8	4	0.6	0.76	12	50	4
HSXE2008L5 0450	0.8	5	0.6	0.76	12	50	4
HSXE2008L6 0450	0.8	6	0.6	0.76	12	50	4
HSXE2008L7 0450	0.8	7	0.6	0.76	12	50	4
HSXE2008L8 0450	0.8	8	0.6	0.76	12	50	4
HSXE2008L10 0450	0.8	10	0.6	0.76	12	50	4
HSXE2008L12 0450	0.8	12	0.6	0.76	12	50	4
HSXE2008L16 0450	0.8	16	0.6	0.76	12	50	4
HSXE2009L6 0450	0.9	6	0.65	0.86	12	50	4
HSXE2009L8 0450	0.9	8	0.65	0.86	12	50	4
HSXE2009L10 0450	0.9	10	0.65	0.86	12	50	4
HSXE2010L3 0450	1	3	0.75	0.95	12	50	4
HSXE2010L4 0450	1	4	0.75	0.95	12	50	4
HSXE2010L5 0450	1	5	0.75	0.95	12	50	4
HSXE2010L6 0450	1	6	0.75	0.95	12	50	4
HSXE2010L7 0450	1	7	0.75	0.95	12	50	4
HSXE2010L8 0450	1	8	0.75	0.95	12	50	4
HSXE2010L9 0450	1	9	0.75	0.95	12	50	4
HSXE2010L10 0450	1	10	0.75	0.95	12	50	4
HSXE2010L12 0450	1	12	0.75	0.95	12	50	4
HSXE2010L14 0450	1	14	0.75	0.95	12	50	4
HSXE2010L16 0450	1	16	0.75	0.95	12	50	4
HSXE2010L18 0460	1	18	0.75	0.95	12	60	4

HSXE2L 2-Flute Long Neck End Mill



Ø D	D Tolerance
D ≤ 3	0 ~ -0.010
3 < D ≤ 6	0 ~ -0.012

Unit : mm

Type No.	Dia.	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXE2010L20 0460	1	20	0.75	0.95	12	60	4
HSXE2010L22 0460	1	22	0.75	0.95	12	60	4
HSXE2012L6 0450	1.2	6	1	1.14	11	50	4
HSXE2012L8 0450	1.2	8	1	1.14	11	50	4
HSXE2012L10 0450	1.2	10	1	1.14	11	50	4
HSXE2012L12 0450	1.2	12	1	1.14	11	50	4
HSXE2012L16 0450	1.2	16	1	1.14	11	50	4
HSXE2014L6 0450	1.4	6	1.1	1.34	11	50	4
HSXE2014L12 0450	1.4	12	1.1	1.34	11	50	4
HSXE2014L16 0450	1.4	16	1.1	1.34	11	50	4
HSXE2015L4 0450	1.5	4	1.2	1.42	11	50	4
HSXE2015L6 0450	1.5	6	1.2	1.42	11	50	4
HSXE2015L8 0450	1.5	8	1.2	1.42	11	50	4
HSXE2015L10 0450	1.5	10	1.2	1.42	11	50	4
HSXE2015L12 0450	1.5	12	1.2	1.42	11	50	4
HSXE2015L14 0450	1.5	14	1.2	1.42	11	50	4
HSXE2015L16 0450	1.5	16	1.2	1.42	11	50	4
HSXE2015L18 0460	1.5	18	1.2	1.42	11	60	4
HSXE2015L20 0460	1.5	20	1.2	1.42	11	60	4
HSXE2015L25 0460	1.5	25	1.2	1.42	11	60	4
HSXE2015L30 0475	1.5	30	1.2	1.42	11	75	4
HSXE2015L35 0475	1.5	35	1.2	1.42	11	75	4
HSXE2016L6 0450	1.6	6	1.3	1.52	11	50	4
HSXE2016L8 0450	1.6	8	1.3	1.52	11	50	4
HSXE2016L12 0450	1.6	12	1.3	1.52	11	50	4
HSXE2016L16 0450	1.6	16	1.3	1.52	11	50	4
HSXE2018L6 0450	1.8	6	1.4	1.72	11	50	4
HSXE2018L8 0450	1.8	8	1.4	1.72	11	50	4

HSXE2L 2-Flute Long Neck End Mill

Unit : mm

Type No.	Dia.	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXE2020L4 0450	2	4	1.6	1.9	11	50	4
HSXE2020L6 0450	2	6	1.6	1.9	11	50	4
HSXE2020L8 0450	2	8	1.6	1.9	11	50	4
HSXE2020L10 0450	2	10	1.6	1.9	11	50	4
HSXE2020L12 0450	2	12	1.6	1.9	11	50	4
HSXE2020L14 0450	2	14	1.6	1.9	11	50	4
HSXE2020L16 0450	2	16	1.6	1.9	11	50	4
HSXE2020L18 0460	2	18	1.6	1.9	11	60	4
HSXE2020L20 0460	2	20	1.6	1.9	11	60	4
HSXE2020L25 0460	2	25	1.6	1.9	11	60	4
HSXE2020L30 0475	2	30	1.6	1.9	11	75	4
HSXE2020L35 0475	2	35	1.6	1.9	11	75	4
HSXE2020L40 0475	2	40	1.6	1.9	11	75	4
HSXE2025L8 0450	2.5	8	2	2.4	11	50	4
HSXE2025L10 0450	2.5	10	2	2.4	11	50	4
HSXE2025L12 0450	2.5	12	2	2.4	11	50	4
HSXE2025L16 0450	2.5	16	2	2.4	11	50	4
HSXE2025L20 0460	2.5	20	2	2.4	11	60	4
HSXE2025L25 0460	2.5	25	2	2.4	11	60	4
HSXE2025L30 0475	2.5	30	2	2.4	11	75	4
HSXE2025L35 0475	2.5	35	2	2.4	11	75	4
HSXE2025L40 0475	2.5	40	2	2.4	11	75	4
HSXE2030L8 0660	3	8	2.4	2.9	11	60	6
HSXE2030L10 0660	3	10	2.4	2.9	11	60	6
HSXE2030L12 0660	3	12	2.4	2.9	11	60	6
HSXE2030L16 0660	3	16	2.4	2.9	11	60	6
HSXE2030L20 0660	3	20	2.4	2.9	11	60	6
HSXE2030L25 0675	3	25	2.4	2.9	11	75	6
HSXE2030L30 0675	3	30	2.4	2.9	11	75	6
HSXE2030L35 0675	3	35	2.4	2.9	11	75	6
HSXE2030L40 06100	3	40	2.4	2.9	11	100	6
HSXE2030L50 06100	3	50	2.4	2.9	11	100	6
HSXE2040L12 0660	4	12	3.2	3.9	11	60	6
HSXE2040L16 0660	4	16	3.2	3.9	11	60	6
HSXE2040L20 0660	4	20	3.2	3.9	11	60	6

HSXE2L 2-Flute Long Neck End Mill



Ø D	D Tolerance
D<3	0~-0.010
3<D<6	0~-0.012

Unit : mm

Type No.	Dia.	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXE2040L25 0675	4	25	3.2	3.9	11	75	6
HSXE2040L30 0675	4	30	3.2	3.9	11	75	6
HSXE2040L35 0675	4	35	3.2	3.9	11	75	6
HSXE2040L40 06100	4	40	3.2	3.9	11	100	6
HSXE2040L50 06100	4	50	3.2	3.9	11	100	6
HSXE2050L20 0660	5	20	4	4.85	11	60	6
HSXE2050L25 0675	5	25	4	4.85	11	75	6
HSXE2050L30 0675	5	30	4	4.85	11	75	6
HSXE2050L40 06100	5	40	4	4.85	11	100	6
HSXE2050L50 06100	5	50	4	4.85	11	100	6
HSXE2060L20 0660	6	20	4.8	5.85	11	60	6
HSXE2060L30 0675	6	30	4.8	5.85	11	75	6
HSXE2060L40 06100	6	40	4.8	5.85	11	100	6
HSXE2060L50 06100	6	50	4.8	5.85	11	100	6

TABLE OF RECOMMENDED MILLING MATERIALS										Very suitable Suitable				
CARBON STEELS	ALLOY STEELS	PREHARDENED STEELS, HARDENED STEELS				STAINLESS STEELS	CAST IRON	COPPER ALLOYS	ALUMINUM ALLOY	GRAPHITE	TITANIUM ALLOY	HEAT RESISTANT ALLOYS	PLASTIC	
PREHARDENED STEELS	TOOL STEELS						DUCTILE CAST IRON							
~40HRC		~45HRC	~55HRC	~60HRC	~65HRC	~35HRC	~350HB							

HSXE4L 4-Flute Long Neck End Mill



Ø D	D Tolerance
D<3	0~-0.010
3<D<6	0~-0.012

Unit : mm

Type No.	Dia.	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXE4008L2 0450	0.8	2	0.6	0.76	12	50	4
HSXE4008L3 0450	0.8	3	0.6	0.76	12	50	4
HSXE4008L4 0450	0.8	4	0.6	0.76	12	50	4
HSXE4008L5 0450	0.8	5	0.6	0.76	12	50	4
HSXE4008L6 0450	0.8	6	0.6	0.76	12	50	4
HSXE4008L7 0450	0.8	7	0.6	0.76	12	50	4
HSXE4008L8 0450	0.8	8	0.6	0.76	12	50	4
HSXE4008L10 0450	0.8	10	0.6	0.76	12	50	4
HSXE4008L12 0450	0.8	12	0.6	0.76	12	50	4
HSXE4008L16 0450	0.8	16	0.6	0.76	12	50	4
HSXE4010L3 0450	1	3	0.75	0.95	12	50	4
HSXE4010L4 0450	1	4	0.75	0.95	12	50	4
HSXE4010L5 0450	1	5	0.75	0.95	12	50	4
HSXE4010L6 0450	1	6	0.75	0.95	12	50	4
HSXE4010L7 0450	1	7	0.75	0.95	12	50	4
HSXE4010L8 0450	1	8	0.75	0.95	12	50	4
HSXE4010L9 0450	1	9	0.75	0.95	12	50	4
HSXE4010L10 0450	1	10	0.75	0.95	12	50	4
HSXE4010L12 0450	1	12	0.75	0.95	12	50	4
HSXE4010L14 0450	1	14	0.75	0.95	12	50	4
HSXE4010L16 0450	1	16	0.75	0.95	12	50	4
HSXE4010L18 0460	1	18	0.75	0.95	12	60	4
HSXE4010L20 0460	1	20	0.75	0.95	12	60	4
HSXE4010L22 0460	1	22	0.75	0.95	12	60	4
HSXE4012L6 0450	1.2	6	1	1.14	11	50	4
HSXE4012L8 0450	1.2	8	1	1.14	11	50	4

HSXE4L 4-Flute Long Neck End Mill



ØD	D Tolerance
D<3	0~-0.010
3<D≤6	0~-0.012

Unit : mm

Type No.	Dia.	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXE4012L10 0450	1.2	10	1	1.14	11	50	4
HSXE4012L12 0450	1.2	12	1	1.14	11	50	4
HSXE4014L6 0450	1.4	6	1.1	1.34	11	50	4
HSXE4014L12 0450	1.4	12	1.1	1.34	11	50	4
HSXE4014L16 0450	1.4	16	1.1	1.34	11	50	4
HSXE4015L4 0450	1.5	4	1.2	1.42	11	50	4
HSXE4015L6 0450	1.5	6	1.2	1.42	11	50	4
HSXE4015L8 0450	1.5	8	1.2	1.42	11	50	4
HSXE4015L10 0450	1.5	10	1.2	1.42	11	50	4
HSXE4015L12 0450	1.5	12	1.2	1.42	11	50	4
HSXE4015L14 0450	1.5	14	1.2	1.42	11	50	4
HSXE4015L16 0450	1.5	16	1.2	1.42	11	50	4
HSXE4015L18 0460	1.5	18	1.2	1.42	11	60	4
HSXE4015L20 0460	1.5	20	1.2	1.42	11	60	4
HSXE4015L25 0460	1.5	25	1.2	1.42	11	60	4
HSXE4016L8 0450	1.6	8	1.3	1.52	11	50	4
HSXE4016L12 0450	1.6	12	1.3	1.52	11	50	4
HSXE4016L16 0450	1.6	16	1.3	1.52	11	50	4
HSXE4020L6 0450	2	6	1.6	1.9	11	50	4
HSXE4020L8 0450	2	8	1.6	1.9	11	50	4
HSXE4020L10 0450	2	10	1.6	1.9	11	50	4
HSXE4020L12 0450	2	12	1.6	1.9	11	50	4
HSXE4020L14 0450	2	14	1.6	1.9	11	50	4
HSXE4020L16 0450	2	16	1.6	1.9	11	50	4
HSXE4020L18 0460	2	18	1.6	1.9	11	60	4
HSXE4020L20 0460	2	20	1.6	1.9	11	60	4

HSXE4L 4-Flute Long Neck End Mill

Type No.	Dia.	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXE4020L25 0460	2	25	1.6	1.9	11	60	4
HSXE4020L30 0475	2	30	1.6	1.9	11	75	4
HSXE4020L35 0475	2	35	1.6	1.9	11	75	4
HSXE4025L8 0450	2.5	8	2	2.4	11	50	4
HSXE4025L10 0450	2.5	10	2	2.4	11	50	4
HSXE4025L12 0450	2.5	12	2	2.4	11	50	4
HSXE4025L16 0450	2.5	16	2	2.4	11	50	4
HSXE4025L20 0460	2.5	20	2	2.4	11	60	4
HSXE4025L25 0460	2.5	25	2	2.4	11	60	4
HSXE4025L30 0475	2.5	30	2	2.4	11	75	4
HSXE4025L35 0475	2.5	35	2	2.4	11	75	4
HSXE4030L10 0450	3	10	2.4	2.9	11	50	4
HSXE4030L10 0660	3	10	2.4	2.9	11	60	6
HSXE4030L12 0450	3	12	2.4	2.9	11	50	4
HSXE4030L12 0660	3	12	2.4	2.9	11	60	6
HSXE4030L16 0450	3	16	2.4	2.9	11	50	4
HSXE4030L16 0660	3	16	2.4	2.9	11	60	6
HSXE4030L20 0660	3	20	2.4	2.9	11	60	6
HSXE4030L25 0675	3	25	2.4	2.9	11	75	6
HSXE4030L30 0675	3	30	2.4	2.9	11	75	6
HSXE4030L35 0675	3	35	2.4	2.9	11	75	6
HSXE4030L40 06100	3	40	2.4	2.9	11	100	6
HSXE4040L12 0660	4	12	3.2	3.9	11	60	6
HSXE4040L16 0660	4	16	3.2	3.9	11	60	6
HSXE4040L20 0660	4	20	3.2	3.9	11	60	6
HSXE4040L25 0675	4	25	3.2	3.9	11	75	6
HSXE4040L30 0675	4	30	3.2	3.9	11	75	6
HSXE4040L35 0675	4	35	3.2	3.9	11	75	6
HSXE4040L40 06100	4	40	3.2	3.9	11	100	6
HSXE4040L50 06100	4	50	3.2	3.9	11	100	6

HSXR2L 2-Flute Long Neck
Corner Radius End Mill



Unit : mm								
Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXR2002R0.05L0.5 0450	0.2	R0.05	0.5	0.15	0.18	12	50	4
HSXR2002R0.05L1 0450	0.2	R0.05	1	0.15	0.18	12	50	4
HSXR2002R0.05L1.5 0450	0.2	R0.05	1.5	0.15	0.18	12	50	4
HSXR2002R0.05L2 0450	0.2	R0.05	2	0.15	0.18	12	50	4
HSXR2003R0.05L1 0450	0.3	R0.05	1	0.2	0.28	12	50	4
HSXR2003R0.05L1.5 0450	0.3	R0.05	1.5	0.2	0.28	12	50	4
HSXR2003R0.05L2 0450	0.3	R0.05	2	0.2	0.28	12	50	4
HSXR2003R0.05L2.5 0450	0.3	R0.05	2.5	0.2	0.28	12	50	4
HSXR2003R0.05L3 0450	0.3	R0.05	3	0.2	0.28	12	50	4
HSXR2004R0.05L1 0450	0.4	R0.05	1	0.3	0.37	12	50	4
HSXR2004R0.05L1.5 0450	0.4	R0.05	1.5	0.3	0.37	12	50	4
HSXR2004R0.05L2 0450	0.4	R0.05	2	0.3	0.37	12	50	4
HSXR2004R0.05L2.5 0450	0.4	R0.05	2.5	0.3	0.37	12	50	4
HSXR2004R0.05L3 0450	0.4	R0.05	3	0.3	0.37	12	50	4
HSXR2004R0.05L4 0450	0.4	R0.05	4	0.3	0.37	12	50	4
HSXR2004R0.1L1 0450	0.4	R0.1	1	0.3	0.37	12	50	4
HSXR2004R0.1L1.5 0450	0.4	R0.1	1.5	0.3	0.37	12	50	4
HSXR2004R0.1L2 0450	0.4	R0.1	2	0.3	0.37	12	50	4
HSXR2004R0.1L2.5 0450	0.4	R0.1	2.5	0.3	0.37	12	50	4
HSXR2004R0.1L3 0450	0.4	R0.1	3	0.3	0.37	12	50	4
HSXR2004R0.1L4 0450	0.4	R0.1	4	0.3	0.37	12	50	4
HSXR2005R0.05L1 0450	0.5	R0.05	1	0.35	0.46	12	50	4
HSXR2005R0.05L1.5 0450	0.5	R0.05	1.5	0.35	0.46	12	50	4
HSXR2005R0.05L2 0450	0.5	R0.05	2	0.35	0.46	12	50	4
HSXR2005R0.05L2.5 0450	0.5	R0.05	2.5	0.35	0.46	12	50	4
HSXR2005R0.05L3 0450	0.5	R0.05	3	0.35	0.46	12	50	4
HSXR2005R0.05L4 0450	0.5	R0.05	4	0.35	0.46	12	50	4
HSXR2005R0.05L5 0450	0.5	R0.05	5	0.35	0.46	12	50	4

HSXR2L 2-Flute Long Neck
Corner Radius End Mill

Unit : mm								
Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXR2005R0.05L6 0450	0.5	R0.05	6	0.35	0.46	12	50	4
HSXR2005R0.1L1 0450	0.5	R0.1	1	0.35	0.46	12	50	4
HSXR2005R0.1L1.5 0450	0.5	R0.1	1.5	0.35	0.46	12	50	4
HSXR2005R0.1L2 0450	0.5	R0.1	2	0.35	0.46	12	50	4
HSXR2005R0.1L2.5 0450	0.5	R0.1	2.5	0.35	0.46	12	50	4
HSXR2005R0.1L3 0450	0.5	R0.1	3	0.35	0.46	12	50	4
HSXR2005R0.1L4 0450	0.5	R0.1	4	0.35	0.46	12	50	4
HSXR2005R0.1L5 0450	0.5	R0.1	5	0.35	0.46	12	50	4
HSXR2005R0.1L6 0450	0.5	R0.1	6	0.35	0.46	12	50	4
HSXR2006R0.05L2 0450	0.6	R0.05	2	0.45	0.56	12	50	4
HSXR2006R0.05L3 0450	0.6	R0.05	3	0.45	0.56	12	50	4
HSXR2006R0.05L4 0450	0.6	R0.05	4	0.45	0.56	12	50	4
HSXR2006R0.05L6 0450	0.6	R0.05	6	0.45	0.56	12	50	4
HSXR2006R0.05L8 0450	0.6	R0.05	8	0.45	0.56	12	50	4
HSXR2006R0.05L10 0450	0.6	R0.05	10	0.45	0.56	12	50	4
HSXR2006R0.1L2 0450	0.6	R0.1	2	0.45	0.56	12	50	4
HSXR2006R0.1L3 0450	0.6	R0.1	3	0.45	0.56	12	50	4
HSXR2006R0.1L4 0450	0.6	R0.1	4	0.45	0.56	12	50	4
HSXR2006R0.1L6 0450	0.6	R0.1	6	0.45	0.56	12	50	4
HSXR2006R0.1L8 0450	0.6	R0.1	8	0.45	0.56	12	50	4
HSXR2006R0.1L10 0450	0.6	R0.1	10	0.45	0.56	12	50	4
HSXR2007R0.05L2 0450	0.7	R0.05	2	0.5	0.66	12	50	4
HSXR2007R0.05L3 0450	0.7	R0.05	3	0.5	0.66	12	50	4
HSXR2007R0.05L4 0450	0.7	R0.05	4	0.5	0.66	12	50	4
HSXR2007R0.05L6 0450	0.7	R0.05	6	0.5	0.66	12	50	4
HSXR2007R0.05L8 0450	0.7	R0.05	8	0.5	0.66	12	50	4
HSXR2007R0.05L10 0450	0.7	R0.05	10	0.5	0.66	12	50	4
HSXR2007R0.1L2 0450	0.7	R0.1	2	0.5	0.66	12	50	4
HSXR2007R0.1L3 0450	0.7	R0.1	3	0.5	0.66	12	50	4
HSXR2007R0.1L4 0450	0.7	R0.1	4	0.5	0.66	12	50	4
HSXR2007R0.1L6 0450	0.7	R0.1	6	0.5	0.66	12	50	4
HSXR2007R0.1L8 0450	0.7	R0.1	8	0.5	0.66	12	50	4
HSXR2007R0.1L10 0450	0.7	R0.1	10	0.5	0.66	12	50	4
HSXR2008R0.05L2 0450	0.8	R0.05	2	0.6	0.76	12	50	4
HSXR2008R0.05L3 0450	0.8	R0.05	3	0.6	0.76	12	50	4
HSXR2008R0.05L4 0450	0.8	R0.05	4	0.6	0.76	12	50	4

HSXR2L 2-Flute Long Neck
Corner Radius End Mill



φD	D Tolerance
D<3	0~0.010
3<D<6	0~0.012

Unit : mm

Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXR2008R0.05L6 0450	0.8	R0.05	6	0.6	0.76	12	50	4
HSXR2008R0.05L8 0450	0.8	R0.05	8	0.6	0.76	12	50	4
HSXR2008R0.05L10 0450	0.8	R0.05	10	0.6	0.76	12	50	4
HSXR2008R0.05L12 0450	0.8	R0.05	12	0.6	0.76	12	50	4
HSXR2008R0.1L2 0450	0.8	R0.1	2	0.6	0.76	12	50	4
HSXR2008R0.1L3 0450	0.8	R0.1	3	0.6	0.76	12	50	4
HSXR2008R0.1L4 0450	0.8	R0.1	4	0.6	0.76	12	50	4
HSXR2008R0.1L6 0450	0.8	R0.1	6	0.6	0.76	12	50	4
HSXR2008R0.1L8 0450	0.8	R0.1	8	0.6	0.76	12	50	4
HSXR2008R0.1L10 0450	0.8	R0.1	10	0.6	0.76	12	50	4
HSXR2008R0.1L12 0450	0.8	R0.1	12	0.6	0.76	12	50	4
HSXR2008R0.2L2 0450	0.8	R0.2	2	0.6	0.76	12	50	4
HSXR2008R0.2L3 0450	0.8	R0.2	3	0.6	0.76	12	50	4
HSXR2008R0.2L4 0450	0.8	R0.2	4	0.6	0.76	12	50	4
HSXR2008R0.2L6 0450	0.8	R0.2	6	0.6	0.76	12	50	4
HSXR2008R0.2L8 0450	0.8	R0.2	8	0.6	0.76	12	50	4
HSXR2008R0.2L10 0450	0.8	R0.2	10	0.6	0.76	12	50	4
HSXR2008R0.2L12 0450	0.8	R0.2	12	0.6	0.76	12	50	4
HSXR2009R0.1L4 0450	0.9	R0.1	4	0.65	0.86	12	50	4
HSXR2009R0.1L8 0450	0.9	R0.1	8	0.65	0.86	12	50	4
HSXR2009R0.2L4 0450	0.9	R0.2	4	0.65	0.86	12	50	4
HSXR2009R0.2L8 0450	0.9	R0.2	8	0.65	0.86	12	50	4
HSXR2010R0.05L3 0450	1	R0.05	3	0.75	0.95	12	50	4
HSXR2010R0.05L4 0450	1	R0.05	4	0.75	0.95	12	50	4
HSXR2010R0.05L5 0450	1	R0.05	5	0.75	0.95	12	50	4
HSXR2010R0.05L6 0450	1	R0.05	6	0.75	0.95	12	50	4
HSXR2010R0.05L8 0450	1	R0.05	8	0.75	0.95	12	50	4
HSXR2010R0.05L10 0450	1	R0.05	10	0.75	0.95	12	50	4

HSXR2L 2-Flute Long Neck
Corner Radius End Mill

Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXR2010R0.05L12 0450	1	R0.05	12	0.75	0.95	12	50	4
HSXR2010R0.05L16 0450	1	R0.05	16	0.75	0.95	12	50	4
HSXR2010R0.05L20 0460	1	R0.05	20	0.75	0.95	12	60	4
HSXR2010R0.1L2 0450	1	R0.1	2	0.75	0.95	12	50	4
HSXR2010R0.1L3 0450	1	R0.1	3	0.75	0.95	12	50	4
HSXR2010R0.1L4 0450	1	R0.1	4	0.75	0.95	12	50	4
HSXR2010R0.1L5 0450	1	R0.1	5	0.75	0.95	12	50	4
HSXR2010R0.1L6 0450	1	R0.1	6	0.75	0.95	12	50	4
HSXR2010R0.1L8 0450	1	R0.1	8	0.75	0.95	12	50	4
HSXR2010R0.1L10 0450	1	R0.1	10	0.75	0.95	12	50	4
HSXR2010R0.1L12 0450	1	R0.1	12	0.75	0.95	12	50	4
HSXR2010R0.1L16 0450	1	R0.1	16	0.75	0.95	12	50	4
HSXR2010R0.1L20 0460	1	R0.1	20	0.75	0.95	12	60	4
HSXR2010R0.2L2 0450	1	R0.2	2	0.75	0.95	12	50	4
HSXR2010R0.2L3 0450	1	R0.2	3	0.75	0.95	12	50	4
HSXR2010R0.2L4 0450	1	R0.2	4	0.75	0.95	12	50	4
HSXR2010R0.2L5 0450	1	R0.2	5	0.75	0.95	12	50	4
HSXR2010R0.2L6 0450	1	R0.2	6	0.75	0.95	12	50	4
HSXR2010R0.2L8 0450	1	R0.2	8	0.75	0.95	12	50	4
HSXR2010R0.2L10 0450	1	R0.2	10	0.75	0.95	12	50	4
HSXR2010R0.2L12 0450	1	R0.2	12	0.75	0.95	12	50	4
HSXR2010R0.2L16 0450	1	R0.2	16	0.75	0.95	12	50	4
HSXR2010R0.2L20 0460	1	R0.2	20	0.75	0.95	12	60	4
HSXR2010R0.3L3 0450	1	R0.3	3	0.75	0.95	12	50	4
HSXR2010R0.3L4 0450	1	R0.3	4	0.75	0.95	12	50	4
HSXR2010R0.3L5 0450	1	R0.3	5	0.75	0.95	12	50	4
HSXR2010R0.3L6 0450	1	R0.3	6	0.75	0.95	12	50	4
HSXR2010R0.3L8 0450	1	R0.3	8	0.75	0.95	12	50	4
HSXR2010R0.3L10 0450	1	R0.3	10	0.75	0.95	12	50	4
HSXR2010R0.3L12 0450	1	R0.3	12	0.75	0.95	12	50	4
HSXR2010R0.3L16 0450	1	R0.3	16	0.75	0.95	12	50	4
HSXR2010R0.3L20 0460	1	R0.3	20	0.75	0.95	12	60	4
HSXR2015R0.05L4 0450	1.5	R0.05	4	1.2	1.42	11	50	4
HSXR2015R0.05L6 0450	1.5	R0.05	6	1.2	1.42	11	50	4
HSXR2015R0.05L8 0450	1.5	R0.05	8	1.2	1.42	11	50	4
HSXR2015R0.05L10 0450	1.5	R0.05	10	1.2	1.42	11	50	4

HSXR2L 2-Flute Long Neck
Corner Radius End Mill



φD	D Tolerance
D<3	0~0.010
3<D<6	0~0.012

Unit : mm

Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXR2015R0.05L12 0450	1.5	R0.05	12	1.2	1.42	11	50	4
HSXR2015R0.05L16 0450	1.5	R0.05	16	1.2	1.42	11	50	4
HSXR2015R0.05L20 0460	1.5	R0.05	20	1.2	1.42	11	60	4
HSXR2015R0.1L4 0450	1.5	R0.1	4	1.2	1.42	11	50	4
HSXR2015R0.1L6 0450	1.5	R0.1	6	1.2	1.42	11	50	4
HSXR2015R0.1L8 0450	1.5	R0.1	8	1.2	1.42	11	50	4
HSXR2015R0.1L10 0450	1.5	R0.1	10	1.2	1.42	11	50	4
HSXR2015R0.1L12 0450	1.5	R0.1	12	1.2	1.42	11	50	4
HSXR2015R0.1L16 0450	1.5	R0.1	16	1.2	1.42	11	50	4
HSXR2015R0.1L20 0460	1.5	R0.1	20	1.2	1.42	11	60	4
HSXR2015R0.2L4 0450	1.5	R0.2	4	1.2	1.42	11	50	4
HSXR2015R0.2L6 0450	1.5	R0.2	6	1.2	1.42	11	50	4
HSXR2015R0.2L8 0450	1.5	R0.2	8	1.2	1.42	11	50	4
HSXR2015R0.2L10 0450	1.5	R0.2	10	1.2	1.42	11	50	4
HSXR2015R0.2L12 0450	1.5	R0.2	12	1.2	1.42	11	50	4
HSXR2015R0.2L15 0450	1.5	R0.2	15	1.2	1.42	11	50	4
HSXR2015R0.2L16 0450	1.5	R0.2	16	1.2	1.42	11	50	4
HSXR2015R0.2L20 0460	1.5	R0.2	20	1.2	1.42	11	60	4
HSXR2015R0.3L4 0450	1.5	R0.3	4	1.2	1.42	11	50	4
HSXR2015R0.3L6 0450	1.5	R0.3	6	1.2	1.42	11	50	4
HSXR2015R0.3L8 0450	1.5	R0.3	8	1.2	1.42	11	50	4
HSXR2015R0.3L10 0450	1.5	R0.3	10	1.2	1.42	11	50	4
HSXR2015R0.3L12 0450	1.5	R0.3	12	1.2	1.42	11	50	4
HSXR2015R0.3L16 0450	1.5	R0.3	16	1.2	1.42	11	50	4
HSXR2015R0.3L20 0460	1.5	R0.3	20	1.2	1.42	11	60	4
HSXR2015R0.5L4 0450	1.5	R0.5	4	1.2	1.42	11	50	4
HSXR2015R0.5L6 0450	1.5	R0.5	6	1.2	1.42	11	50	4
HSXR2015R0.5L8 0450	1.5	R0.5	8	1.2	1.42	11	50	4

HSXR2L 2-Flute Long Neck
Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXR2015R0.5L10 0450	1.5	R0.5	10	1.2	1.42	11	50	4
HSXR2015R0.5L12 0450	1.5	R0.5	12	1.2	1.42	11	50	4
HSXR2015R0.5L16 0450	1.5	R0.5	16	1.2	1.42	11	50	4
HSXR2015R0.5L20 0460	1.5	R0.5	20	1.2	1.42	11	60	4
HSXR20175R0.2L5 0450	1.75	R0.2	5	1.4	1.67	11	50	4
HSXR20175R0.2L10 0450	1.75	R0.2	10	1.4	1.67	11	50	4
HSXR20175R0.2L15 0450	1.75	R0.2	15	1.4	1.67	11	50	4
HSXR2020R0.05L6 0450	2	R0.05	6	1.6	1.9	11	50	4
HSXR2020R0.05L8 0450	2	R0.05	8	1.6	1.9	11	50	4
HSXR2020R0.05L10 0450	2	R0.05	10	1.6	1.9	11	50	4
HSXR2020R0.05L12 0450	2	R0.05	12	1.6	1.9	11	50	4
HSXR2020R0.05L16 0450	2	R0.05	16	1.6	1.9	11	50	4
HSXR2020R0.05L20 0460	2	R0.05	20	1.6	1.9	11	60	4
HSXR2020R0.05L25 0460	2	R0.05	25	1.6	1.9	11	60	4
HSXR2020R0.05L30 0475	2	R0.05	30	1.6	1.9	11	75	4
HSXR2020R0.1L6 0450	2	R0.1	6	1.6	1.9	11	50	4
HSXR2020R0.1L8 0450	2	R0.1	8	1.6	1.9	11	50	4
HSXR2020R0.1L10 0450	2	R0.1	10	1.6	1.9	11	50	4
HSXR2020R0.1L12 0450	2	R0.1	12	1.6	1.9	11	50	4
HSXR2020R0.1L16 0450	2	R0.1	16	1.6	1.9	11	50	4
HSXR2020R0.1L20 0460	2	R0.1	20	1.6	1.9	11	60	4
HSXR2020R0.1L25 0460	2	R0.1	25	1.6	1.9	11	60	4
HSXR2020R0.1L30 0475	2	R0.1	30	1.6	1.9	11	75	4
HSXR2020R0.2L4 0450	2	R0.2	4	1.6	1.9	11	50	4
HSXR2020R0.2L6 0450	2	R0.2	6	1.6	1.9	11	50	4
HSXR2020R0.2L8 0450	2	R0.2	8	1.6	1.9	11	50	4
HSXR2020R0.2L10 0450	2	R0.2	10	1.6	1.9	11	50	4
HSXR2020R0.2L12 0450	2	R0.2	12	1.6	1.9	11	50	4
HSXR2020R0.2L16 0450	2	R0.2	16	1.6	1.9	11	50	4
HSXR2020R0.2L20 4050	2	R0.2	20	1.6	1.9	11	50	4
HSXR2020R0.2L20 0460	2	R0.2	20	1.6	1.9	11	60	4
HSXR2020R0.2L25 0460	2	R0.2	25	1.6	1.9	11	60	4
HSXR2020R0.2L30 0475	2	R0.2	30	1.6	1.9	11	75	4
HSXR2020R0.3L6 0450	2	R0.3	6	1.6	1.9	11	50	4
HSXR2020R0.3L8 0450	2	R0.3	8	1.6	1.9	11	50	4
HSXR2020R0.3L10 0450	2	R0.3	10	1.6	1.9	11	50	4

HSXR2L 2-Flute Long Neck
Corner Radius End Mill



φD	D Tolerance
D<3	0~0.010
3<D<6	0~0.012

Unit : mm

Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXR2020R0.3L12 0450	2	R0.3	12	1.6	1.9	11	50	4
HSXR2020R0.3L16 0450	2	R0.3	16	1.6	1.9	11	50	4
HSXR2020R0.3L20 0460	2	R0.3	20	1.6	1.9	11	60	4
HSXR2020R0.3L25 0460	2	R0.3	25	1.6	1.9	11	60	4
HSXR2020R0.3L30 0475	2	R0.3	30	1.6	1.9	11	75	4
HSXR2020R0.5L6 0450	2	R0.5	6	1.6	1.9	11	50	4
HSXR2020R0.5L8 0450	2	R0.5	8	1.6	1.9	11	50	4
HSXR2020R0.5L10 0450	2	R0.5	10	1.6	1.9	11	50	4
HSXR2020R0.5L12 0450	2	R0.5	12	1.6	1.9	11	50	4
HSXR2020R0.5L16 0450	2	R0.5	16	1.6	1.9	11	50	4
HSXR2020R0.5L20 0460	2	R0.5	20	1.6	1.9	11	60	4
HSXR2020R0.5L25 0460	2	R0.5	25	1.6	1.9	11	60	4
HSXR2020R0.5L30 0475	2	R0.5	30	1.6	1.9	11	75	4
HSXR2025R0.2L10 0450	2.5	R0.2	10	2	2.4	11	50	4
HSXR2025R0.2L20 0460	2.5	R0.2	20	2	2.4	11	60	4
HSXR2025R0.2L30 0475	2.5	R0.2	30	2	2.4	11	75	4
HSXR2025R0.5L10 0450	2.5	R0.5	10	2	2.4	11	50	4
HSXR2025R0.5L20 0460	2.5	R0.5	20	2	2.4	11	60	4
HSXR2025R0.5L30 0475	2.5	R0.5	30	2	2.4	11	75	4
HSXR2030R0.1L8 0660	3	R0.1	8	2.4	2.9	11	60	6
HSXR2030R0.1L10 0660	3	R0.1	10	2.4	2.9	11	60	6
HSXR2030R0.1L12 0660	3	R0.1	12	2.4	2.9	11	60	6
HSXR2030R0.1L16 0660	3	R0.1	16	2.4	2.9	11	60	6
HSXR2030R0.1L20 0660	3	R0.1	20	2.4	2.9	11	60	6
HSXR2030R0.1L25 0675	3	R0.1	25	2.4	2.9	11	75	6
HSXR2030R0.1L30 0675	3	R0.1	30	2.4	2.9	11	75	6
HSXR2030R0.1L35 0675	3	R0.1	35	2.4	2.9	11	75	6
HSXR2030R0.1L40 06100	3	R0.1	40	2.4	2.9	11	100	6

HSXR2L 2-Flute Long Neck
Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXR2030R0.2L8 0660	3	R0.2	8	2.4	2.9	11	60	6
HSXR2030R0.2L10 0660	3	R0.2	10	2.4	2.9	11	60	6
HSXR2030R0.2L12 0660	3	R0.2	12	2.4	2.9	11	60	6
HSXR2030R0.2L16 0660	3	R0.2	16	2.4	2.9	11	60	6
HSXR2030R0.2L20 0660	3	R0.2	20	2.4	2.9	11	60	6
HSXR2030R0.2L25 0675	3	R0.2	25	2.4	2.9	11	75	6
HSXR2030R0.2L30 0675	3	R0.2	30	2.4	2.9	11	75	6
HSXR2030R0.2L35 0675	3	R0.2	35	2.4	2.9	11	75	6
HSXR2030R0.2L40 06100	3	R0.2	40	2.4	2.9	11	100	6
HSXR2030R0.3L8 0660	3	R0.3	8	2.4	2.9	11	60	6
HSXR2030R0.3L10 0660	3	R0.3	10	2.4	2.9	11	60	6
HSXR2030R0.3L12 0660	3	R0.3	12	2.4	2.9	11	60	6
HSXR2030R0.3L16 0660	3	R0.3	16	2.4	2.9	11	60	6
HSXR2030R0.3L20 0660	3	R0.3	20	2.4	2.9	11	60	6
HSXR2030R0.3L25 0675	3	R0.3	25	2.4	2.9	11	75	6
HSXR2030R0.3L30 0675	3	R0.3	30	2.4	2.9	11	75	6
HSXR2030R0.3L35 0675	3	R0.3	35	2.4	2.9	11	75	6
HSXR2030R0.3L40 06100	3	R0.3	40	2.4	2.9	11	100	6
HSXR2030R0.5L8 0660	3	R0.5	8	2.4	2.9	11	60	6
HSXR2030R0.5L10 0660	3	R0.5	10	2.4	2.9	11	60	6
HSXR2030R0.5L12 0660	3	R0.5	12	2.4	2.9	11	60	6
HSXR2030R0.5L16 0660	3	R0.5	16	2.4	2.9	11	60	6
HSXR2030R0.5L20 0660	3	R0.5	20	2.4	2.9	11	60	6
HSXR2030R0.5L25 0675	3	R0.5	25	2.4	2.9	11	75	6
HSXR2030R0.5L30 0675	3	R0.5	30	2.4	2.9	11	75	6
HSXR2030R0.5L35 0675	3	R0.5	35	2.4	2.9	11	75	6
HSXR2030R0.5L40 06100	3	R0.5	40	2.4	2.9	11	100	6
HSXR2040R0.1L10 0660	4	R0.1	10	3.2	3.9	11	60	6
HSXR2040R0.1L12 0660	4	R0.1	12	3.2	3.9	11	60	6
HSXR2040R0.1L16 0660	4	R0.1	16	3.2	3.9	11	60	6
HSXR2040R0.1L20 0660	4	R0.1	20	3.2	3.9	11	60	6
HSXR2040R0.1L25 0675	4	R0.1	25	3.2	3.9	11	75	6
HSXR2040R0.1L30 0675	4	R0.1	30	3.2	3.9	11	75	6
HSXR2040R0.1L35 0675	4	R0.1	35	3.2	3.9	11	75	6
HSXR2040R0.1L40 06100	4	R0.1	40	3.2	3.9	11	100	6
HSXR2040R0.1L45 06100	4	R0.1	45	3.2	3.9	11	100	6

HSXR2L 2-Flute Long Neck
Corner Radius End Mill



φD	D Tolerance
D<3	0~-0.010
3<D≤6	0~-0.012

Unit : mm

Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXR2040R0.1L50 06100	4	R0.1	50	3.2	3.9	11	100	6
HSXR2040R0.2L10 0660	4	R0.2	10	3.2	3.9	11	60	6
HSXR2040R0.2L12 0660	4	R0.2	12	3.2	3.9	11	60	6
HSXR2040R0.2L16 0660	4	R0.2	16	3.2	3.9	11	60	6
HSXR2040R0.2L20 0660	4	R0.2	20	3.2	3.9	11	60	6
HSXR2040R0.2L25 0675	4	R0.2	25	3.2	3.9	11	75	6
HSXR2040R0.2L30 0675	4	R0.2	30	3.2	3.9	11	75	6
HSXR2040R0.2L35 0675	4	R0.2	35	3.2	3.9	11	75	6
HSXR2040R0.2L40 06100	4	R0.2	40	3.2	3.9	11	100	6
HSXR2040R0.2L45 06100	4	R0.2	45	3.2	3.9	11	100	6
HSXR2040R0.2L50 06100	4	R0.2	50	3.2	3.9	11	100	6
HSXR2040R0.3L10 0660	4	R0.3	10	3.2	3.9	11	60	6
HSXR2040R0.3L12 0660	4	R0.3	12	3.2	3.9	11	60	6
HSXR2040R0.3L16 0660	4	R0.3	16	3.2	3.9	11	60	6
HSXR2040R0.3L20 0660	4	R0.3	20	3.2	3.9	11	60	6
HSXR2040R0.3L25 0675	4	R0.3	25	3.2	3.9	11	75	6
HSXR2040R0.3L30 0675	4	R0.3	30	3.2	3.9	11	75	6
HSXR2040R0.3L35 0675	4	R0.3	35	3.2	3.9	11	75	6
HSXR2040R0.3L40 06100	4	R0.3	40	3.2	3.9	11	100	6
HSXR2040R0.3L45 06100	4	R0.3	45	3.2	3.9	11	100	6
HSXR2040R0.3L50 06100	4	R0.3	50	3.2	3.9	11	100	6
HSXR2040R0.5L10 0660	4	R0.5	10	3.2	3.9	11	60	6
HSXR2040R0.5L12 0660	4	R0.5	12	3.2	3.9	11	60	6
HSXR2040R0.5L16 0660	4	R0.5	16	3.2	3.9	11	60	6
HSXR2040R0.5L20 0660	4	R0.5	20	3.2	3.9	11	60	6
HSXR2040R0.5L25 0675	4	R0.5	25	3.2	3.9	11	75	6
HSXR2040R0.5L30 0675	4	R0.5	30	3.2	3.9	11	75	6

HSXR2L 2-Flute Long Neck
Corner Radius End Mill

Unit : mm								
Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXR2040R0.5L35 0675	4	R0.5	35	3.2	3.9	11	75	6
HSXR2040R0.5L40 06100	4	R0.5	40	3.2	3.9	11	100	6
HSXR2040R0.5L45 06100	4	R0.5	45	3.2	3.9	11	100	6
HSXR2040R0.5L50 06100	4	R0.5	50	3.2	3.9	11	100	6
HSXR2040R1.0L10 0660	4	R1	10	3.2	3.9	11	60	6
HSXR2040R1.0L12 0660	4	R1	12	3.2	3.9	11	60	6
HSXR2040R1.0L16 0660	4	R1	16	3.2	3.9	11	60	6
HSXR2040R1.0L20 0660	4	R1	20	3.2	3.9	11	60	6
HSXR2040R1.0L25 0675	4	R1	25	3.2	3.9	11	75	6
HSXR2040R1.0L30 0675	4	R1	30	3.2	3.9	11	75	6
HSXR2040R1.0L35 0675	4	R1	35	3.2	3.9	11	75	6
HSXR2040R1.0L40 06100	4	R1	40	3.2	3.9	11	100	6
HSXR2040R1.0L45 06100	4	R1	45	3.2	3.9	11	100	6
HSXR2040R1.0L50 06100	4	R1	50	3.2	3.9	11	100	6
HSXR2060R0.5L18 0660	6	R0.5	18	4.8	5.85	-	60	6
HSXR2060R0.5L24 0675	6	R0.5	24	4.8	5.85	-	75	6
HSXR2060R0.5L36 0675	6	R0.5	36	4.8	5.85	-	75	6

HSXR4L 4-Flute Long Neck
Corner Radius End Mill



Unit : mm

Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	ϕD	CR	ℓ_1	ℓ	ϕd_1	$\gamma/^\circ$	L	ϕd
HSXR4008R0.05L2 0450	0.8	R0.05	2	0.6	0.76	12	50	4
HSXR4008R0.05L4 0450	0.8	R0.05	4	0.6	0.76	12	50	4
HSXR4008R0.05L6 0450	0.8	R0.05	6	0.6	0.76	12	50	4
HSXR4008R0.05L8 0450	0.8	R0.05	8	0.6	0.76	12	50	4
HSXR4008R0.05L10 0450	0.8	R0.05	10	0.6	0.76	12	50	4
HSXR4008R0.05L12 0450	0.8	R0.05	12	0.6	0.76	12	50	4
HSXR4008R0.1L2 0450	0.8	R0.1	2	0.6	0.76	12	50	4
HSXR4008R0.1L4 0450	0.8	R0.1	4	0.6	0.76	12	50	4
HSXR4008R0.1L6 0450	0.8	R0.1	6	0.6	0.76	12	50	4
HSXR4008R0.1L8 0450	0.8	R0.1	8	0.6	0.76	12	50	4
HSXR4008R0.1L10 0450	0.8	R0.1	10	0.6	0.76	12	50	4
HSXR4008R0.1L12 0450	0.8	R0.1	12	0.6	0.76	12	50	4
HSXR4010R0.05L4 0450	1	R0.05	4	0.75	0.95	12	50	4
HSXR4010R0.05L6 0450	1	R0.05	6	0.75	0.95	12	50	4
HSXR4010R0.05L8 0450	1	R0.05	8	0.75	0.95	12	50	4
HSXR4010R0.05L10 0450	1	R0.05	10	0.75	0.95	12	50	4
HSXR4010R0.05L12 0450	1	R0.05	12	0.75	0.95	12	50	4
HSXR4010R0.05L16 0450	1	R0.05	16	0.75	0.95	12	50	4
HSXR4010R0.05L20 0460	1	R0.05	20	0.75	0.95	12	60	4
HSXR4010R0.1L4 0450	1	R0.1	4	0.75	0.95	12	50	4
HSXR4010R0.1L6 0450	1	R0.1	6	0.75	0.95	12	50	4
HSXR4010R0.1L8 0450	1	R0.1	8	0.75	0.95	12	50	4
HSXR4010R0.1L10 0450	1	R0.1	10	0.75	0.95	12	50	4
HSXR4010R0.1L12 0450	1	R0.1	12	0.75	0.95	12	50	4
HSXR4010R0.1L16 0450	1	R0.1	16	0.75	0.95	12	50	4
HSXR4010R0.1L20 0460	1	R0.1	20	0.75	0.95	12	60	4

HSXR4L 4-Flute Long Neck
Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	ϕD	CR	ℓ_1	ℓ	ϕd_1	$\gamma/^\circ$	L	ϕd
HSXR4010R0.2L4 0450	1	R0.2	4	0.75	0.95	12	50	4
HSXR4010R0.2L6 0450	1	R0.2	6	0.75	0.95	12	50	4
HSXR4010R0.2L8 0450	1	R0.2	8	0.75	0.95	12	50	4
HSXR4010R0.2L10 0450	1	R0.2	10	0.75	0.95	12	50	4
HSXR4010R0.2L12 0450	1	R0.2	12	0.75	0.95	12	50	4
HSXR4010R0.2L16 0450	1	R0.2	16	0.75	0.95	12	50	4
HSXR4010R0.2L20 0460	1	R0.2	20	0.75	0.95	12	60	4
HSXR4010R0.3L4 0450	1	R0.3	4	0.75	0.95	12	50	4
HSXR4010R0.3L6 0450	1	R0.3	6	0.75	0.95	12	50	4
HSXR4010R0.3L8 0450	1	R0.3	8	0.75	0.95	12	50	4
HSXR4010R0.3L10 0450	1	R0.3	10	0.75	0.95	12	50	4
HSXR4010R0.3L12 0450	1	R0.3	12	0.75	0.95	12	50	4
HSXR4010R0.3L16 0450	1	R0.3	16	0.75	0.95	12	50	4
HSXR4010R0.3L20 0460	1	R0.3	20	0.75	0.95	12	60	4
HSXR4012R0.05L5 0450	1.2	R0.05	5	1	1.14	12	50	4
HSXR4012R0.05L10 0450	1.2	R0.05	10	1	1.14	12	50	4
HSXR4012R0.1L5 0450	1.2	R0.1	5	1	1.14	12	50	4
HSXR4012R0.1L10 0450	1.2	R0.1	10	1	1.14	12	50	4
HSXR4012R0.2L5 0450	1.2	R0.2	5	1	1.14	12	50	4
HSXR4012R0.2L10 0450	1.2	R0.2	10	1	1.14	12	50	4
HSXR4012R0.3L5 0450	1.2	R0.3	5	1	1.14	12	50	4
HSXR4012R0.3L10 0450	1.2	R0.3	10	1	1.14	12	50	4
HSXR4015R0.05L6 0450	1.5	R0.05	6	1.2	1.42	11	50	4
HSXR4015R0.05L8 0450	1.5	R0.05	8	1.2	1.42	11	50	4
HSXR4015R0.05L10 0450	1.5	R0.05	10	1.2	1.42	11	50	4
HSXR4015R0.05L12 0450	1.5	R0.05	12	1.2	1.42	11	50	4
HSXR4015R0.05L16 0450	1.5	R0.05	16	1.2	1.42	11	50	4
HSXR4015R0.05L20 0460	1.5	R0.05	20	1.2	1.42	11	60	4
HSXR4015R0.1L4 0450	1.5	R0.1	4	1.2	1.42	11	50	4
HSXR4015R0.1L6 0450	1.5	R0.1	6	1.2	1.42	11	50	4
HSXR4015R0.1L8 0450	1.5	R0.1	8	1.2	1.42	11	50	4
HSXR4015R0.1L10 0450	1.5	R0.1	10	1.2	1.42	11	50	4
HSXR4015R0.1L12 0450	1.5	R0.1	12	1.2	1.42	11	50	4
HSXR4015R0.1L16 0450	1.5	R0.1	16	1.2	1.42	11	50	4

HSXR4L 4-Flute Long Neck
Corner Radius End Mill



ϕD	D Tolerance
$D < 3$	0 ~ 0.010
$3 < D < 6$	0 ~ 0.012

Unit : mm

Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	ϕD	CR	ℓ_1	ℓ	ϕd_1	$\gamma / ^\circ$	L	ϕd
HSXR4015R0.1L20 0460	1.5	R0.1	20	1.2	1.42	11	60	4
HSXR4015R0.2L4 0450	1.5	R0.2	4	1.2	1.42	11	50	4
HSXR4015R0.2L6 0450	1.5	R0.2	6	1.2	1.42	11	50	4
HSXR4015R0.2L8 0450	1.5	R0.2	8	1.2	1.42	11	50	4
HSXR4015R0.2L10 0450	1.5	R0.2	10	1.2	1.42	11	50	4
HSXR4015R0.2L12 0450	1.5	R0.2	12	1.2	1.42	11	50	4
HSXR4015R0.2L16 0450	1.5	R0.2	16	1.2	1.42	11	50	4
HSXR4015R0.2L20 0460	1.5	R0.2	20	1.2	1.42	11	60	4
HSXR4015R0.3L4 0450	1.5	R0.3	4	1.2	1.42	11	50	4
HSXR4015R0.3L6 0450	1.5	R0.3	6	1.2	1.42	11	50	4
HSXR4015R0.3L8 0450	1.5	R0.3	8	1.2	1.42	11	50	4
HSXR4015R0.3L10 0450	1.5	R0.3	10	1.2	1.42	11	50	4
HSXR4015R0.3L12 0450	1.5	R0.3	12	1.2	1.42	11	50	4
HSXR4015R0.3L16 0450	1.5	R0.3	16	1.2	1.42	11	50	4
HSXR4015R0.3L20 0460	1.5	R0.3	20	1.2	1.42	11	60	4
HSXR4020R0.05L8 0450	2	R0.05	8	1.6	1.9	11	50	4
HSXR4020R0.05L10 0450	2	R0.05	10	1.6	1.9	11	50	4
HSXR4020R0.05L12 0450	2	R0.05	12	1.6	1.9	11	50	4
HSXR4020R0.05L16 0450	2	R0.05	16	1.6	1.9	11	50	4
HSXR4020R0.05L20 0460	2	R0.05	20	1.6	1.9	11	60	4
HSXR4020R0.05L25 0460	2	R0.05	25	1.6	1.9	11	60	4
HSXR4020R0.05L30 0475	2	R0.05	30	1.6	1.9	11	75	4
HSXR4020R0.1L4 0450	2	R0.1	4	1.6	1.9	11	50	4
HSXR4020R0.1L6 0450	2	R0.1	6	1.6	1.9	11	50	4
HSXR4020R0.1L8 0450	2	R0.1	8	1.6	1.9	11	50	4
HSXR4020R0.1L10 0450	2	R0.1	10	1.6	1.9	11	50	4

HSXR4L 4-Flute Long Neck
Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	ϕD	CR	ℓ_1	ℓ	ϕd_1	$\gamma / ^\circ$	L	ϕd
HSXR4020R0.1L12 0450	2	R0.1	12	1.6	1.9	11	50	4
HSXR4020R0.1L16 0450	2	R0.1	16	1.6	1.9	11	50	4
HSXR4020R0.1L20 0460	2	R0.1	20	1.6	1.9	11	60	4
HSXR4020R0.1L25 0460	2	R0.1	25	1.6	1.9	11	60	4
HSXR4020R0.1L30 0475	2	R0.1	30	1.6	1.9	11	75	4
HSXR4020R0.2L4 0450	2	R0.2	4	1.6	1.9	11	50	4
HSXR4020R0.2L6 0450	2	R0.2	6	1.6	1.9	11	50	4
HSXR4020R0.2L8 0450	2	R0.2	8	1.6	1.9	11	50	4
HSXR4020R0.2L10 0450	2	R0.2	10	1.6	1.9	11	50	4
HSXR4020R0.2L12 0450	2	R0.2	12	1.6	1.9	11	50	4
HSXR4020R0.2L16 0450	2	R0.2	16	1.6	1.9	11	50	4
HSXR4020R0.2L20 0460	2	R0.2	20	1.6	1.9	11	60	4
HSXR4020R0.2L25 0460	2	R0.2	25	1.6	1.9	11	60	4
HSXR4020R0.2L30 0475	2	R0.2	30	1.6	1.9	11	75	4
HSXR4020R0.3L6 0450	2	R0.3	6	1.6	1.9	11	50	4
HSXR4020R0.3L8 0450	2	R0.3	8	1.6	1.9	11	50	4
HSXR4020R0.3L10 0450	2	R0.3	10	1.6	1.9	11	50	4
HSXR4020R0.3L12 0450	2	R0.3	12	1.6	1.9	11	50	4
HSXR4020R0.3L16 0450	2	R0.3	16	1.6	1.9	11	50	4
HSXR4020R0.3L20 0460	2	R0.3	20	1.6	1.9	11	60	4
HSXR4020R0.3L25 0460	2	R0.3	25	1.6	1.9	11	60	4
HSXR4020R0.3L30 0475	2	R0.3	30	1.6	1.9	11	75	4
HSXR4020R0.5L6 0450	2	R0.5	6	1.6	1.9	11	50	4
HSXR4020R0.5L8 0450	2	R0.5	8	1.6	1.9	11	50	4
HSXR4020R0.5L10 0450	2	R0.5	10	1.6	1.9	11	50	4
HSXR4020R0.5L12 0450	2	R0.5	12	1.6	1.9	11	50	4
HSXR4020R0.5L16 0450	2	R0.5	16	1.6	1.9	11	50	4
HSXR4020R0.5L20 0460	2	R0.5	20	1.6	1.9	11	60	4
HSXR4020R0.5L25 0460	2	R0.5	25	1.6	1.9	11	60	4
HSXR4020R0.5L30 0475	2	R0.5	30	1.6	1.9	11	75	4
HSXR4025R0.1L10 0450	2.5	R0.1	10	2	2.4	11	50	4
HSXR4025R0.1L20 0460	2.5	R0.1	20	2	2.4	11	60	4
HSXR4025R0.1L30 0475	2.5	R0.1	30	2	2.4	11	75	4
HSXR4025R0.2L10 0450	2.5	R0.2	10	2	2.4	11	50	4

HSXR4L 4-Flute Long Neck
Corner Radius End Mill



∅ D	D Tolerance
D<3	0~0.010
3<D≤6	0~0.012

Unit : mm

Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	∅D	CR	ℓ ₁	ℓ	∅d ₁	γ/°	L	∅d
HSXR4025R0.2L20 0460	2.5	R0.2	20	2	2.4	11	60	4
HSXR4025R0.2L30 0475	2.5	R0.2	30	2	2.4	11	75	4
HSXR4025R0.3L10 0450	2.5	R0.3	10	2	2.4	11	50	4
HSXR4025R0.3L20 0460	2.5	R0.3	20	2	2.4	11	60	4
HSXR4025R0.3L30 0475	2.5	R0.3	30	2	2.4	11	75	4
HSXR4025R0.5L10 0450	2.5	R0.5	10	2	2.4	11	50	4
HSXR4025R0.5L20 0460	2.5	R0.5	20	2	2.4	11	60	4
HSXR4025R0.5L30 0475	2.5	R0.5	30	2	2.4	11	75	4
HSXR4030R0.1L10 0450	3	R0.1	10	2.4	2.9	11	50	4
HSXR4030R0.1L10 0660	3	R0.1	10	2.4	2.9	11	60	6
HSXR4030R0.1L12 0450	3	R0.1	12	2.4	2.9	11	50	4
HSXR4030R0.1L12 0660	3	R0.1	12	2.4	2.9	11	60	6
HSXR4030R0.1L16 0450	3	R0.1	16	2.4	2.9	11	50	4
HSXR4030R0.1L16 0660	3	R0.1	16	2.4	2.9	11	60	6
HSXR4030R0.1L20 0660	3	R0.1	20	2.4	2.9	11	60	6
HSXR4030R0.1L25 0675	3	R0.1	25	2.4	2.9	11	75	6
HSXR4030R0.1L30 0675	3	R0.1	30	2.4	2.9	11	75	6
HSXR4030R0.1L35 0675	3	R0.1	35	2.4	2.9	11	75	6
HSXR4030R0.1L40 06100	3	R0.1	40	2.4	2.9	11	100	6
HSXR4030R0.2L8 0450	3	R0.2	8	2.4	2.9	11	50	4
HSXR4030R0.2L10 0450	3	R0.2	10	2.4	2.9	11	50	4
HSXR4030R0.2L10 0660	3	R0.2	10	2.4	2.9	11	60	6
HSXR4030R0.2L12 0450	3	R0.2	12	2.4	2.9	11	50	4
HSXR4030R0.2L12 0660	3	R0.2	12	2.4	2.9	11	60	6
HSXR4030R0.2L16 0450	3	R0.2	16	2.4	2.9	11	50	4
HSXR4030R0.2L16 0660	3	R0.2	16	2.4	2.9	11	60	6

HSXR4L 4-Flute Long Neck
Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	∅D	CR	ℓ ₁	ℓ	∅d ₁	γ/°	L	∅d
HSXR4030R0.2L20 0660	3	R0.2	20	2.4	2.9	11	60	6
HSXR4030R0.2L25 0675	3	R0.2	25	2.4	2.9	11	75	6
HSXR4030R0.2L30 0675	3	R0.2	30	2.4	2.9	11	75	6
HSXR4030R0.2L35 0675	3	R0.2	35	2.4	2.9	11	75	6
HSXR4030R0.2L40 06100	3	R0.2	40	2.4	2.9	11	100	6
HSXR4030R0.3L10 0450	3	R0.3	10	2.4	2.9	11	50	4
HSXR4030R0.3L10 0660	3	R0.3	10	2.4	2.9	11	60	6
HSXR4030R0.3L12 0450	3	R0.3	12	2.4	2.9	11	50	4
HSXR4030R0.3L12 0660	3	R0.3	12	2.4	2.9	11	60	6
HSXR4030R0.3L16 0450	3	R0.3	16	2.4	2.9	11	50	4
HSXR4030R0.3L16 0660	3	R0.3	16	2.4	2.9	11	60	6
HSXR4030R0.3L20 0660	3	R0.3	20	2.4	2.9	11	60	6
HSXR4030R0.3L25 0675	3	R0.3	25	2.4	2.9	11	75	6
HSXR4030R0.3L30 0675	3	R0.3	30	2.4	2.9	11	75	6
HSXR4030R0.3L35 0675	3	R0.3	35	2.4	2.9	11	75	6
HSXR4030R0.3L40 06100	3	R0.3	40	2.4	2.9	11	100	6
HSXR4030R0.5L8 0450	3	R0.5	8	2.4	2.9	11	50	4
HSXR4030R0.5L10 0450	3	R0.5	10	2.4	2.9	11	50	4
HSXR4030R0.5L10 0660	3	R0.5	10	2.4	2.9	11	60	6
HSXR4030R0.5L12 0450	3	R0.5	12	2.4	2.9	11	50	4
HSXR4030R0.5L12 0660	3	R0.5	12	2.4	2.9	11	60	6
HSXR4030R0.5L16 0450	3	R0.5	16	2.4	2.9	11	50	4
HSXR4030R0.5L16 0660	3	R0.5	16	2.4	2.9	11	60	6
HSXR4030R0.5L20 0660	3	R0.5	20	2.4	2.9	11	60	6
HSXR4030R0.5L25 0675	3	R0.5	25	2.4	2.9	11	75	6
HSXR4030R0.5L30 0675	3	R0.5	30	2.4	2.9	11	75	6
HSXR4030R0.5L35 0675	3	R0.5	35	2.4	2.9	11	75	6
HSXR4030R0.5L40 06100	3	R0.5	40	2.4	2.9	11	100	6
HSXR4040R0.1L12 0660	4	R0.1	12	3.2	3.9	11	60	6
HSXR4040R0.1L16 0660	4	R0.1	16	3.2	3.9	11	60	6
HSXR4040R0.1L20 0660	4	R0.1	20	3.2	3.9	11	60	6
HSXR4040R0.1L25 0675	4	R0.1	25	3.2	3.9	11	75	6
HSXR4040R0.1L30 0675	4	R0.1	30	3.2	3.9	11	75	6
HSXR4040R0.1L35 0675	4	R0.1	35	3.2	3.9	11	75	6

HSXR4L 4-Flute Long Neck
Corner Radius End Mill



Unit : mm

Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXR4040R0.1L40 06100	4	R0.1	40	3.2	3.9	11	100	6
HSXR4040R0.1L45 06100	4	R0.1	45	3.2	3.9	11	100	6
HSXR4040R0.1L50 06100	4	R0.1	50	3.2	3.9	11	100	6
HSXR4040R0.2L12 0660	4	R0.2	12	3.2	3.9	11	60	6
HSXR4040R0.2L16 0660	4	R0.2	16	3.2	3.9	11	60	6
HSXR4040R0.2L20 0660	4	R0.2	20	3.2	3.9	11	60	6
HSXR4040R0.2L25 0675	4	R0.2	25	3.2	3.9	11	75	6
HSXR4040R0.2L30 0675	4	R0.2	30	3.2	3.9	11	75	6
HSXR4040R0.2L35 0675	4	R0.2	35	3.2	3.9	11	75	6
HSXR4040R0.2L40 06100	4	R0.2	40	3.2	3.9	11	100	6
HSXR4040R0.2L45 06100	4	R0.2	45	3.2	3.9	11	100	6
HSXR4040R0.2L50 06100	4	R0.2	50	3.2	3.9	11	100	6
HSXR4040R0.3L12 0660	4	R0.3	12	3.2	3.9	11	60	6
HSXR4040R0.3L16 0660	4	R0.3	16	3.2	3.9	11	60	6
HSXR4040R0.3L20 0660	4	R0.3	20	3.2	3.9	11	60	6
HSXR4040R0.3L25 0675	4	R0.3	25	3.2	3.9	11	75	6
HSXR4040R0.3L30 0675	4	R0.3	30	3.2	3.9	11	75	6
HSXR4040R0.3L35 0675	4	R0.3	35	3.2	3.9	11	75	6
HSXR4040R0.3L40 06100	4	R0.3	40	3.2	3.9	11	100	6
HSXR4040R0.3L45 06100	4	R0.3	45	3.2	3.9	11	100	6
HSXR4040R0.3L50 06100	4	R0.3	50	3.2	3.9	11	100	6
HSXR4040R0.5L12 0660	4	R0.5	12	3.2	3.9	11	60	6
HSXR4040R0.5L16 0660	4	R0.5	16	3.2	3.9	11	60	6
HSXR4040R0.5L20 0660	4	R0.5	20	3.2	3.9	11	60	6

HSXR4L 4-Flute Long Neck
Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Under Neck Length	Length of Cut	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ ₁	ℓ	φd ₁	γ/°	L	φd
HSXR4040R0.5L25 0675	4	R0.5	25	3.2	3.9	11	75	6
HSXR4040R0.5L30 0675	4	R0.5	30	3.2	3.9	11	75	6
HSXR4040R0.5L35 0675	4	R0.5	35	3.2	3.9	11	75	6
HSXR4040R0.5L40 06100	4	R0.5	40	3.2	3.9	11	100	6
HSXR4040R0.5L45 06100	4	R0.5	45	3.2	3.9	11	100	6
HSXR4040R0.5L50 06100	4	R0.5	50	3.2	3.9	11	100	6
HSXR4040R1.0L12 0660	4	R1	12	3.2	3.9	11	60	6
HSXR4040R1.0L16 0660	4	R1	16	3.2	3.9	11	60	6
HSXR4040R1.0L20 0660	4	R1	20	3.2	3.9	11	60	6
HSXR4040R1.0L25 0675	4	R1	25	3.2	3.9	11	75	6
HSXR4040R1.0L30 0675	4	R1	30	3.2	3.9	11	75	6
HSXR4040R1.0L35 0675	4	R1	35	3.2	3.9	11	75	6
HSXR4040R1.0L40 06100	4	R1	40	3.2	3.9	11	100	6
HSXR4040R1.0L45 06100	4	R1	45	3.2	3.9	11	100	6
HSXR4040R1.0L50 06100	4	R1	50	3.2	3.9	11	100	6

Cutting Parameter

HSXB 2-Flute Ball End Mill/ HSBP 2-Flute Power Type Ball End Mill

Workpiece	Pre-Hardened Steels (35-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
HSXB2001	40000	100	0.005	0.005	40000	80	0.003	0.005	40000	50	0.003	0.004
HSXB20015	40000	300	0.007	0.008	40000	100	0.003	0.005	40000	60	0.003	0.004
HSXB2002	35000	384	0.01	0.01	35000	300	0.01	0.01	35000	100	0.005	0.008
HSXB2003	30000	500	0.01	0.01	30000	400	0.01	0.01	30000	200	0.008	0.01
HSXB2004	28000	600	0.011	0.013	28000	600	0.011	0.013	26600	600	0.008	0.013
HSXB2005	25000	720	0.02	0.03	25000	720	0.01	0.013	23750	720	0.008	0.02
HSXB2006	22000	800	0.03	0.03	22000	800	0.03	0.03	20900	800	0.03	0.03
HSXB2008	20000	1000	0.03	0.03	20000	1000	0.03	0.04	19000	1000	0.03	0.03
HSXB2010	18000	1200	0.03	0.05	18000	1200	0.03	0.04	17100	1200	0.03	0.05
HSXB2015	16000	1500	0.03	0.05	16000	500	0.04	0.05	15200	1500	0.03	0.05
HSXB2020	14800	1560	0.04	0.05	14800	560	0.04	0.06	14060	1560	0.04	0.06
HSXB2025	14400	1680	0.04	0.06	14400	1680	0.04	0.06	13680	1680	0.04	0.06
HSXB2030	13000	2000	0.05	0.08	13000	2000	0.04	0.08	12350	2000	0.04	0.08
HSXB2040	12000	2400	0.05	0.1	12000	2400	0.05	0.1	11400	2400	0.05	0.1
HSXB2050	10000	2500	0.05	0.1	10000	2500	0.05	0.1	9500	2500	0.05	0.1
HSXB2060	9000	2800	0.05	0.15	9000	2800	0.05	0.12	8550	2800	0.05	0.1
HSXB2080	8000	3000	0.05	0.2	8000	3000	0.05	0.15	7600	3000	0.05	0.15
HSXB2100	7200	3000	0.08	0.25	7200	3000	0.08	0.2	6840	3000	0.08	0.25
HSXB2120	6400	3000	0.1	0.25	6400	3000	0.08	0.25	6080	3000	0.1	0.25

Cutting Parameter

HSXEF 4-Flute End Mill-45°

Workpiece	Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
HSXEF4010	15000	600	2	0.05	12000	480	2	0.03	10500	200	1	0.02
HSXEF4012	13500	660	2.4	0.05	10800	528	2.4	0.03	9450	200	1.2	0.02
HSXEF4015	12000	720	3	0.05	9600	576	3	0.03	8400	250	1.5	0.02
HSXEF4016	11800	750	3.2	0.05	9440	600	3.2	0.03	8260	250	1.6	0.02
HSXEF4020	10000	800	4	0.05	8000	640	4	0.03	7000	300	2	0.03
HSXEF4025	8500	850	5	0.05	6800	680	5	0.03	5950	350	2.5	0.03
HSXEF4030	7500	900	6	0.05	6000	720	6	0.03	5250	400	3	0.03
HSXEF4040	6800	1000	8	0.1	5440	800	8	0.03	4760	440	4	0.03
HSXEF4050	6000	1200	10	0.1	4800	960	10	0.05	4200	500	5	0.05
HSXEF4060	5000	1500	12	0.1	4000	1200	12	0.05	3500	550	6	0.05
HSXEF4080	4200	2000	16	0.1	3360	1600	16	0.05	2940	600	8	0.05
HSXEF4100	4000	2500	20	0.1	3200	2000	20	0.05	2800	600	10	0.06
HSXEF4120	3800	3000	24	0.1	3040	2400	24	0.1	2660	500	12	0.1
HSXEF4140	3500	2600	28	0.1	2800	2080	28	0.1	2450	500	14	0.1
HSXEF4160	3200	2500	32	0.1	2560	2000	32	0.1	2240	500	16	0.1
HSXEF4200	3000	2000	40	0.1	2400	1600	40	0.1	2100	500	20	0.1

Cutting Parameter

HSXEG 6-Flute End Mill-52°

Workpiece	Pre-Hardened Steels (35-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
	Type No.	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm
HSXEG6060	4500	2420	15	0.2	4000	870	15	0.1	3200	700	15	0.05
HSXEG6080	4000	2400	18	0.2	3500	900	18	0.1	2800	700	18	0.05
HSXEG6100	3500	2300	25	0.2	2800	850	25	0.1	2240	680	25	0.05
HSXEG6120	3000	2000	30	0.2	2500	800	30	0.1	2000	650	30	0.05
HSXEG6160	2400	2000	35	0.2	2200	750	35	0.1	1760	650	35	0.05
HSXEG6200	2200	1800	40	0.2	2000	700	40	0.1	1600	600	40	0.05

Cutting Parameter

HSXR 4-Flute Corner Radius End Mill for Side Milling (Face Rough Milling)

Workpiece	Pre-Hardened Steels (35-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
HSXR4008R_	28000	1450	0.02	0.56	25000	1305	0.014	0.48	23000	420	0.012	0.4
HSXR4009R_	25000	1500	0.05	0.63	25000	1350	0.03	0.54	20000	450	0.02	0.45
HSXR4010R_	18000	1500	0.05	0.7	16000	1350	0.05	0.6	15000	500	0.03	0.5
HSXR4015R_	16155	1700	0.05	1.05	14360	1530	0.05	0.9	13500	600	0.03	0.75
HSXR4020R_	14301	2000	0.1	1.4	12712	1800	0.1	1.2	10000	800	0.05	1
HSXR4030R_	11056	2200	0.1	2.1	9828	1980	0.1	1.8	7200	800	0.05	1.5
HSXR4040R_	8712	2500	0.2	2.8	7744	2250	0.2	2.4	6000	1000	0.08	2
HSXR4060R_	6543	2800	0.2	4.2	5808	2520	0.2	3.6	4500	1200	0.08	3
HSXR4080R_	5445	3000	0.2	5.6	4840	2700	0.2	4.8	4000	1500	0.1	4
HSXR4100R_	4900	3600	0.2	7	4356	3200	0.2	6	3500	1800	0.1	5
HSXR4120R_	4356	3600	0.2	8.4	3872	3200	0.2	7.2	3200	2000	0.15	6

HSXR 4-Flute Corner Radius End Mill for Planning.

Workpiece	Pre-Hardened Steels (35-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
	Type No.	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm
HSXR4020R_	12000	360	0.03	1	10000	300	0.03	1	8800	200	0.02	1
HSXR4030R_	9000	480	0.03	1.5	8000	400	0.03	1.5	7200	300	0.02	1.5
HSXR4040R_	7500	600	0.05	2	7000	500	0.05	2	6000	400	0.03	2
HSXR4060R_	6600	660	0.08	3.5	6000	600	0.05	3.5	4500	500	0.04	3.5
HSXR4080R_	5500	880	0.08	4.5	5000	800	0.05	4.5	4200	600	0.04	4.5
HSXR4100R_	4950	1100	0.08	6	4500	1000	0.06	6	2800	700	0.05	6
HSXR4120R_	4400	1320	0.08	8	4000	1200	0.06	8	2400	800	0.05	8

Cutting Parameter

HSXR 4-Flute Corner Radius End Mill for Side Milling (Precision Machining)

Workpiece	Pre-Hardened Steels (35-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm
HSXR4008R_	28000	1450	0.03	0.05	25000	1305	0.03	0.03	23000	420	0.03	0.02
HSXR4009R_	25000	1500	0.05	0.05	25000	1350	0.05	0.03	20000	450	0.05	0.02
HSXR4010R_	18000	1500	0.05	0.05	16000	1350	0.05	0.05	15000	500	0.05	0.02
HSXR4015R_	16155	1700	0.05	0.05	14360	1530	0.05	0.05	13500	600	0.05	0.02
HSXR4025R_	15200	1880	0.05	0.1	13500	1680	0.05	0.08	12000	700	0.05	0.02
HSXR4020R_	14301	2000	0.1	0.1	12712	1800	0.1	0.08	10000	800	0.1	0.03
HSXR4030R_	11056	2200	0.1	0.1	9828	1980	0.1	0.08	7200	800	0.1	0.03
HSXR4040R_	8712	2500	0.2	0.1	7744	2250	0.2	0.1	6000	1000	0.2	0.05
HSXR4060R_	6543	2800	0.2	0.2	5808	2520	0.2	0.1	4500	1200	0.2	0.05
HSXR4080R_	5445	3000	0.2	0.2	4840	2700	0.2	0.1	4000	1500	0.2	0.05
HSXR4100R_	4900	3600	0.2	0.2	4356	3200	0.2	0.1	3500	1800	0.2	0.05
HSXR4120R_	4356	3600	0.2	0.2	3872	3200	0.2	0.1	3200	2000	0.2	0.05

Cutting Parameter

HSXRP 4-Flute Corner Radius End Mill

Workpiece	Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
HSXRP4008R_	28000	1450	0.03	0.05	25000	1305	0.03	0.03	23000	420	0.03	0.02
HSXRP4009R_	25000	1500	0.05	0.05	25000	1350	0.05	0.03	20000	450	0.05	0.02
HSXRP4010R_	18000	1500	0.05	0.05	16000	1350	0.05	0.05	15000	500	0.05	0.02
HSXRP4015R_	16155	1700	0.05	0.05	14360	1530	0.05	0.05	13500	600	0.05	0.02
HSXRP4025R_	15200	1880	0.05	0.1	13500	1680	0.05	0.08	12000	700	0.05	0.02
HSXRP4020R_	14301	2000	0.1	0.1	12712	1800	0.1	0.08	10000	800	0.1	0.03
HSXRP4030R_	11056	2200	0.1	0.1	9828	1980	0.1	0.08	7200	800	0.1	0.03
HSXRP4040R_	8712	2500	0.2	0.1	7744	2250	0.2	0.1	6000	1000	0.2	0.05
HSXRP4060R_	6543	2800	0.2	0.2	5808	2520	0.2	0.1	4500	1200	0.2	0.05
HSXRP4080R_	5445	3000	0.2	0.2	4840	2700	0.2	0.1	4000	1500	0.2	0.05
HSXRP4100R_	4900	3600	0.2	0.2	4356	3200	0.2	0.1	3500	1800	0.2	0.05
HSXRP4120R_	4356	3600	0.2	0.2	3872	3200	0.2	0.1	3200	2000	0.2	0.05

Cutting Parameter

HSXRT 4-Flute Power Corner Radius End Mill-Intermediate Speed Semi-finishing

Workpiece	Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
HSXRT4030R_	11056	2500	0.1	0.1	9828	2500	0.1	0.15	7200	1200	0.1	0.08
HSXRT4040R_	8712	2800	0.15	0.15	7744	2800	0.1	0.2	6000	2000	0.1	0.1
HSXRT4050R_	7200	3000	0.2	0.2	6400	3000	0.1	0.2	5600	2500	0.1	0.1
HSXRT4060R_	6543	3200	0.2	0.5	5808	3200	0.2	0.2	4500	3000	0.1	0.1
HSXRT4080R_	5445	3500	0.2	0.5	5000	3500	0.2	0.2	4000	3000	0.1	0.1
HSXRT4100R_	4900	4000	0.3	0.5	4500	4000	0.2	0.2	3500	3600	0.1	0.1
HSXRT4120R_	4356	4000	0.3	0.5	4000	4000	0.2	0.2	3200	3600	0.1	0.1

HSXRT 4-Flute Power Corner Radius End Mill-High Speed Semi-finishing

Workpiece	Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
HSXRT4060R_	12000	8000	0.2	0.5	10000	8000	0.15	0.2	9000	6000	0.1	0.1
HSXRT4080R_	10000	10000	0.2	0.2	8000	8000	0.15	0.2	8000	8000	0.1	0.1
HSXRT4100R_	8500	10000	0.2	0.2	7200	8000	0.15	0.2	7200	8000	0.1	0.1
HSXRT4120R_	8000	8000	0.2	0.2	7000	8000	0.15	0.2	7000	8000	0.1	0.1

Cutting Parameter

HSXB2L 2-Flute Long Neck BallEnd Mill

Workpiece	Type No.	Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
R0.05	0.2	40000	120	0.003	0.005	40000	100	0.002	0.005	40000	70	0.002	0.003
	0.3	40000	100	0.003	0.005	40000	70	0.002	0.005	40000	50	0.002	0.003
	0.5	40000	70	0.002	0.003	40000	50	0.001	0.003	40000	30	0.001	0.002
	0.75	40000	70	0.002	0.003	40000	50	0.001	0.003	40000	30	0.001	0.002
	1	40000	50	0.002	0.003	40000	30	0.001	0.003	40000	30	0.001	0.002
R0.075	0.3	40000	180	0.003	0.005	40000	150	0.002	0.005	40000	100	0.002	0.003
	0.5	40000	150	0.003	0.005	40000	120	0.002	0.005	40000	70	0.002	0.003
	0.75	40000	70	0.002	0.003	40000	50	0.001	0.003	40000	30	0.001	0.002
	1	40000	70	0.002	0.003	40000	50	0.001	0.003	40000	30	0.001	0.002
	1.5	40000	50	0.002	0.003	40000	30	0.001	0.003	40000	30	0.001	0.002
R0.1	0.3	40000	350	0.01	0.01	40000	300	0.006	0.005	36000	200	0.003	0.003
	0.5	40000	320	0.008	0.01	39600	280	0.005	0.005	36000	180	0.003	0.003
	0.75	40000	280	0.005	0.01	39600	200	0.003	0.005	36000	150	0.002	0.003
	1	40000	250	0.003	0.005	39600	160	0.002	0.003	36000	120	0.001	0.002
	1.25	40000	180	0.003	0.005	39600	140	0.002	0.003	36000	100	0.001	0.002
	1.5	40000	150	0.003	0.005	39600	120	0.002	0.003	36000	80	0.001	0.002
	1.75	40000	120	0.002	0.003	39600	100	0.001	0.002	36000	60	0.001	0.002
	2	40000	100	0.002	0.003	39600	80	0.001	0.002	36000	50	0.001	0.001
	2.5	40000	70	0.001	0.002	39600	60	0.001	0.001	36000	40	0.001	0.001
	3	40000	50	0.001	0.001	39600	40	0.001	0.001	36000	30	0.001	0.001
	0.5	36300	350	0.01	0.015	33000	300	0.007	0.01	30000	280	0.003	0.005
	0.6	36300	350	0.007	0.01	33000	300	0.005	0.007	30000	250	0.003	0.005
	0.75	36300	330	0.007	0.01	33000	280	0.005	0.007	30000	230	0.003	0.005
	1	36300	320	0.007	0.01	33000	250	0.005	0.007	30000	200	0.003	0.005
	1.25	36300	280	0.005	0.007	33000	200	0.003	0.005	30000	160	0.002	0.003
R0.15	1.5	36300	230	0.005	0.007	33000	180	0.003	0.005	30000	120	0.002	0.003
	1.75	36300	180	0.003	0.005	33000	150	0.002	0.003	30000	100	0.002	0.002
	2	36300	150	0.003	0.005	33000	120	0.002	0.003	30000	90	0.002	0.002
	2.25	36300	120	0.002	0.003	33000	100	0.001	0.002	30000	80	0.001	0.001
	2.5	36300	100	0.002	0.003	33000	80	0.001	0.002	30000	70	0.001	0.001
	3	36300	80	0.001	0.003	33000	70	0.001	0.002	30000	60	0.001	0.001
	3.5	36300	70	0.001	0.002	33000	60	0.001	0.001	30000	50	0.001	0.001

Cutting Parameter

HSXB2L 2-Flute Long Neck BallEnd Mill

Workpiece		Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
R0.15	4	36300	60	0.001	0.002	33000	50	0.001	0.001	30000	40	0.001	0.001
	0.5	36300	800	0.03	0.05	33000	720	0.03	0.03	30000	580	0.009	0.02
	0.8	36300	800	0.02	0.05	33000	720	0.02	0.03	30000	580	0.008	0.02
	1	36300	800	0.02	0.05	33000	720	0.02	0.03	30000	580	0.008	0.02
	1.5	36300	620	0.01	0.03	33000	500	0.01	0.02	30000	400	0.005	0.01
R0.2	2	36300	500	0.01	0.02	33000	380	0.01	0.01	30000	300	0.005	0.007
	2.5	36300	420	0.007	0.01	33000	300	0.005	0.007	30000	260	0.003	0.005
	3	36300	300	0.007	0.01	33000	240	0.005	0.007	30000	200	0.003	0.005
	3.5	36300	230	0.005	0.007	33000	160	0.003	0.005	30000	120	0.002	0.003
	4	30000	160	0.005	0.005	30000	120	0.003	0.003	30000	90	0.002	0.003
	4.5	30000	100	0.003	0.005	30000	80	0.002	0.003	30000	60	0.001	0.002
	5	30000	70	0.002	0.003	30000	50	0.001	0.002	30000	40	0.001	0.002
	6	30000	50	0.001	0.002	30000	40	0.001	0.001	30000	30	0.001	0.001
	8	30000	50	0.001	0.002	30000	40	0.001	0.001	30000	30	0.001	0.001
	1	37500	650	0.01	0.025	34800	590	0.01	0.025	30000	500	0.01	0.025
R0.25	1.5	37500	650	0.009	0.02	34800	590	0.009	0.02	30000	500	0.009	0.02
	2	37500	520	0.008	0.02	34800	470	0.008	0.02	30000	400	0.008	0.02
	2.5	35000	520	0.007	0.015	32480	470	0.007	0.015	28000	400	0.007	0.015
	3	35000	468	0.007	0.01	32480	420	0.007	0.01	28000	360	0.007	0.01
	3.5	31250	468	0.006	0.01	29000	420	0.006	0.01	25000	360	0.006	0.01
	4	31250	390	0.005	0.008	29000	350	0.005	0.008	25000	300	0.005	0.008
	4.5	31250	338	0.004	0.008	29000	300	0.004	0.008	25000	260	0.004	0.008
	5	31250	338	0.004	0.008	29000	300	0.004	0.008	25000	260	0.004	0.008
	5.5	31250	312	0.004	0.006	29000	280	0.004	0.006	25000	240	0.004	0.006
	6	27500	156	0.003	0.005	25520	140	0.003	0.005	22000	120	0.003	0.005
	8	25000	104	0.003	0.003	23200	90	0.003	0.003	20000	80	0.003	0.003
	10	25000	65	0.003	0.003	23200	60	0.003	0.003	20000	50	0.003	0.003
R0.3	1	33000	975	0.02	0.03	31320	700	0.02	0.03	28800	600	0.02	0.03
	1.5	33000	975	0.02	0.03	31320	700	0.02	0.03	28800	600	0.02	0.03
	2	33000	780	0.02	0.03	31320	560	0.02	0.03	28800	480	0.02	0.03
	2.5	30800	780	0.015	0.02	29232	560	0.015	0.02	26880	480	0.015	0.02
	3	30800	702	0.015	0.02	29232	500	0.015	0.02	26880	432	0.015	0.02

Cutting Parameter

HSXB2L 2-Flute Long Neck BallEnd Mill

Workpiece		Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
R0.3	3.5	27500	702	0.01	0.02	26100	500	0.01	0.02	24000	432	0.01	0.02
	4	27500	585	0.01	0.02	26100	420	0.01	0.02	24000	360	0.01	0.02
	4.5	27500	507	0.01	0.02	26100	360	0.01	0.02	24000	312	0.01	0.02
	5	27500	507	0.01	0.02	26100	360	0.01	0.02	24000	312	0.01	0.02
	5.5	27500	468	0.008	0.01	26100	336	0.008	0.01	24000	288	0.008	0.01
	6	24200	234	0.008	0.01	22968	168	0.008	0.01	21120	144	0.008	0.01
	7	22000	156	0.006	0.008	20880	108	0.006	0.008	19200	96	0.006	0.008
	8	22000	97.5	0.005	0.008	20880	70	0.005	0.008	19200	60	0.005	0.008
	9	19040	85	0.005	0.008	18188	65	0.005	0.008	18048	50	0.005	0.008
	10	19040	80	0.003	0.005	18188	60	0.003	0.005	18000	40	0.003	0.005
	12	19040	60	0.003	0.005	18188	50	0.003	0.005	18000	30	0.003	0.005
R0.35	2	42500	1625	0.02	0.035	41200	1300	0.02	0.035	36000	1000	0.02	0.035
	3	40000	1200	0.02	0.03	40000	960	0.02	0.03	30000	800	0.02	0.03
	4	40000	1025	0.015	0.02	40000	820	0.015	0.02	30000	600	0.015	0.02
	6	30000	625	0.006	0.01	30000	500	0.006	0.01	25000	420	0.006	0.01
R0.4	8	25000	475	0.004	0.006	20000	380	0.004	0.006	20000	250	0.004	0.006
	2	24200	2000	0.03	0.05	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	2.5	24200	2000	0.03	0.05	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	3	24200	2000	0.03	0.05	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	4	24200	1600	0.03	0.05	22000	1200	0.03	0.05	20000	860	0.03	0.05
	5	24200	1600	0.02	0.03	22000	1000	0.02	0.03	20000	620	0.02	0.03
	6	21780	1200	0.02	0.03	19800	760	0.02	0.03	18000	560	0.02	0.03
	7	21780	1000	0.02	0.03	19800	680	0.02	0.03	18000	520	0.02	0.03
	8	21780	820	0.01	0.02	19800	600	0.01	0.02	18000	480	0.01	0.02
	10	19360	450	0.008	0.015	17600	380	0.008	0.015	16000	320	0.008	0.015
	12	18150	320	0.006	0.012	16500	260	0.006	0.012	15000	200	0.006	0.012
	16	18150	320	0.005	0.01	16500	260	0.005	0.01	15000	200	0.005	0.01
R0.45	2	24200	2000	0.03	0.05	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	4	24200	1600	0.03	0.05	22000	1200	0.03	0.05	20000	860	0.03	0.05
	6	21780	1200	0.02	0.03	19800	760	0.02	0.03	18000	560	0.02	0.03
	8	21780	820	0.01	0.02	19800	600	0.01	0.02	18000	480	0.01	0.02
R0.5	2.5	24000	2000	0.03	0.06	22000	1600	0.03	0.05	20000	1200	0.03	0.05

Cutting Parameter

HSXB2L 2-Flute Long Neck BallEnd Mill

Workpiece		Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
R0.5	3	24000	2000	0.03	0.06	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	4	24000	2000	0.03	0.06	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	5	24000	2000	0.03	0.05	22000	1600	0.03	0.05	20000	920	0.03	0.05
	6	21600	1800	0.05	0.05	19800	1200	0.03	0.05	18000	740	0.02	0.05
	7	21600	1200	0.04	0.05	19800	950	0.03	0.04	18000	680	0.02	0.03
	8	21600	1000	0.04	0.05	19800	860	0.03	0.04	18000	560	0.02	0.03
	9	19200	820	0.03	0.05	17600	750	0.02	0.03	16000	500	0.01	0.02
	10	18000	750	0.03	0.05	16500	620	0.02	0.03	15000	450	0.01	0.02
	12	18000	600	0.01	0.03	16500	520	0.007	0.02	15000	400	0.005	0.01
	14	16800	420	0.005	0.01	15400	360	0.003	0.007	14000	320	0.002	0.005
	16	16800	300	0.005	0.005	15400	250	0.003	0.005	14000	200	0.002	0.003
	18	16800	180	0.003	0.005	15400	120	0.002	0.005	14000	85	0.002	0.002
	20	14400	100	0.003	0.003	13200	75	0.002	0.003	12000	60	0.002	0.002
	22	12000	50	0.002	0.003	11000	40	0.002	0.002	10000	35	0.001	0.002
R0.6	4	24000	2000	0.03	0.06	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	6	21600	1800	0.05	0.05	19800	1200	0.04	0.05	18000	740	0.02	0.05
	8	21600	1000	0.04	0.05	19800	860	0.03	0.04	18000	560	0.02	0.03
	10	18000	750	0.03	0.05	16500	620	0.02	0.03	15000	450	0.01	0.02
	12	18000	600	0.01	0.03	16500	520	0.007	0.02	15000	400	0.005	0.01
	14	16800	420	0.005	0.01	15400	360	0.003	0.007	14000	320	0.002	0.005
R0.7	16	16800	300	0.005	0.005	15400	250	0.003	0.005	14000	200	0.002	0.003
	8	21600	2500	0.03	0.05	19800	1600	0.03	0.05	18000	1200	0.03	0.05
	12	18000	1800	0.02	0.05	16500	920	0.02	0.05	15000	780	0.02	0.05
	16	18000	720	0.01	0.02	16500	650	0.01	0.02	15000	580	0.01	0.02
R0.75	4	21600	3000	0.03	0.05	19800	2500	0.03	0.05	18000	2000	0.03	0.05
	6	21600	3000	0.03	0.05	19800	2000	0.03	0.05	18000	1600	0.03	0.05
	8	21600	2500	0.03	0.05	19800	1600	0.03	0.05	18000	1200	0.03	0.05
	10	21600	2500	0.02	0.05	19800	1200	0.02	0.05	18000	860	0.02	0.05
	12	18000	1800	0.02	0.05	16500	920	0.02	0.05	15000	780	0.02	0.05
	14	18000	1200	0.02	0.03	16500	820	0.02	0.03	15000	650	0.02	0.03
	16	18000	720	0.01	0.02	16500	650	0.01	0.02	15000	580	0.01	0.02
	18	16800	550	0.008	0.015	15400	400	0.008	0.015	14000	400	0.008	0.015

Cutting Parameter

HSXB2L 2-Flute Long Neck BallEnd Mill

Workpiece		Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
R0.75	20	16800	450	0.007	0.01	15400	360	0.007	0.01	14000	300	0.007	0.01
	25	14400	330	0.007	0.007	13200	250	0.007	0.007	12000	200	0.007	0.007
	30	9600	80	0.003	0.003	8800	60	0.003	0.003	8000	40	0.003	0.003
R0.8	8	21600	2500	0.03	0.05	19800	1600	0.03	0.05	18000	1200	0.03	0.05
	12	18000	1800	0.02	0.05	16500	920	0.02	0.05	15000	780	0.02	0.05
	16	18000	720	0.01	0.02	16500	650	0.01	0.02	15000	580	0.01	0.02
	20	16800	450	0.007	0.01	15400	360	0.007	0.01	14000	300	0.007	0.01
R1	6	18000	1920	0.04	0.06	16500	1760	0.04	0.06	15000	1600	0.04	0.06
	8	18000	1440	0.03	0.05	16500	1320	0.03	0.05	15000	1200	0.03	0.05
	10	16800	1440	0.03	0.05	15400	1320	0.03	0.05	14000	1200	0.03	0.05
	12	14400	1128	0.02	0.05	13200	1034	0.02	0.05	12000	940	0.02	0.05
	14	14400	1128	0.015	0.04	13200	1034	0.015	0.04	12000	940	0.015	0.04
	16	14400	1128	0.015	0.04	13200	1034	0.015	0.04	12000	940	0.015	0.04
	18	12000	1020	0.01	0.03	11000	935	0.01	0.03	10000	850	0.01	0.03
	20	12000	864	0.01	0.03	11000	792	0.01	0.03	10000	720	0.01	0.03
	22	12000	720	0.008	0.02	11000	660	0.008	0.02	10000	600	0.008	0.02
	25	10200	504	0.008	0.02	9350	462	0.008	0.02	8500	420	0.008	0.02
	30	10200	288	0.005	0.01	9350	264	0.005	0.01	8500	240	0.005	0.01
	35	8160	120	0.005	0.007	7480	110	0.005	0.007	6800	100	0.005	0.007
R1.25	40	8160	60	0.002	0.005	7480	55	0.002	0.005	6800	50	0.002	0.005
	6	18000	1920	0.04	0.06	16500	1760	0.04	0.06	15000	1600	0.04	0.06
	8	18000	1440	0.03	0.05	16500	1320	0.03	0.05	15000	1200	0.03	0.05
	10	16800	1440	0.03	0.05	15400	1320	0.03	0.05	14000	1200	0.03	0.05
	12	15000	1320	0.02	0.05	13800	1180	0.02	0.04	13000	1080	0.02	0.04
	16	14400	1128	0.015	0.04	13200	1034	0.015	0.04	12000	940	0.015	0.04
	20	12000	864	0.01	0.03	11000	792	0.01	0.03	10000	720	0.01	0.03
	25	10200	504	0.008	0.02	9350	462	0.008	0.02	8500	420	0.008	0.02
	30	10200	288	0.005	0.01	9350	264	0.005	0.01	8500	240	0.005	0.01
	35	8160	120	0.005	0.007	7480	110	0.005	0.007	6800	100	0.005	0.007
R1.5	8	16800	2500	0.04	0.08	15400	2200	0.04	0.08	14000	2000	0.04	0.08
	10	16800	1875	0.03	0.07	15400	1650	0.03	0.07	14000	1500	0.03	0.07
	12	14400	1875	0.03	0.07	13200	1650	0.03	0.07	12000	1500	0.03	0.07

Cutting Parameter

HSXB2L 2-Flute Long Neck BallEnd Mill

Workpiece		Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
R1.5	14	14400	1500	0.03	0.07	13200	1320	0.03	0.07	12000	1200	0.03	0.07
	16	14400	1500	0.02	0.05	13200	1320	0.02	0.05	12000	1200	0.02	0.05
	20	12000	1200	0.02	0.05	11000	1056	0.02	0.05	10000	960	0.02	0.05
	25	10320	1000	0.015	0.05	9460	880	0.015	0.05	8600	800	0.015	0.05
	30	8640	750	0.015	0.04	7920	660	0.015	0.04	7200	600	0.015	0.04
	35	7680	525	0.01	0.03	7040	462	0.01	0.03	6400	420	0.01	0.03
	40	7200	325	0.01	0.03	6600	286	0.01	0.03	6000	260	0.01	0.03
R1.75	16	14400	1500	0.02	0.05	13200	1320	0.02	0.05	12000	1200	0.02	0.05
	20	12000	1200	0.02	0.05	11000	1056	0.02	0.05	10000	960	0.02	0.05
	25	10320	1000	0.015	0.05	9460	880	0.015	0.05	8600	800	0.015	0.05
	30	8640	750	0.015	0.04	7920	660	0.015	0.04	7200	600	0.015	0.04
	35	7680	525	0.01	0.03	7040	462	0.01	0.03	6400	420	0.01	0.03
R2	40	7200	325	0.01	0.03	6600	286	0.01	0.03	6000	260	0.01	0.03
	45	6800	300	0.01	0.03	6500	264	0.01	0.03	6000	200	0.01	0.03
	12	13200	3000	0.04	0.08	12100	2500	0.04	0.08	11000	2000	0.04	0.08
	14	13200	3000	0.04	0.08	12100	2000	0.04	0.08	11000	1600	0.04	0.08
	16	12000	3000	0.03	0.06	11000	2000	0.03	0.06	10000	1600	0.03	0.06
	20	12000	2400	0.03	0.06	11000	1800	0.03	0.06	10000	1400	0.03	0.06
	25	10800	1600	0.03	0.05	9900	1200	0.03	0.05	9000	1000	0.03	0.05
	30	9600	1600	0.03	0.05	8800	1200	0.03	0.05	8000	1000	0.03	0.05
	35	9000	1200	0.03	0.05	8250	1000	0.03	0.05	7500	820	0.03	0.05
	40	8160	1200	0.02	0.04	7480	1000	0.02	0.04	6800	820	0.02	0.04
R2.5	45	7800	750	0.02	0.04	7150	620	0.02	0.04	6500	500	0.02	0.04
	50	6600	550	0.015	0.03	6050	500	0.015	0.03	5500	420	0.015	0.03
	16	12000	3000	0.03	0.06	11000	2000	0.03	0.06	10000	1600	0.03	0.06
	20	12000	2400	0.03	0.06	11000	1800	0.03	0.06	10000	1400	0.03	0.06
	25	10800	1600	0.03	0.05	9900	1200	0.03	0.05	9000	1000	0.03	0.05
	30	9600	1600	0.03	0.05	8800	1200	0.03	0.05	8000	1000	0.03	0.05
	35	8500	1450	0.025	0.045	8000	1100	0.025	0.045	7500	950	0.025	0.045
	40	8160	1200	0.02	0.04	7480	1000	0.02	0.04	6800	820	0.02	0.04
	45	7800	750	0.02	0.04	7150	620	0.02	0.04	6500	500	0.02	0.04
	50	6600	550	0.015	0.03	6050	500	0.015	0.03	5500	420	0.015	0.03

Cutting Parameter

HSXE2L 2-Flute Long Neck End Mill

Workpiece		Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
0.1	0.3	48000	150	0.006	0.06	40000	150	0.005	0.06	32000	120	0.003	0.05
	0.5	48000	100	0.006	0.06	40000	100	0.005	0.06	32000	80	0.003	0.05
	0.75	48000	80	0.004	0.06	40000	80	0.003	0.06	32000	70	0.002	0.05
	1	48000	60	0.002	0.06	40000	60	0.002	0.06	32000	50	0.001	0.05
0.15	0.3	48000	180	0.006	0.09	40000	180	0.005	0.09	32000	150	0.003	0.07
	0.5	48000	150	0.006	0.09	40000	150	0.005	0.09	32000	120	0.003	0.07
	0.75	48000	120	0.004	0.09	40000	120	0.003	0.09	32000	100	0.002	0.07
	1	48000	100	0.002	0.09	40000	100	0.002	0.09	32000	80	0.001	0.07
0.2	1.5	48000	80	0.002	0.09	40000	80	0.002	0.09	32000	60	0.001	0.07
	0.5	36000	240	0.006	0.12	30000	240	0.005	0.12	24000	200	0.003	0.1
	0.75	36000	200	0.006	0.12	30000	200	0.005	0.12	24000	180	0.003	0.1
	1	36000	180	0.006	0.12	30000	180	0.005	0.12	24000	150	0.003	0.1
	1.5	36000	120	0.004	0.12	30000	120	0.003	0.12	24000	100	0.002	0.1
	2	36000	80	0.004	0.12	30000	80	0.003	0.12	24000	50	0.002	0.1
	2.5	36000	60	0.002	0.12	30000	60	0.002	0.12	24000	50	0.001	0.1
	3	36000	40	0.002	0.12	30000	40	0.002	0.12	24000	40	0.001	0.1
	1	36000	350	0.008	0.18	30000	350	0.007	0.18	24000	300	0.003	0.15
	1.5	36000	260	0.008	0.18	30000	260	0.007	0.18	24000	200	0.003	0.15
0.3	2	36000	180	0.006	0.18	30000	180	0.005	0.18	24000	150	0.003	0.15
	2.5	36000	150	0.005	0.18	30000	150	0.004	0.18	24000	100	0.002	0.15
	3	36000	70	0.005	0.18	30000	70	0.004	0.18	24000	50	0.002	0.15
	3.5	30000	70	0.005	0.18	25000	70	0.004	0.18	20000	50	0.002	0.15
	4	28800	70	0.005	0.18	24000	70	0.004	0.18	19200	50	0.002	0.15
	1	36000	495	0.012	0.28	30000	450	0.01	0.24	24000	400	0.005	0.2
	1.5	36000	440	0.012	0.28	30000	400	0.01	0.24	24000	360	0.005	0.2
0.4	2	36000	400	0.012	0.28	30000	360	0.01	0.24	24000	320	0.005	0.2
	2.5	36000	370	0.01	0.28	30000	340	0.008	0.24	24000	280	0.005	0.2
	3	36000	350	0.01	0.28	30000	320	0.008	0.24	24000	260	0.004	0.2
	3.5	36000	300	0.008	0.28	30000	280	0.007	0.24	24000	220	0.004	0.2
	4	36000	275	0.008	0.28	30000	250	0.006	0.24	24000	200	0.003	0.2
	5	30000	275	0.006	0.28	25000	250	0.005	0.24	20000	180	0.003	0.2
	6	30000	220	0.005	0.28	25000	200	0.004	0.24	20000	150	0.002	0.2

Cutting Parameter

HSXE2L 2-Flute Long Neck End Mill

Workpiece		Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
0.4	8	24000	165	0.003	0.28	20000	150	0.002	0.24	16000	120	0.001	0.2
	10	19200	110	0.003	0.28	16000	100	0.002	0.24	12800	80	0.001	0.2
0.5	1	36000	605	0.025	0.36	30000	550	0.02	0.3	24000	500	0.01	0.25
	1.5	36000	570	0.025	0.36	30000	520	0.02	0.3	24000	450	0.01	0.25
	2	36000	550	0.025	0.36	30000	500	0.02	0.3	24000	420	0.01	0.25
	2.5	36000	530	0.020	0.36	30000	480	0.015	0.3	24000	400	0.008	0.25
	3	36000	460	0.020	0.36	30000	420	0.015	0.3	24000	350	0.007	0.25
	3.5	30000	440	0.015	0.36	25000	400	0.012	0.3	20000	320	0.006	0.25
	4	30000	420	0.012	0.36	25000	380	0.01	0.3	20000	280	0.005	0.25
	4.5	30000	385	0.01	0.36	25000	350	0.008	0.3	20000	230	0.004	0.25
	5	30000	350	0.008	0.36	25000	320	0.007	0.3	20000	200	0.003	0.25
	6	30000	330	0.006	0.36	25000	300	0.005	0.3	20000	200	0.003	0.25
	7	24000	275	0.006	0.36	20000	250	0.005	0.3	16000	180	0.003	0.25
	8	24000	220	0.006	0.36	20000	200	0.005	0.3	16000	160	0.002	0.25
	9	24000	220	0.004	0.36	20000	200	0.003	0.3	16000	150	0.002	0.25
	10	19200	190	0.004	0.36	16000	170	0.003	0.3	12800	130	0.002	0.25
	1.5	36000	720	0.025	0.42	30000	650	0.02	0.35	24000	550	0.01	0.3
	2	36000	605	0.025	0.42	30000	550	0.02	0.35	24000	500	0.01	0.3
	2.5	36000	605	0.025	0.42	30000	550	0.02	0.35	24000	500	0.01	0.3
	3	36000	550	0.020	0.42	30000	500	0.015	0.35	24000	450	0.007	0.3
0.6	3.5	36000	550	0.020	0.42	30000	500	0.015	0.35	24000	450	0.007	0.3
	4	30000	495	0.012	0.42	25000	450	0.01	0.35	20000	400	0.005	0.3
	4.5	30000	495	0.012	0.42	25000	450	0.01	0.35	20000	400	0.005	0.3
	5	30000	440	0.010	0.42	25000	400	0.007	0.35	20000	350	0.003	0.3
	6	30000	385	0.006	0.42	25000	350	0.005	0.35	20000	300	0.002	0.3
	7	23760	340	0.003	0.24	19800	308	0.002	0.2	18000	280	0.002	0.2
	8	21120	300	0.003	0.24	17600	275	0.002	0.2	16000	250	0.002	0.2
	9	18480	260	0.003	0.18	15400	242	0.002	0.15	14000	220	0.002	0.15
	10	15840	240	0.003	0.18	13200	220	0.002	0.15	12000	200	0.002	0.15
	12	13200	180	0.003	0.12	11000	165	0.002	0.1	10000	150	0.002	0.1
0.7	2	36000	820	0.05	0.48	30000	750	0.04	0.4	24000	600	0.03	0.35
	4	30000	760	0.038	0.48	25000	690	0.03	0.4	20000	560	0.02	0.35

Cutting Parameter

HSXE2L 2-Flute Long Neck End Mill

Workpiece		Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
0.7	6	30000	600	0.025	0.48	25000	550	0.02	0.4	20000	410	0.015	0.35
	8	24000	470	0.015	0.48	20000	430	0.012	0.4	16000	330	0.01	0.35
	10	19200	330	0.01	0.48	16000	300	0.008	0.4	12800	200	0.005	0.35
0.8	2	30000	940	0.05	0.54	25000	850	0.04	0.45	20000	780	0.03	0.4
	3	30000	940	0.05	0.54	25000	850	0.04	0.45	20000	780	0.03	0.4
	4	30000	880	0.04	0.54	25000	800	0.03	0.45	20000	700	0.025	0.4
	5	30000	770	0.04	0.54	25000	700	0.03	0.45	20000	630	0.02	0.4
	6	24000	680	0.03	0.54	20000	620	0.025	0.45	16000	550	0.02	0.4
	7	21600	605	0.25	0.54	18000	550	0.2	0.45	14400	500	0.01	0.4
	8	19200	550	0.02	0.54	16000	500	0.015	0.45	12800	400	0.007	0.4
	10	19200	440	0.015	0.54	16000	400	0.012	0.45	12800	350	0.007	0.4
	12	19200	330	0.008	0.54	16000	300	0.007	0.45	12800	220	0.005	0.4
	16	18000	220	0.006	0.5	15000	200	0.005	0.40	12000	150	0.005	0.4
	2	30000	1320	0.08	0.6	25000	1200	0.07	0.5	20000	1000	0.06	0.45
	4	30000	1100	0.06	0.6	25000	1000	0.05	0.5	20000	900	0.04	0.45
0.9	6	24000	990	0.04	0.6	20000	900	0.03	0.5	16000	700	0.02	0.45
	8	21600	880	0.04	0.6	18000	800	0.03	0.5	14400	600	0.02	0.45
	10	19200	660	0.025	0.6	16000	600	0.02	0.5	12800	500	0.01	0.45
1	3	30000	1320	0.075	0.7	25000	1200	0.06	0.6	20000	1000	0.05	0.5
	4	30000	1100	0.06	0.7	25000	1000	0.05	0.6	20000	900	0.04	0.5
	5	24000	1100	0.05	0.7	20000	1000	0.04	0.6	16000	800	0.03	0.5
	6	24000	990	0.04	0.7	20000	900	0.03	0.6	16000	700	0.02	0.5
	7	24000	990	0.04	0.7	20000	900	0.03	0.6	16000	650	0.02	0.5
	8	21600	880	0.04	0.7	18000	800	0.03	0.6	14400	600	0.02	0.5
	9	21600	770	0.025	0.7	18000	700	0.02	0.6	14400	550	0.015	0.5
	10	19200	660	0.025	0.7	16000	600	0.02	0.6	12800	500	0.01	0.5
	12	19200	550	0.025	0.7	16000	500	0.02	0.6	12800	400	0.01	0.5
	14	19200	495	0.02	0.7	16000	450	0.015	0.6	12800	360	0.008	0.5
	16	16800	440	0.015	0.7	14000	400	0.012	0.6	11200	320	0.006	0.5
	18	16800	330	0.012	0.7	14000	300	0.01	0.6	11200	240	0.006	0.5
	20	14400	220	0.008	0.7	12000	200	0.007	0.6	9600	160	0.005	0.5
	22	14400	198	0.006	0.7	12000	180	0.005	0.6	9600	150	0.003	0.5

Cutting Parameter

HSXE2L 2-Flute Long Neck End Mill

Workpiece		Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
1.2	6	24000	990	0.05	0.8	20000	900	0.04	0.7	16000	700	0.03	0.6
	8	21600	880	0.05	0.8	18000	800	0.04	0.7	14400	600	0.02	0.6
	10	19200	660	0.04	0.8	16000	600	0.03	0.7	12800	500	0.02	0.6
	12	16800	660	0.025	0.8	14000	600	0.02	0.7	11200	500	0.01	0.6
	16	14400	440	0.02	0.8	12000	400	0.018	0.7	9600	300	0.01	0.6
1.4	6	26400	1100	0.075	1	22000	1000	0.06	0.8	17600	800	0.04	0.7
	12	19200	770	0.04	1	16000	700	0.03	0.8	12800	500	0.01	0.7
	16	14400	440	0.02	0.8	12000	400	0.018	0.7	9600	300	0.01	0.6
1.5	4	27600	1320	0.08	1.1	23000	1200	0.07	0.9	18400	900	0.05	0.75
	6	27600	1100	0.075	1.1	23000	1000	0.06	0.9	18400	800	0.04	0.75
	8	24000	990	0.075	1.1	20000	900	0.06	0.9	16000	600	0.03	0.75
	10	24000	880	0.05	1.1	20000	800	0.04	0.9	16000	500	0.03	0.75
	12	19200	770	0.05	1.1	16000	700	0.04	0.9	12800	500	0.02	0.75
	14	16800	660	0.04	1.1	14000	600	0.03	0.9	11200	400	0.02	0.75
	16	14400	550	0.025	1.1	12000	500	0.02	0.9	9600	360	0.01	0.75
	18	12000	440	0.025	1.1	10000	400	0.02	0.9	8000	330	0.008	0.75
	20	10800	352	0.02	1.1	9000	320	0.015	0.9	7200	280	0.005	0.75
	25	9600	275	0.012	1.1	8000	250	0.01	0.9	6400	200	0.004	0.75
	30	8400	220	0.006	1.1	7000	200	0.005	0.9	5600	150	0.003	0.75
	35	7200	165	0.004	1.1	6000	150	0.003	0.9	4800	110	0.002	0.75
1.6	6	26400	1100	0.075	1.2	22000	1000	0.06	0.96	17600	850	0.04	0.8
	8	24000	990	0.075	1.2	20000	900	0.06	0.96	16000	750	0.03	0.8
	12	19200	770	0.05	1	16000	700	0.04	0.9	12800	500	0.02	0.75
	16	14400	550	0.025	1	12000	500	0.02	0.9	9600	360	0.01	0.75
1.8	6	24000	1100	0.08	1.2	20000	1000	0.07	1	16000	900	0.05	0.9
	8	21600	990	0.075	1.2	18000	900	0.06	1	14400	800	0.04	0.9
	10	19200	880	0.075	1.2	16000	800	0.06	1	12800	700	0.04	0.9
	12	16800	770	0.06	1.2	14000	700	0.05	1	11200	600	0.03	0.9
	14	16800	770	0.06	1.2	14000	700	0.05	1	11200	600	0.03	0.9
	16	14400	660	0.05	1.2	12000	600	0.04	1	9600	500	0.02	0.9
	18	12000	550	0.05	1.2	10000	500	0.04	1	8000	410	0.02	0.9
	2	24000	1100	0.1	1.4	20000	1000	0.08	1.2	16000	900	0.06	1

Cutting Parameter

HSXE2L 2-Flute Long Neck End Mill

Workpiece		Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
2	8	21600	990	0.08	1.4	18000	900	0.07	1.2	14400	800	0.05	1
	10	19200	880	0.075	1.4	16000	800	0.06	1.2	12800	700	0.05	1
	12	16800	770	0.06	1.4	14000	700	0.05	1.2	11200	600	0.04	1
	14	16800	770	0.05	1.4	14000	700	0.04	1.2	11200	600	0.03	1
	16	14400	660	0.05	1.4	12000	600	0.04	1.2	9600	500	0.03	1
	18	12000	550	0.04	1.4	10000	500	0.03	1.2	8000	410	0.02	1
	20	12000	440	0.04	1.4	10000	400	0.03	1.2	8000	380	0.02	1
	25	10800	385	0.025	1.4	9000	350	0.02	1.2	7200	330	0.015	1
	30	9600	330	0.02	1.4	8000	300	0.015	1.2	6400	280	0.01	1
	35	8400	275	0.015	1.4	7000	250	0.012	1.2	5600	230	0.008	1
	40	7200	220	0.01	1.4	6000	200	0.008	1.2	4800	180	0.005	1
	50	6000	132	0.006	1.4	5000	120	0.005	1.2	4000	100	0.004	1
2.5	8	19200	1100	0.1	1.8	16000	1000	0.08	1.5	12800	800	0.07	1.25
	10	19200	880	0.075	1.8	16000	800	0.06	1.5	12800	700	0.05	1.25
	12	16800	880	0.08	1.8	14000	800	0.07	1.5	11200	700	0.06	1.25
	16	14400	770	0.075	1.8	12000	700	0.06	1.5	9600	600	0.05	1.25
	20	12000	660	0.075	1.8	10000	600	0.06	1.5	8000	500	0.05	1.25
	25	10800	600	0.025	1.8	9000	500	0.02	1.5	7200	400	0.015	1.25
	30	9600	440	0.04	1.8	8000	400	0.03	1.5	6400	300	0.025	1.25
	35	8400	330	0.02	1.4	7000	300	0.015	1.2	5600	280	0.01	1.25
	40	7200	275	0.02	1.8	6000	250	0.015	1.5	4800	200	0.012	1.25
	50	6000	165	0.012	1.8	5000	150	0.01	1.5	4000	120	0.008	1.25
3	10	18000	880	0.15	2	15000	800	0.12	1.8	12000	700	0.09	1.5
	12	16800	990	0.125	2	14000	900	0.1	1.8	11200	800	0.08	1.5
	16	14400	880	0.1	2	12000	800	0.08	1.8	9600	700	0.07	1.5
	20	12000	880	0.1	2	10000	800	0.08	1.8	8000	700	0.07	1.5
	25	10800	770	0.08	2	9000	700	0.07	1.8	7200	600	0.06	1.5
	30	9600	770	0.06	2	8000	700	0.05	1.8	6400	600	0.03	1.5
	35	8400	330	0.02	1.8	7000	300	0.015	1.5	5600	280	0.02	1.25
	40	7200	275	0.02	1.4	6000	250	0.015	1.2	4800	200	0.012	1

Cutting Parameter

HSXE2L 2-Flute Long Neck End Mill

Workpiece		Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
4	12	14400	990	0.125	2.4	12000	900	0.1	2.0	9600	720	0.1	1.5
	16	12000	880	0.1	2.4	10000	800	0.08	2.0	8000	640	0.09	1.5
	20	10800	880	0.1	2.4	9000	800	0.08	2.0	7200	640	0.08	1.5
	25	9600	770	0.08	2.4	8000	700	0.07	2.0	6400	560	0.07	1.5
	30	8400	770	0.06	2.4	7000	700	0.05	2.0	5600	560	0.07	1.5
	35	7200	330	0.02	2.4	6000	300	0.015	2.0	4800	240	0.06	1.5
	40	6000	275	0.02	1.8	5000	250	0.015	1.5	4000	200	0.03	1.5
	45	4800	220	0.012	1.8	4000	200	0.01	1.5	3200	160	0.02	1.25
	50	3600	165	0.012	1.8	3000	150	0.01	1.5	2400	120	0.012	1

Cutting Parameter

HSXE4L 4-Flute Long Neck End Mill

Workpiece		Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
0.8	2	30000	1870	0.05	0.54	25000	1700	0.04	0.45	20000	1560	0.03	0.4
	3	30000	1870	0.05	0.54	25000	1700	0.04	0.45	20000	1560	0.03	0.4
	4	30000	1760	0.04	0.54	25000	1600	0.03	0.45	20000	1468	0.025	0.4
	5	30000	1540	0.04	0.54	25000	1400	0.03	0.45	20000	1285	0.02	0.4
	6	24000	1360	0.04	0.54	20000	1240	0.025	0.45	16000	1138	0.02	0.4
	7	21600	1200	0.25	0.54	18000	1100	0.2	0.45	14400	1009	0.01	0.4
	8	19200	1100	0.018	0.54	16000	1000	0.015	0.45	12800	920	0.007	0.4
	10	19200	880	0.015	0.54	16000	800	0.012	0.45	12800	730	0.007	0.4
	12	19200	660	0.008	0.54	16000	600	0.007	0.45	12800	550	0.005	0.4
	16	18000	880	0.006	0.48	15000	800	0.005	0.40	12000	730	0.005	0.4
1	3	30000	2650	0.075	0.72	25000	2400	0.06	0.6	20000	2200	0.05	0.5
	4	30000	2200	0.06	0.72	25000	2000	0.05	0.6	20000	1800	0.04	0.5
	5	24000	2200	0.05	0.72	20000	2000	0.04	0.6	16000	1800	0.03	0.5
	6	24000	2000	0.04	0.72	20000	1800	0.03	0.6	16000	1650	0.02	0.5
	7	24000	2000	0.04	0.72	20000	1800	0.03	0.6	16000	1650	0.02	0.5
	8	21600	1750	0.04	0.72	18000	1600	0.03	0.6	14400	1450	0.02	0.5
	9	21600	1540	0.025	0.72	18000	1400	0.02	0.6	14400	1300	0.015	0.5
	10	19200	1320	0.025	0.72	16000	1200	0.02	0.6	12800	1100	0.01	0.5
	12	19200	1100	0.025	0.72	16000	1000	0.02	0.6	12800	920	0.01	0.5
	14	19200	990	0.02	0.72	16000	900	0.015	0.6	12800	820	0.008	0.5
	16	16800	880	0.015	0.72	14000	800	0.012	0.6	11200	730	0.006	0.5
	18	16800	660	0.012	0.72	14000	600	0.01	0.6	11200	550	0.006	0.5
	20	14400	440	0.008	0.72	12000	400	0.007	0.6	9600	370	0.005	0.5
	22	14400	396	0.006	0.72	12000	360	0.005	0.6	9600	330	0.003	0.5
1.2	6	24000	2000	0.05	0.84	20000	1800	0.04	0.7	16000	1400	0.03	0.6
	8	21600	1760	0.05	0.84	18000	1600	0.04	0.7	14400	1200	0.02	0.6
	10	19200	1300	0.04	0.84	16000	1200	0.03	0.7	12800	1000	0.02	0.6
	12	16800	1300	0.025	0.84	14000	1200	0.02	0.7	11200	1000	0.01	0.6
1.4	6	26400	2200	0.075	0.96	22000	2000	0.06	0.8	17600	1600	0.04	0.7
	12	19200	1540	0.04	0.96	16000	1400	0.03	0.8	12800	1000	0.01	0.7
	16	14400	880	0.02	0.84	12000	800	0.018	0.7	9600	600	0.01	0.6
1.5	4	27600	2640	0.08	1.08	23000	2400	0.07	0.9	18400	1800	0.05	0.75

Cutting Parameter

HSXE4L 4-Flute Long Neck End Mill													
Workpiece		Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
1.5	6	27600	2200	0.075	1.08	23000	2000	0.06	0.9	18400	1600	0.04	0.75
	8	24000	1980	0.075	1.08	20000	1800	0.06	0.9	16000	1200	0.03	0.75
	10	24000	1760	0.05	1.08	20000	1600	0.04	0.9	16000	1000	0.03	0.75
	12	19200	1540	0.05	1.08	16000	1400	0.04	0.9	12800	1000	0.02	0.75
	14	16800	1320	0.04	1.08	14000	1200	0.03	0.9	11200	800	0.02	0.75
	16	14400	1100	0.025	1.08	12000	1000	0.02	0.9	9600	720	0.015	0.75
	18	12000	880	0.025	1.08	10000	800	0.02	0.9	8000	660	0.015	0.75
	20	10800	700	0.018	1.08	9000	640	0.014	0.9	7200	560	0.01	0.75
	25	9600	550	0.012	1.08	8000	500	0.01	0.9	6400	400	0.008	0.75
1.6	8	24000	1980	0.075	1.15	20000	1800	0.06	0.96	16000	1500	0.03	0.8
	12	19200	1540	0.05	1.1	16000	1400	0.04	0.9	12800	1000	0.02	0.75
	16	14400	1100	0.025	1.1	12000	1000	0.02	0.9	9600	720	0.01	0.75
1.8	6	24000	2200	0.08	1.2	20000	2000	0.07	1	16000	1800	0.05	0.9
	8	21600	1980	0.075	1.2	18000	1800	0.06	1	14400	1600	0.04	0.9
	10	19200	1760	0.075	1.2	16000	1600	0.06	1	12800	1400	0.04	0.9
	12	16800	1540	0.06	1.2	14000	1400	0.05	1	11200	1200	0.03	0.9
	14	16800	1540	0.06	1.2	14000	1400	0.05	1	11200	1200	0.03	0.9
	16	14400	1320	0.05	1.2	12000	1200	0.04	1	9600	1000	0.02	0.9
	18	12000	1100	0.05	1.2	10000	1000	0.04	1	8000	820	0.02	0.9
2	6	24000	2200	0.1	1.4	20000	2000	0.08	1.2	16000	1800	0.06	1
	8	21600	1980	0.08	1.4	18000	1800	0.07	1.2	14400	1650	0.05	1
	10	19200	1760	0.075	1.4	16000	1600	0.06	1.2	12800	1500	0.05	1
	12	16800	1540	0.06	1.4	14000	1400	0.05	1.2	11200	1300	0.04	1
	14	16800	1540	0.05	1.4	14000	1400	0.04	1.2	11200	1300	0.03	1
	16	14400	1300	0.05	1.4	12000	1200	0.04	1.2	9600	1100	0.03	1
	18	12000	1100	0.04	1.4	10000	1000	0.03	1.2	8000	920	0.02	1
	20	12000	880	0.04	1.4	10000	800	0.03	1.2	8000	730	0.02	1
	25	10800	770	0.025	1.4	9000	700	0.02	1.2	7200	640	0.015	1
	30	9600	660	0.018	1.4	8000	600	0.015	1.2	6400	550	0.01	1
	35	8400	550	0.015	1.4	7000	500	0.012	1.2	5600	460	0.008	1
2.5	8	19200	2200	0.1	1.8	16000	2000	0.08	1.5	12800	1830	0.07	1.25
	10	18000	2000	0.1	1.8	15000	1800	0.08	1.5	11800	1550	0.07	1.25

Cutting Parameter

HSXE4L 4-Flute Long Neck End Mill													
Workpiece		Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
2.5	12	16800	1760	0.08	1.8	14000	1600	0.07	1.5	11200	1450	0.06	1.25
	16	14400	1540	0.075	1.8	12000	1400	0.06	1.5	9600	1280	0.05	1.25
	20	12000	1300	0.075	1.8	10000	1200	0.06	1.5	8000	1100	0.05	1.25
	25	10800	990	0.025	1.8	9000	900	0.02	1.5	7200	830	0.015	1.25
	30	9600	880	0.04	1.8	8000	800	0.03	1.5	6400	734	0.025	1.25
	35	8400	660	0.018	1.44	7000	600	0.015	1.2	5600	550	0.01	1
3	10	19200	2200	0.18	2.16	16000	2000	0.15	1.8	12800	1800	0.1	1.5
	12	16800	2000	0.12	2.16	14000	1800	0.1	1.8	11200	1650	0.08	1.5
	16	14400	1500	0.1	2.16	12000	1400	0.08	1.8	9600	1280	0.07	1.5
	20	12000	1300	0.1	2.16	10000	1200	0.08	1.8	8000	1100	0.07	1.5
	25	10800	1100	0.08	2.16	9000	1000	0.07	1.8	7200	920	0.06	1.5
	30	9600	880	0.06	2.16	8000	800	0.05	1.8	6400	730	0.03	1.5
	35	8400	660	0.018	1.44	7000	600	0.015	1.2	5600	550	0.02	1.2
	40	7200	600	0.018	1.2	6000	550	0.015	1.0	4800	500	0.012	1
4	12	12000	2000	0.2	2.5	9500	2000	0.15	2	8000	1600	0.08	1.6
	16	10000	2000	0.15	2.5	8000	1800	0.1	2	7000	1400	0.06	1.6
	20	8500	1800	0.12	2.5	7000	1600	0.08	2	6500	1200	0.05	1.6
	25	8000	1600	0.1	2.5	6000	1400	0.07	2	5200	1200	0.04	1.6
	30	6800	1400	0.08	2.5	4800	1000	0.05	2	4200	850	0.03	1.6
	35	5500	1000	0.07	2.5	4200	880	0.04	2	3800	720	0.02	1.6
	40	4000	860	0.05	2.5	3600	720	0.03	2	3000	600	0.01	1.6
	45	3600	600	0.04	2.5	3200	500	0.03	2	2850	400	0.01	1.6
	50	3200	380	0.02	2.5	3000	300	0.03	2	2600	220	0.01	1.6
5	16	10000	2000	0.2	3	7000	1800	0.12	2.5	5500	1600	0.08	2
	25	8000	1600	0.15	3	5800	1400	0.07	2.5	4200	1200	0.05	2
	35	6000	1200	0.1	3	4200	900	0.05	2.5	3500	800	0.03	2
	50	3500	750	0.07	3	2800	620	0.03	2.5	2500	500	0.02	2

Cutting Parameter

HSXR2L 2-Flute Long Neck Corner Radius End Mill

Workpiece			Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.			Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm
0.2	R0.02	0.5	36000	360	0.006	0.12	30000	300	0.005	0.12	24000	200	0.003	0.1
		1	36000	300	0.006	0.12	30000	240	0.005	0.12	24000	150	0.003	0.1
		1.5	36000	240	0.004	0.12	30000	180	0.003	0.12	24000	100	0.002	0.1
		2	36000	180	0.004	0.12	30000	120	0.003	0.12	24000	50	0.002	0.1
	R0.05	0.5	36000	440	0.006	0.12	30000	400	0.005	0.12	24000	300	0.003	0.1
		1	36000	360	0.006	0.12	30000	300	0.005	0.12	24000	200	0.003	0.1
		1.5	36000	240	0.004	0.12	30000	200	0.003	0.12	24000	150	0.002	0.1
		2	36000	200	0.004	0.12	30000	150	0.003	0.12	24000	100	0.002	0.1
0.3	R0.02	1	36000	350	0.008	0.18	30000	350	0.007	0.18	24000	300	0.003	0.15
		1.5	36000	260	0.008	0.18	30000	260	0.007	0.18	24000	200	0.003	0.15
		2	36000	180	0.006	0.18	30000	180	0.005	0.18	24000	150	0.003	0.15
		2.5	36000	150	0.005	0.18	30000	150	0.004	0.18	24000	100	0.002	0.15
	R0.05	3	36000	70	0.005	0.18	30000	70	0.004	0.18	24000	50	0.002	0.15
		1	36000	450	0.008	0.18	30000	400	0.007	0.18	24000	350	0.003	0.15
		1.5	36000	330	0.008	0.18	30000	300	0.007	0.18	24000	250	0.003	0.15
		2	36000	280	0.006	0.18	30000	250	0.005	0.18	24000	200	0.003	0.15
		2.5	36000	250	0.005	0.18	30000	200	0.004	0.18	24000	150	0.002	0.15
		3	36000	150	0.005	0.18	30000	100	0.004	0.18	24000	80	0.002	0.15
	R0.02	1	36000	500	0.012	0.28	30000	450	0.01	0.24	24000	400	0.005	0.2
		1.5	36000	440	0.012	0.28	30000	400	0.01	0.24	24000	360	0.005	0.2
		2	36000	400	0.012	0.28	30000	360	0.01	0.24	24000	320	0.005	0.2
		2.5	36000	370	0.01	0.28	30000	340	0.008	0.24	24000	280	0.005	0.2
		3	36000	350	0.01	0.28	30000	320	0.008	0.24	24000	260	0.004	0.2
		4	36000	275	0.008	0.28	30000	250	0.006	0.24	24000	200	0.003	0.2
	R0.05	1	36000	600	0.012	0.28	30000	500	0.01	0.24	24000	400	0.005	0.2
		1.5	36000	540	0.012	0.28	30000	450	0.01	0.24	24000	360	0.005	0.2
		2	36000	490	0.012	0.28	30000	410	0.01	0.24	24000	328	0.005	0.2
		2.5	36000	450	0.01	0.28	30000	380	0.008	0.24	24000	304	0.005	0.2
		3	36000	430	0.01	0.28	30000	360	0.008	0.24	24000	288	0.004	0.2
		4	36000	360	0.008	0.28	30000	300	0.006	0.24	24000	240	0.003	0.2
	R0.1	1	36000	660	0.012	0.28	30000	550	0.01	0.24	24000	440	0.005	0.2
		1.5	36000	600	0.012	0.28	30000	500	0.01	0.24	24000	400	0.005	0.2

Cutting Parameter

HSXR2L 2-Flute Long Neck Corner Radius End Mill

Workpiece			Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.			Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm
0.4	R0.1	2	36000	550	0.012	0.28	30000	460	0.01	0.24	24000	360	0.005	0.2
		2.5	36000	500	0.01	0.28	30000	420	0.008	0.24	24000	340	0.005	0.2
		3	36000	450	0.01	0.28	30000	380	0.008	0.24	24000	300	0.004	0.2
		4	36000	420	0.008	0.28	30000	350	0.006	0.24	24000	280	0.003	0.2
0.5	R0.02	1	30000	600	0.016	0.14	25000	500	0.008	0.15	23000	400	0.006	0.1
		1.5	30000	550	0.016	0.14	25000	460	0.008	0.15	23000	370	0.006	0.1
		2	30000	500	0.014	0.14	25000	420	0.007	0.15	23000	340	0.005	0.1
		2.5	30000	450	0.014	0.14	25000	380	0.007	0.15	23000	300	0.005	0.1
		3	30000	420	0.012	0.14	25000	350	0.006	0.15	23000	280	0.004	0.1
		4	25000	360	0.01	0.14	25000	300	0.004	0.15	23000	240	0.002	0.1
		5	25000	240	0.008	0.14	20000	200	0.003	0.15	18000	160	0.002	0.1
		6	25000	190	0.004	0.14	20000	160	0.002	0.15	18000	130	0.001	0.1
	R0.05 R0.1	1	30000	720	0.03	0.14	25000	600	0.01	0.15	23000	480	0.007	0.1
		1.5	30000	660	0.03	0.14	25000	550	0.01	0.15	23000	440	0.007	0.1
		2	30000	576	0.025	0.14	25000	480	0.01	0.15	23000	384	0.007	0.1
		2.5	30000	540	0.025	0.14	25000	450	0.01	0.15	23000	360	0.007	0.1
		3	30000	480	0.02	0.14	25000	400	0.008	0.15	23000	320	0.005	0.1
		4	25000	420	0.015	0.14	25000	350	0.005	0.15	23000	280	0.003	0.1
		5	25000	300	0.01	0.14	20000	250	0.004	0.15	18000	200	0.003	0.1
		6	25000	240	0.008	0.14	20000	200	0.003	0.15	18000	160	0.002	0.1
	R0.02	2	30000	600	0.016	0.2	25000	500	0.012	0.2	23000	400	0.006	0.15
		3	28000	540	0.014	0.2	24000	450	0.01	0.2	21000	360	0.005	0.15
		4	25000	480	0.012	0.2	23000	400	0.007	0.2	20000	320	0.004	0.15
		6	23000	240	0.008	0.2	20000	200	0.005	0.2	18000	160	0.003	0.15
		8	18000	180	0.006	0.2	16000	150	0.003	0.2	14000	120	0.001	0.15
		10	16000	120	0.003	0.2	14000	100	0.001	0.2	12000	80	0.001	0.15
	R0.05 R0.1	2	30000	720	0.035	0.2	25000	600	0.02	0.2	23000	480	0.01	0.15
		3	28000	600	0.03	0.2	24000	500	0.02	0.2	21000	400	0.008	0.15
		4	25000	480	0.025	0.2	23000	400	0.015	0.2	20000	320	0.007	0.15
		6	23000	264	0.015	0.2	20000	220	0.008	0.2	18000	180	0.005	0.15
		8	18000	216	0.01	0.2	16000	180	0.005	0.2	14000	140	0.002	0.15
		10	16000	144	0.005	0.2	14000	120	0.002	0.2	12000	100	0.001	0.15

Cutting Parameter

HSXR2L 2-Flute Long Neck Corner Radius End Mill

Workpiece			Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
			Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm
Type No.														
0.7	R0.02	2	30000	840	0.016	0.25	25000	700	0.012	0.25	23000	560	0.01	0.15
		3	30000	840	0.016	0.25	25000	700	0.012	0.25	23000	560	0.01	0.15
		4	28000	720	0.012	0.25	25000	600	0.01	0.25	23000	480	0.008	0.15
		6	25000	480	0.008	0.25	20000	400	0.008	0.25	18000	320	0.006	0.15
		8	18000	240	0.006	0.2	16000	200	0.005	0.2	14000	160	0.005	0.15
		10	16000	216	0.005	0.2	14000	180	0.005	0.2	12000	140	0.005	0.15
	R0.05 R0.1	2	30000	840	0.05	0.25	25000	700	0.03	0.25	23000	560	0.02	0.15
		3	30000	780	0.04	0.25	25000	650	0.03	0.25	23000	520	0.015	0.15
		4	28000	720	0.03	0.25	25000	600	0.02	0.25	23000	480	0.01	0.15
		6	25000	480	0.02	0.25	20000	400	0.01	0.25	18000	320	0.01	0.15
		8	18000	360	0.02	0.25	16000	300	0.01	0.25	14000	240	0.008	0.15
		10	16000	240	0.015	0.25	14000	200	0.01	0.25	12000	160	0.006	0.15
0.8	R0.02	2	28000	1020	0.02	0.3	25000	850	0.014	0.25	23000	680	0.012	0.16
		3	28000	960	0.02	0.3	25000	800	0.014	0.25	23000	640	0.012	0.16
		4	28000	840	0.015	0.3	25000	700	0.012	0.25	23000	560	0.01	0.16
		6	23000	660	0.012	0.3	20000	550	0.01	0.25	18000	440	0.01	0.15
		8	18000	480	0.012	0.3	16000	400	0.01	0.25	14000	320	0.008	0.15
		10	16000	360	0.01	0.25	15000	300	0.008	0.20	13500	240	0.006	0.12
	R0.05 R0.1	12	14000	240	0.01	0.2	13000	200	0.008	0.15	12000	160	0.006	0.12
		2	28000	1200	0.02	0.3	25000	1000	0.014	0.25	23000	800	0.012	0.16
		3	28000	1080	0.02	0.3	25000	900	0.014	0.25	23000	720	0.012	0.16
		4	28000	960	0.015	0.3	25000	800	0.012	0.25	23000	640	0.01	0.16
		6	23000	720	0.012	0.3	20000	600	0.01	0.25	18000	480	0.01	0.15
		8	18000	600	0.012	0.3	16000	500	0.01	0.25	14000	400	0.008	0.15
		10	16000	480	0.01	0.25	15000	400	0.008	0.20	13500	320	0.006	0.12
		12	14000	360	0.01	0.2	13000	300	0.008	0.15	12000	240	0.006	0.12
0.9	R0.1	4	25000	1200	0.05	0.3	25000	900	0.03	0.3	20000	800	0.02	0.2
		8	18000	800	0.03	0.3	16000	500	0.01	0.3	14000	400	0.008	0.2
1	R0.05	3	30000	1450	0.04	0.35	25000	1300	0.03	0.3	22000	1000	0.025	0.3
		4	30000	1440	0.03	0.35	25000	1200	0.025	0.3	21000	960	0.02	0.25
		5	28000	1200	0.03	0.35	23000	1000	0.025	0.3	20000	800	0.02	0.25
		6	25000	1080	0.02	0.35	21000	900	0.02	0.3	18000	720	0.015	0.25

Cutting Parameter

HSXR2L 2-Flute Long Neck Corner Radius End Mill

Workpiece			Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)					
			Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm		
Type No.			Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm		
1	R0.05	8	23000	960	0.02	0.35	19000	800	0.02	0.3	16000	640	0.015	0.25		
		10	20000	840	0.02	0.35	16000	700	0.015	0.3	14000	560	0.010	0.25		
		12	18000	720	0.015	0.35	15000	600	0.015	0.3	13000	480	0.010	0.25		
		16	16000	480	0.015	0.35	13000	400	0.01	0.3	11000	320	0.008	0.25		
		20	14000	400	0.015	0.35	13000	300	0.01	0.3	11000	240	0.008	0.25		
	R0.1 R0.2 R0.3	3	30000	1500	0.04	0.35	25000	1350	0.03	0.3	22000	1080	0.025	0.3		
		4	30000	1440	0.07	0.35	25000	1200	0.05	0.3	21000	960	0.04	0.25		
		5	28000	1200	0.06	0.35	23000	1000	0.05	0.3	20000	800	0.04	0.25		
		6	25000	1080	0.055	0.35	21000	900	0.04	0.3	18000	720	0.03	0.25		
		8	23000	960	0.05	0.35	19000	800	0.03	0.3	16000	640	0.02	0.25		
		10	20000	840	0.045	0.35	16000	700	0.02	0.3	14000	560	0.01	0.25		
		12	18000	720	0.035	0.35	15000	600	0.015	0.3	13000	480	0.008	0.25		
		16	18000	480	0.035	0.35	15000	400	0.015	0.3	13000	320	0.008	0.25		
		20	14000	450	0.015	0.35	13000	350	0.01	0.3	11000	280	0.008	0.25		
		1.5	R0.05 R0.1 R0.2 R0.3	4	28000	1500	0.1	0.55	24000	1250	0.05	0.5	22000	1000	0.04	0.4
				6	28000	1440	0.1	0.55	23000	1200	0.05	0.5	20000	960	0.04	0.4
8	25000			1200	0.08	0.55	21000	1000	0.05	0.5	18000	800	0.04	0.4		
10	23000			1080	0.08	0.55	19000	900	0.045	0.5	16000	720	0.03	0.4		
12	20000			960	0.06	0.55	16000	800	0.04	0.5	14000	640	0.025	0.4		
16	16000			720	0.06	0.55	13000	600	0.03	0.5	11000	480	0.02	0.4		
20	12000			480	0.03	0.55	11000	400	0.02	0.5	9000	320	0.007	0.4		
2	R0.05 R0.1 R0.2 R0.3 R0.5	6	24000	1320	0.13	0.7	20000	1100	0.06	0.6	17000	880	0.05	0.5		
		8	24000	1320	0.13	0.7	20000	1100	0.06	0.6	17000	880	0.05	0.5		
		10	22000	1200	0.12	0.7	18000	1000	0.06	0.6	15000	800	0.05	0.5		
		12	20000	1080	0.11	0.7	16000	900	0.05	0.6	14000	720	0.04	0.5		
		16	16000	840	0.09	0.7	13000	700	0.04	0.6	11000	560	0.03	0.5		
		20	14000	720	0.07	0.7	11000	600	0.03	0.6	9500	480	0.02	0.5		
		25	12000	600	0.06	0.7	9000	500	0.03	0.6	8000	400	0.02	0.5		
		30	10000	480	0.05	0.7	8000	400	0.02	0.6	7000	320	0.01	0.5		
3	R0.1 R0.2 R0.3 R0.5	8	18000	1440	0.18	1	15000	1200	0.1	0.8	13000	960	0.07	0.7		
		10	18000	1440	0.18	1	15000	1200	0.1	0.8	13000	960	0.07	0.7		
		12	16000	1320	0.17	1	13000	1100	0.1	0.8	11000	880	0.07	0.7		

Cutting Parameter

HSXR2L 2-Flute Long Neck Corner Radius End Mill

Workpiece			Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.			Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm
3	R0.1 R0.2 R0.3 R0.5	16	14000	1200	0.16	1	11000	1000	0.1	0.8	9500	800	0.07	0.7
		20	13500	1080	0.16	1	11000	900	0.08	0.8	9500	720	0.06	0.7
		25	12000	900	0.14	1	10000	750	0.07	0.8	8500	600	0.05	0.7
		30	10000	780	0.12	1	8000	650	0.05	0.8	7000	520	0.04	0.7
		35	9000	600	0.08	1	7500	500	0.04	0.8	6500	400	0.02	0.7
		40	8000	480	0.06	1	6500	400	0.03	0.8	5500	320	0.02	0.7
4	R0.1 R0.2 R0.3 R0.5 R1	10	14000	1800	0.3	2.5	13000	1500	0.15	2	12000	1200	0.12	1.5
		12	13000	1500	0.3	2.5	12000	1300	0.15	2	10000	1000	0.12	1.5
		16	12000	1300	0.25	1.4	10000	1100	0.15	1.2	8500	900	0.1	1
		20	12000	1300	0.25	1.4	10000	1000	0.15	1.2	8500	900	0.1	1
		25	10000	1100	0.17	1.4	8000	900	0.1	1.2	7000	800	0.08	1
		30	8000	800	0.14	1.4	6500	800	0.08	1.2	5500	660	0.08	1
		35	6500	700	0.08	1.4	5500	700	0.06	1.2	4500	540	0.05	1
		40	5800	660	0.06	1.2	5200	600	0.05	1	4000	480	0.05	0.8
		45	5200	550	0.05	1.2	4800	500	0.04	1	3800	420	0.04	0.8
		50	4800	450	0.04	1.2	4500	400	0.03	1	3200	360	0.04	0.8

Cutting Parameter

HSXR4L 4-Flute Long Neck Corner Radius End Mill

Workpiece			Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.			Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm
0.5	R0.02	1	30000	1200	0.016	0.14	25000	1000	0.008	0.15	23000	800	0.006	0.1
		1.5	30000	1100	0.016	0.14	25000	920	0.008	0.15	23000	740	0.006	0.1
		2	30000	1000	0.014	0.14	25000	840	0.007	0.15	23000	670	0.005	0.1
		2.5	30000	910	0.014	0.14	25000	760	0.007	0.15	23000	610	0.005	0.1
		3	30000	840	0.012	0.14	25000	700	0.006	0.15	23000	560	0.004	0.1
		4	25000	720	0.01	0.14	25000	600	0.004	0.15	23000	480	0.002	0.1
		5	25000	480	0.008	0.14	20000	400	0.003	0.15	18000	320	0.002	0.1
	R0.05 R0.1	6	25000	280	0.004	0.14	20000	230	0.002	0.15	18000	180	0.001	0.1
		1	30000	1440	0.03	0.14	25000	1200	0.01	0.15	23000	960	0.007	0.1
		1.5	30000	1300	0.03	0.14	25000	1100	0.01	0.15	23000	880	0.007	0.1
		2	30000	1150	0.025	0.14	25000	960	0.01	0.15	23000	770	0.007	0.1
		2.5	30000	1100	0.025	0.14	25000	900	0.01	0.15	23000	720	0.007	0.1
		3	30000	960	0.02	0.14	25000	800	0.008	0.15	23000	640	0.005	0.1
		4	25000	840	0.015	0.14	25000	700	0.005	0.15	23000	560	0.003	0.1
0.6	R0.02	5	25000	600	0.01	0.14	20000	500	0.004	0.15	18000	400	0.003	0.1
		6	25000	480	0.008	0.14	20000	400	0.003	0.15	18000	320	0.002	0.1
	R0.05 R0.1	2	30000	1200	0.016	0.2	25000	1000	0.012	0.2	23000	800	0.006	0.15
		3	28000	1080	0.014	0.2	24000	900	0.01	0.2	21000	720	0.005	0.15
		4	25000	960	0.012	0.2	23000	800	0.007	0.2	20000	640	0.004	0.15
		6	23000	480	0.008	0.2	20000	400	0.005	0.2	18000	320	0.003	0.15
		8	18000	360	0.006	0.2	16000	300	0.005	0.2	14000	240	0.003	0.15
		10	16000	240	0.003	0.2	14000	200	0.002	0.2	12000	160	0.002	0.15
0.7	R0.02	2	30000	1440	0.035	0.2	25000	1200	0.02	0.2	23000	960	0.01	0.15
		3	28000	1200	0.030	0.2	24000	1000	0.02	0.2	21000	800	0.008	0.15
		4	25000	960	0.025	0.2	23000	800	0.015	0.2	20000	640	0.007	0.15
		6	23000	530	0.015	0.2	20000	440	0.008	0.2	18000	350	0.005	0.15
		8	18000	430	0.01	0.2	16000	360	0.005	0.2	14000	290	0.002	0.15
		10	16000	290	0.005	0.2	14000	240	0.002	0.2	12000	190	0.001	0.15
	R0.02	2	30000	1680	0.016	0.25	25000	1400	0.012	0.25	23000	1120	0.01	0.15
		3	30000	1680	0.016	0.25	25000	1400	0.012	0.25	23000	1120	0.01	0.15
		4	28000	1440	0.012	0.25	25000	1200	0.01	0.25	23000	960	0.008	0.15
		6	25000	960	0.008	0.25	20000	800	0.008	0.25	18000	640	0.006	0.15

Cutting Parameter

HSXR4L 4-Flute Long Neck Corner Radius End Mill

Workpiece			Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
			Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm
Type No.														
0.7	R0.02	8	18000	480	0.006	0.2	16000	400	0.005	0.2	14000	320	0.005	0.15
		10	16000	430	0.005	0.2	14000	360	0.005	0.2	12000	290	0.005	0.15
	R0.05 R0.1	2	30000	1680	0.05	0.25	25000	1400	0.03	0.25	23000	1120	0.02	0.15
		3	30000	1560	0.04	0.25	25000	1300	0.03	0.25	23000	1040	0.015	0.15
		4	28000	1440	0.03	0.25	25000	1200	0.02	0.25	23000	960	0.01	0.15
		6	25000	960	0.02	0.25	20000	800	0.01	0.25	18000	640	0.01	0.15
		8	18000	720	0.02	0.25	16000	600	0.01	0.25	14000	480	0.008	0.15
		10	16000	480	0.02	0.25	14000	400	0.01	0.25	12000	320	0.006	0.15
0.8	R0.02	2	28000	2040	0.020	0.3	25000	1700	0.014	0.25	23000	1360	0.012	0.16
		4	28000	1680	0.015	0.3	25000	1400	0.012	0.25	23000	1120	0.01	0.16
		6	23000	1320	0.012	0.3	20000	1100	0.01	0.25	18000	880	0.01	0.15
		8	18000	960	0.012	0.3	16000	800	0.01	0.25	14000	640	0.008	0.15
		10	16000	720	0.010	0.25	15000	600	0.008	0.20	13500	480	0.006	0.12
		12	14000	480	0.010	0.2	13000	400	0.008	0.15	12000	320	0.006	0.12
	R0.05 R0.1 R0.2	2	28000	2400	0.020	0.3	25000	2000	0.014	0.25	23000	1600	0.012	0.16
		4	28000	1920	0.015	0.3	25000	1600	0.012	0.25	23000	1280	0.01	0.16
		6	23000	1440	0.012	0.3	20000	1200	0.01	0.25	18000	960	0.01	0.15
		8	18000	1200	0.012	0.3	16000	1000	0.01	0.25	14000	800	0.008	0.15
		10	16000	960	0.010	0.25	15000	800	0.008	0.20	13500	640	0.006	0.12
		12	14000	720	0.010	0.2	13000	600	0.008	0.15	12000	480	0.006	0.12
0.9	R0.1	4	25000	2200	0.05	0.3	25000	1700	0.03	0.3	20000	1400	0.02	0.2
		8	18000	1000	0.03	0.3	16000	800	0.01	0.3	14000	700	0.008	0.2
1	R0.02	4	30000	2880	0.030	0.35	25000	2400	0.025	0.3	21000	1920	0.02	0.25
		5	28000	2400	0.030	0.35	23000	2000	0.025	0.3	20000	1600	0.02	0.25
		6	25000	2160	0.020	0.35	21000	1800	0.02	0.3	18000	1440	0.015	0.25
		8	23000	1920	0.020	0.35	19000	1600	0.020	0.3	16000	1280	0.015	0.25
		10	20000	1680	0.02	0.35	16000	1400	0.015	0.3	14000	1120	0.010	0.25
		12	18000	1440	0.015	0.35	15000	1200	0.015	0.3	13000	960	0.010	0.25
		16	16000	960	0.015	0.35	13000	800	0.010	0.3	11000	640	0.008	0.25
		20	14000	720	0.015	0.35	13000	600	0.010	0.3	11000	480	0.008	0.25
	R0.05 R0.1 R0.2 R0.3	4	30000	2880	0.065	0.35	25000	2400	0.05	0.3	21000	1920	0.04	0.25
		5	28000	2400	0.06	0.35	23000	2000	0.05	0.3	20000	1600	0.04	0.25

Cutting Parameter

HSXR4L 4-Flute Long Neck Corner Radius End Mill

Workpiece			Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
			Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm
Type No.														
1	R0.05 R0.1 R0.2 R0.3	6	25000	2160	0.055	0.35	21000	1800	0.04	0.3	18000	1440	0.03	0.25
		8	23000	1920	0.05	0.35	19000	1600	0.03	0.3	16000	1280	0.02	0.25
		10	20000	1680	0.045	0.35	16000	1400	0.02	0.3	14000	1120	0.01	0.25
		12	18000	1440	0.035	0.35	15000	1200	0.015	0.3	13000	960	0.008	0.25
		16	18000	960	0.035	0.35	15000	800	0.015	0.3	13000	640	0.008	0.25
		20	14000	840	0.015	0.35	13000	700	0.010	0.3	11000	560	0.008	0.25
1.2	R0.05 R0.1 R0.2 R0.3	5	24000	2200	0.06	0.45	20000	1800	0.045	0.4	17000	1500	0.03	0.3
		10	16000	1400	0.04	0.45	13000	1100	0.03	0.4	11000	950	0.01	0.3
1.5	R0.02	6	28000	2800	0.016	0.55	23000	2300	0.012	0.5	20000	2000	0.01	0.4
		8	25000	2400	0.016	0.55	21000	2000	0.012	0.5	18000	1700	0.01	0.4
		10	23000	2200	0.014	0.55	19000	1800	0.01	0.5	16000	1500	0.008	0.4
		12	20000	1800	0.014	0.55	16000	1500	0.01	0.5	14000	1300	0.008	0.4
		16	16000	1400	0.012	0.55	13000	1100	0.008	0.5	11000	950	0.005	0.4
		20	14000	1000	0.008	0.55	11000	800	0.005	0.5	9000	700	0.003	0.4
	R0.05 R0.1 R0.2 R0.3 R0.5	6	28000	2800	0.1	0.55	23000	2300	0.05	0.5	20000	2000	0.04	0.4
		8	25000	2400	0.08	0.55	21000	2000	0.05	0.5	18000	1700	0.04	0.4
		10	23000	2200	0.08	0.55	19000	1800	0.045	0.5	16000	1500	0.03	0.4
		12	20000	1800	0.06	0.55	16000	1500	0.04	0.5	14000	1300	0.025	0.4
		16	16000	1400	0.06	0.55	13000	1100	0.03	0.5	11000	950	0.02	0.4
		20	14000	1000	0.03	0.55	11000	800	0.02	0.5	9000	700	0.007	0.4
2	R0.02	8	24000	2800	0.02	0.7	20000	2300	0.015	0.6	17000	2000	0.012	0.5
		10	22000	2500	0.018	0.7	18000	2100	0.015	0.6	15000	1800	0.012	0.5
		12	20000	2200	0.016	0.7	16000	1800	0.012	0.6	14000	1500	0.01	0.5
		16	16000	1700	0.014	0.7	13000	1400	0.01	0.6	11000	1200	0.008	0.5
		20	14000	1400	0.012	0.7	11000	1100	0.008	0.6	9500	950	0.005	0.5
		25	10000	800	0.01	0.7	8000	650	0.005	0.6	7000	550	0.003	0.5
	R0.05 R0.1 R0.2 R0.3 R0.5	30	10000	480	0.005	0.7	8000	400	0.002	0.6	7000	320	0.002	0.5
		8	24000	2800	0.13	0.7	20000	2300	0.06	0.6	17000	2000	0.05	0.5
		10	22000	2500	0.12	0.7	18000	2100	0.06	0.6	15000	1800	0.05	0.5
		12	20000	2200	0.11	0.7	16000	1800	0.05	0.6	14000	1500	0.04	0.5
		16	16000	1700	0.09	0.7	13000	1400	0.04	0.6	11000	1200	0.03	0.5
		20	14000	1400	0.07	0.7	11000	1100	0.03	0.6	9500	950	0.02	0.5

Cutting Parameter

HSXR4L 4-Flute Long Neck Corner Radius End Mill

Workpiece			Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.			Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm
2	R0.05 R0.1 R0.2 R0.3 R0.5	25	12000	960	0.06	0.7	9000	800	0.03	0.6	8000	640	0.02	0.5
		30	10000	800	0.05	0.7	8000	650	0.02	0.6	7000	550	0.01	0.5
2.5	R0.05 R0.1 R0.2 R0.3 R0.5	10	16000	2200	0.14	0.85	13000	1800	0.07	0.7	11000	1500	0.05	0.5
		20	11000	1400	0.08	0.85	9000	1100	0.04	0.7	7500	950	0.02	0.5
		30	7000	800	0.03	0.85	5500	650	0.01	0.7	4500	550	0.01	0.5
3	R0.05	10	18000	2800	0.18	1	15000	2300	0.1	0.8	13000	2000	0.07	0.7
		12	16000	2500	0.17	1	13000	2100	0.1	0.8	11000	1800	0.07	0.7
		16	14000	2200	0.16	1	11000	1800	0.1	0.8	9500	1500	0.07	0.7
		20	13500	2000	0.16	1	11000	1600	0.08	0.8	9500	1400	0.06	0.7
		25	12000	1800	0.14	1	10000	1500	0.07	0.8	8500	1300	0.05	0.7
		30	10000	1400	0.12	1	8000	1100	0.05	0.8	7000	950	0.04	0.7
		35	9000	1200	0.08	1	7500	1000	0.04	0.8	6500	800	0.02	0.7
		40	8000	960	0.06	1	6500	800	0.03	0.8	5500	640	0.02	0.7
	R0.1 R0.2 R0.3 R0.5	10	18000	2800	0.18	1	15000	2300	0.1	0.8	13000	2000	0.07	0.7
		12	16000	2500	0.17	1	13000	2100	0.1	0.8	11000	1800	0.07	0.7
		16	14000	2200	0.16	1	11000	1800	0.1	0.8	9500	1500	0.07	0.7
		20	13500	2000	0.16	1	11000	1600	0.08	0.8	9500	1400	0.06	0.7
		25	12000	1800	0.14	1	10000	1500	0.07	0.8	8500	1300	0.05	0.7
		30	10000	1400	0.12	1	8000	1100	0.05	0.8	7000	950	0.04	0.7
		35	9000	1200	0.08	1	7500	1050	0.04	0.8	6500	850	0.02	0.7
		40	8000	1000	0.06	1	6500	800	0.03	0.8	5500	700	0.02	0.7
	R0.1	10	14000	2200	0.16	1	11000	1800	0.1	0.8	9500	1500	0.07	0.7
		12	13500	2000	0.16	1	11000	1600	0.08	0.8	9500	1400	0.06	0.7
		16	12000	1800	0.14	1	10000	1500	0.07	0.8	8500	1300	0.05	0.7
		20	10000	1400	0.12	1	8000	1100	0.05	0.8	7000	950	0.04	0.7
		25	9000	1200	0.08	1	7500	1100	0.04	0.8	6500	850	0.02	0.7
		30	9000	1200	0.08	1	7500	1100	0.04	0.8	6500	800	0.02	0.7
		35	9000	1200	0.08	1	7500	1050	0.04	0.8	6500	750	0.02	0.7
		40	8000	1000	0.06	1	6500	800	0.03	0.8	5500	700	0.02	0.7
4	R0.1 R0.2 R0.3 R0.5 R1	16	12000	2650	0.25	1.4	10000	2200	0.15	1.2	8500	1760	0.1	1
		20	12000	2400	0.25	1.4	10000	2000	0.15	1.2	8500	1600	0.1	1
		25	10000	2160	0.17	1.4	8000	1800	0.1	1.2	7000	1440	0.08	1

Cutting Parameter

HSXR4L 4-Flute Long Neck Corner Radius End Mill

Workpiece			Pre-Hardened Steels (30-45HRC)				Hardened Steels (45-55HRC)				Hardened Steels (55-65HRC)			
Type No.			Spindle Speed min ⁻¹	Feed mm/min	A _p mm	A _e mm	Spindle Speed min ⁻¹	Feed mm/min	A _p mm	A _e mm	Spindle Speed min ⁻¹	Feed mm/min	A _p mm	A _e mm
4	R0.1 R0.2 R0.3 R0.5 R1	30	8000	1900	0.14	1.4	6500	1600	0.08	1.2	5500	1280	0.08	1
		35	6500	1680	0.08	1.4	5500	1400	0.06	1.2	4500	1100	0.05	1
		40	5800	1440	0.06	1.2	5200	1200	0.05	1	4000	960	0.05	0.8
		45	5200	1200	0.05	1.2	4800	1000	0.04	1	3800	800	0.04	0.8
		50	4800	960	0.04	1.2	4500	800	0.03	1	3200	640	0.04	0.8
5	R0.1 R0.2 R0.3 R0.5 R1	16	9500	2400	0.25	2.2	8000	2000	0.15	2	7000	1700	0.08	1.6
		20	8000	2000	0.18	2.2	6500	1600	0.1	2	5500	1400	0.07	1.6
		40	5000	1200	0.09	2.2	4000	1000	0.05	2	3500	850	0.02	1.6

HGX SERIES

Trusted Partner For Precision Mold Machining

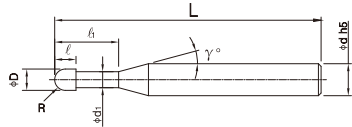
The Speciality of HSX Serie

- We use 0.3 μm ultra fine carbide substrates to ensure high wear resistance.
- The super lubrication of ATX coating surface makes the surface friction coefficient lower. Thus during the process of machining,the cutting resistance and cutting temperature will be greatly reduced.
- ATX coating is very suitable for cutting the materials of ≤55HRC. The coating is widely used for the processing of high-precision moulds such as car lamp moulds, mobile phone moulds and hardware moulds,etc.



≤55HRC

HGXB 2-Flute Ball End Mill



Ø D	D Tolerance	Ø D	R Tolerance
D<3	0~-0.010	D<1	±0.003
3<D≤6	0~-0.012	1<D≤8	±0.005
6<D<10	0~-0.015	D>8	±0.008
10<D≤18	0~-0.018		

Unit : mm

Type No.	Radius	Length of Cut	Under Neck Length	Dia.	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	R	ℓ	ℓ ₁	φD	φd ₁	γ/°	L	φd
HGXB2001 0450	R0.05	0.1	-	0.1	-	12	50	4
HGXB20015 0450	R0.075	0.15	-	0.15	-	12	50	4
HGXB2002 0450	R0.1	0.2	-	0.2	-	12	50	4
HGXB2003 0450	R0.15	0.3	-	0.3	-	12	50	4
HGXB2004 0450	R0.2	0.6	-	0.4	-	12	50	4
HGXB2005 0450	R0.25	0.8	-	0.5	-	12	50	4
HGXB2006 0450	R0.3	0.9	-	0.6	-	12	50	4
HGXB2008 0450	R0.4	1.2	-	0.8	-	12	50	4
HGXB2010 0450	R0.5	0.75	2	1	0.95	12	50	4
HGXB2010 0650	R0.5	0.75	2.5	1	0.95	12	50	6
HGXB2010 0660	R0.5	0.75	2.5	1	0.95	12	60	6
HGXB2010 0675	R0.5	0.75	2.5	1	0.95	12	75	6
HGXB2012 0450	R0.6	0.9	2.4	1.2	1.14	11	50	4
HGXB2015 0450	R0.75	1.2	3	1.5	1.42	11	50	4
HGXB2015 0650	R0.75	1.2	4	1.5	1.42	11	50	6
HGXB2015 0660	R0.75	1.2	4	1.5	1.42	11	60	6
HGXB2015 0675	R0.75	1.2	4	1.5	1.42	11	75	6
HGXB2020 0450	R1	1.6	4	2	1.9	11	50	4
HGXB2020 0650	R1	1.6	6	2	1.9	11	50	6
HGXB2020 0660	R1	1.6	6	2	1.9	11	60	6
HGXB2020 0675	R1	1.6	6	2	1.9	11	75	6
HGXB2025 0450	R1.25	2	5	2.5	2.4	11	50	4
HGXB2025 0650	R1.25	2	7	2.5	2.4	11	50	6
HGXB2025 0660	R1.25	2	7	2.5	2.4	11	60	6
HGXB2025 0675	R1.25	2	7	2.5	2.4	11	75	6
HGXB2030 0450	R1.5	2.4	6	3	2.9	11	50	4
HGXB2030 0650	R1.5	2.4	8	3	2.9	11	50	6
HGXB2030 0660	R1.5	2.4	8	3	2.9	11	60	6

HGXB 2-Flute Ball End Mill



Ø D	D Tolerance	Ø D	R Tolerance
D<3	0~-0.010	D<1	±0.003
3<D≤6	0~-0.012	1<D≤8	±0.005
6<D≤10	0~-0.015	D>8	±0.008
10<D≤18	0~-0.018		

Unit : mm

Type No.	Radius	Length of Cut	Under Neck Length	Dia.	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	R	ℓ	ℓ ₁	φD	φd ₁	γ/°	L	φd
HGXB2030 0675	R1.5	2.4	8	3	2.9	11	75	6
HGXB2040 0450	R2	6	-	4	-	-	50	4
HGXB2040 0475	R2	6	-	4	-	-	75	4
HGXB2040 0650	R2	3.2	10	4	3.9	11	50	6
HGXB2040 0660	R2	3.2	10	4	3.9	11	60	6
HGXB2040 0675	R2	3.2	10	4	3.9	11	75	6
HGXB2050 0650	R2.5	4	12	5	4.85	11	50	6
HGXB2050 0660	R2.5	4	12	5	4.85	11	60	6
HGXB2050 0675	R2.5	4	12	5	4.85	11	75	6
HGXB2060 0650	R3	9	-	6	-	-	50	6
HGXB2060 0660	R3	9	-	6	-	-	60	6
HGXB2060 0675	R3	9	-	6	-	-	75	6
HGXB2060 06100	R3	9	-	6	-	-	100	6
HGXB2080 0860	R4	12	-	8	-	-	60	8
HGXB2080 0875	R4	12	-	8	-	-	75	8
HGXB2080 08100	R4	12	-	8	-	-	100	8
HGXB2100 1075	R5	15	-	10	-	-	75	10
HGXB2100 10100	R5	15	-	10	-	-	100	10
HGXB2100 10125	R5	15	-	10	-	-	125	10
HGXB2120 1275	R6	18	-	12	-	-	75	12
HGXB2120 12100	R6	18	-	12	-	-	100	12
HGXB2120 12125	R6	18	-	12	-	-	125	12

TABLE OF RECOMMENDED MILLING MATERIALS

○ Very suitable ○ Suitable

CARBON STEELS	ALLOY STEELS	PREHARDENED STEELS, HARDENED STEELS				STAINLESS STEELS	CAST IRON	COPPER ALLOYS	ALUMINUM ALLOY	GRAPHITE	TITANIUM ALLOY	HEAT RESISTANT ALLOYS	PLASTIC
PREHARDENED STEELS	TOOL STEELS						DUCTILE CAST IRON						
~40HRC	~50HRC	~55HRC	~60HRC	~65HRC	~35HRC	~350HB							
○	○	○			○	○	○	○			○	○	

HGXE 2-Flute End Mill

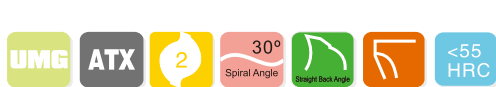


Ø D	D Tolerance
D<3	0~-0.010
3<D≤6	0~-0.012
6<D≤10	0~-0.015
10<D≤18	0~-0.018
D>18	0~-0.020

Unit : mm

Type No.	Dia.	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	ℓ	γ/°	L	φd
HGXE2001 0450	0.1	0.2	12	50	4
HGXE20015 0450	0.15	0.3	12	50	4
HGXE2002 0450	0.2	0.4	12	50	4
HGXE2003 0450	0.3	0.6	12	50	4
HGXE2004 0450	0.4	1.2	12	50	4
HGXE2005 0450	0.5	1.5	12	50	4
HGXE2006 0450	0.6	1.8	12	50	4
HGXE2007 0450	0.7	2.1	12	50	4
HGXE2008 0450	0.8	2.4	12	50	4
HGXE2010 0450	1	3	12	50	4
HGXE2010 0650	1	3	12	50	6
HGXE2012 0450	1.2	3.5	11	50	4
HGXE2014 0450	1.4	4	11	50	4
HGXE2015 0450	1.5	4	11	50	4
HGXE2015 0650	1.5	4	11	50	6
HGXE2016 0450	1.6	4.5	11	50	4
HGXE2020 0450	2	6	11	50	4
HGXE2020 0650	2	6	11	50	6
HGXE2025 0450	2.5	8	11	50	4
HGXE2025 0650	2.5	8	11	50	6
HGXE2030 0450	3	8	11	50	4
HGXE2030 0650	3	8	11	50	6
HGXE2030 0675	3	12	11	75	6
HGXE2040 0450	4	11	-	50	4
HGXE2040 0650	4	11	11	50	6
HGXE2040 0675	4	15	11	75	6
HGXE2050 0650	5	13	11	50	6
HGXE2050 0675	5	18	11	75	6

HGXE 2-Flute End Mill



φ D	D Tolerance
D<3	0~-0.010
3<D≤6	0~-0.012
6<D≤10	0~-0.015
10<D≤18	0~-0.018
D>18	0~-0.020

Unit : mm

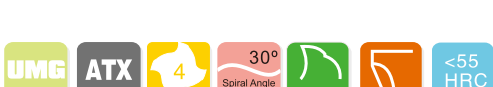
Type No.	Dia.	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	ℓ	γ/°	L	φd
HGXE2060 0650	6	16	-	50	6
HGXE2060 0660	6	16	-	60	6
HGXE2060 0675	6	20	-	75	6
HGXE2080 0860	8	20	-	60	8
HGXE2080 0875	8	20	-	75	8
HGXE2080 08100	8	25	-	100	8
HGXE2100 1075	10	25	-	75	10
HGXE2100 10100	10	30	-	100	10
HGXE2120 1275	12	30	-	75	12
HGXE2120 12100	12	35	-	100	12
HGXE2160 16100	16	45	-	100	16
HGXE2200 20100	20	45	-	100	20

TABLE OF RECOMMENDED MILLING MATERIALS

○ Very suitable
 ○ Suitable

CARBON STEELS	ALLOY STEELS	PREHARDENED STEELS, HARDENED STEELS				STAINLESS STEELS	CAST IRON	COPPER ALLOYS	ALUMINUM ALLOY	GRAPHITE	TITANIUM ALLOY	HEAT RESISTANT ALLOYS	PLASTIC
PREHARDENED STEELS	TOOL STEELS						DUCTILE CAST IRON						
~40HRC	~50HRC	~55HRC	~60HRC	~65HRC	~35HRC	~350HB							
○	○	○			○	○	○	○	○		○	○	

HGXE 4-Flute End Mill

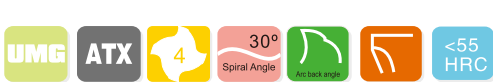


φ D	D Tolerance
D<3	0~-0.010
3<D≤6	0~-0.012
6<D≤10	0~-0.015
10<D≤18	0~-0.018
D>18	0~-0.020

Unit : mm

Type No.	Dia.	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	ℓ	γ/°	L	φd
HGXE4008 0450	0.8	2.4	12	50	4
HGXE4010 0450	1	3	12	50	4
HGXE4010 0650	1	3	12	50	6
HGXE4012 0450	1.2	3.5	11	50	4
HGXE4014 0450	1.4	4	11	50	4
HGXE4015 0450	1.5	4	11	50	4
HGXE4015 0650	1.5	4	11	50	6
HGXE4016 0450	1.6	5	11	50	4
HGXE4020 0450	2	6	11	50	4
HGXE4020 0650	2	6	11	50	6
HGXE4025 0450	2.5	8	11	50	4
HGXE4025 0650	2.5	8	11	50	6
HGXE4030 0450	3	8	11	50	4
HGXE4030 0650	3	8	11	50	6
HGXE4030 0675	3	12	11	75	6
HGXE4040 0450	4	11	-	50	4
HGXE4040 0475	4	15	-	75	4
HGXE4040 0650	4	11	11	50	6
HGXE4040 0675	4	15	11	75	6
HGXE4050 0650	5	13	11	50	6
HGXE4050 0675	5	18	11	75	6
HGXE4060 0650	6	16	-	50	6
HGXE4060 0660	6	16	-	60	6
HGXE4060 0675	6	20	-	75	6

HGXE 4-Flute End Mill



∅ D	D Tolerance
D<3	0~-0.010
3<D≤6	0~-0.012
6<D≤10	0~-0.015
10<D≤18	0~-0.018
D>18	0~-0.020

Unit : mm

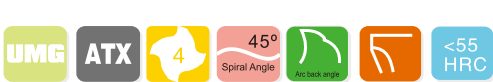
Type No.	Dia.	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	ℓ	γ/°	L	φd
HGXE4060 06100	6	20	—	100	6
HGXE4080 0860	8	20	—	60	8
HGXE4080 0875	8	20	—	75	8
HGXE4080 08100	8	25	—	100	8
HGXE4100 1075	10	25	—	75	10
HGXE4100 10100	10	30	—	100	10
HGXE4120 1275	12	30	—	75	12
HGXE4120 12100	12	35	—	100	12
HGXE4160 16100	16	45	—	100	16
HGXE4160 16125	16	50	—	125	16
HGXE4200 20100	20	45	—	100	20
HGXE4200 20125	20	55	—	125	20

TABLE OF RECOMMENDED MILLING MATERIALS

○ Very suitable
 ○ Suitable

CARBON STEELS	ALLOY STEELS	PREHARDENED STEELS, HARDENED STEELS				STAINLESS STEELS	CAST IRON	COPPER ALLOYS	ALUMINUM ALLOY	GRAPHITE	TITANIUM ALLOY	HEAT RESISTANT ALLOYS	PLASTIC
PREHARDENED STEELS	TOOL STEELS						DUCTILE CAST IRON						
~40HRC		~50HRC	~55HRC	~60HRC	~65HRC	~35HRC	~350HB						
○		○	○			○	○	○	○		○	○	

HGXEF 4-Flute End Mill-45°



∅ D	D Tolerance
D<3	0~-0.010
3<D≤6	0~-0.012
6<D≤10	0~-0.015
10<D≤20	0~-0.018

Unit : mm

Type No.	Dia.	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	ℓ	γ/°	L	φd
HGXEF4010 0450	1	3	12	50	4
HGXEF4010 0650	1	3	12	50	6
HGXEF4012 0450	1.2	3.5	11	50	4
HGXEF4014 0450	1.4	4	11	50	4
HGXEF4015 0450	1.5	4	11	50	4
HGXEF4015 0650	1.5	4	11	50	6
HGXEF4016 0450	1.6	5	11	50	4
HGXEF4020 0450	2	6	11	50	4
HGXEF4020 0650	2	6	11	50	6
HGXEF4025 0450	2.5	8	11	50	4
HGXEF4025 0650	2.5	8	11	50	6
HGXEF4030 0450	3	8	11	50	4
HGXEF4030 0650	3	8	11	50	6
HGXEF4030 0660	3	8	11	60	6
HGXEF4030 0675	3	12	11	75	6
HGXEF4040 0450	4	11	—	50	4
HGXEF4040 0475	4	15	—	75	4
HGXEF4040 0650	4	11	11	50	6
HGXEF4040 0660	4	11	11	60	6
HGXEF4040 0675	4	15	11	75	6
HGXEF4050 0650	5	13	11	50	6
HGXEF4050 0660	5	13	11	60	6
HGXEF4050 0675	5	18	11	75	6
HGXEF4060 0650	6	16	—	50	6
HGXEF4060 0660	6	16	—	60	6
HGXEF4060 0675	6	20	—	75	6

HGXEF 4-Flute End Mill-45°











φ D	D Tolerance
D<3	0~-0.010
3<D<6	0~-0.012
6<D<10	0~-0.015
10<D<18	0~-0.018
D>18	0~-0.020

Unit : mm

Type No.	Dia.	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	ℓ	γ/°	L	φd
F4060 06100	6	20	—	100	6
F4080 0860	8	20	—	60	8
F4080 0875	8	20	—	75	8
F4080 08100	8	25	—	100	8
F4100 1075	10	25	—	75	10
F4100 10100	10	30	—	100	10
F4100 10125	10	35	—	125	10
F4120 1275	12	30	—	75	12
F4120 12100	12	35	—	100	12
F4120 12125	12	42	—	125	12
F4160 16100	16	45	—	100	16
F4160 16150	16	50	—	150	16
F4200 20100	20	45	—	100	20
F4200 20150	20	55	—	150	20

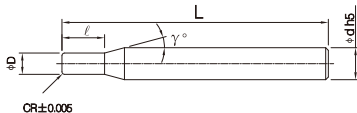
TABLE OF RECOMMENDED MILLING MATERIALS									
CARBON STEELS		PRE-HARDENED STEELS, HARDENED STEELS				STAINLESS STEELS	CAST IRON DUCTILE CAST IRON	COPPER ALLOYS	ALUMINUM ALLOY
PRE-HARDENED STEELS	TOOL STEELS								
~40HRC	~50HRC	~55HRC	~60HRC	~65HRC	~35HRC	~350HB			
○	○	○			○	○	○	○	○

HGXR 2-Flute Corner Radius End Mill



UMG ATX 2 30° Spiral Angle Straight Back Angle R <55 HRC				<table><tr><th>φ D</th><th>D Tolerance</th></tr><tr><td>D<3</td><td>0~-0.010</td></tr><tr><td>3<D<6</td><td>0~-0.012</td></tr><tr><td>6<D<10</td><td>0~-0.015</td></tr><tr><td>10<D<18</td><td>0~-0.018</td></tr></table>	φ D	D Tolerance	D<3	0~-0.010	3<D<6	0~-0.012	6<D<10	0~-0.015	10<D<18	0~-0.018	Unit : mm	
φ D	D Tolerance															
D<3	0~-0.010															
3<D<6	0~-0.012															
6<D<10	0~-0.015															
10<D<18	0~-0.018															
Type No.	Dia.	Corner Radius	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.										
	φD	CR	ℓ	γ/°	L	φd										
HGXR2002R0.05 0450	0.2	R0.05	0.4	12	50	4										
HGXR2003R0.05 0450	0.3	R0.05	0.6	12	50	4										
HGXR2004R0.05 0450	0.4	R0.05	0.8	12	50	4										
HGXR2004R0.1 0450	0.4	R0.1	0.8	12	50	4										
HGXR2005R0.05 0450	0.5	R0.05	1	12	50	4										
HGXR2005R0.1 0450	0.5	R0.1	1	12	50	4										
HGXR2006R0.05 0450	0.6	R0.05	1.2	12	50	4										
HGXR2006R0.1 0450	0.6	R0.1	1.2	12	50	4										
HGXR2007R0.05 0450	0.7	R0.05	1.4	12	50	4										
HGXR2007R0.1 0450	0.7	R0.1	1.4	12	50	4										
HGXR2008R0.05 0450	0.8	R0.05	1.6	12	50	4										
HGXR2008R0.1 0450	0.8	R0.1	1.6	12	50	4										
HGXR2009R0.1 0450	0.9	R0.1	1.8	12	50	4										
HGXR2010R0.05 0450	1	R0.05	2	12	50	4										
HGXR2010R0.1 0450	1	R0.1	2	12	50	4										
HGXR2010R0.2 0450	1	R0.2	2	12	50	4										
HGXR2010R0.3 0450	1	R0.3	2	12	50	4										
HGXR2015R0.05 0450	1.5	R0.05	3	11	50	4										
HGXR2015R0.1 0450	1.5	R0.1	3	11	50	4										
HGXR2015R0.2 0450	1.5	R0.2	3	11	50	4										
HGXR2015R0.3 0450	1.5	R0.3	3	11	50	4										
HGXR2020R0.05 0450	2	R0.05	4	11	50	4										
HGXR2020R0.1 0450	2	R0.1	4	11	50	4										
HGXR2020R0.2 0450	2	R0.2	4	11	50	4										
HGXR2020R0.3 0450	2	R0.3	4	11	50	4										
HGXR2020R0.5 0450	2	R0.5	4	11	50	4										

HGXR 2-Flute Corner Radius End Mill



∅ D	D Tolerance
D < 3	0 ~ -0.010
3 < D ≤ 6	0 ~ -0.012
6 < D ≤ 10	0 ~ -0.015
10 < D ≤ 18	0 ~ -0.018

Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	γ/°	L	φd
HGXR2030R0.2 0450	3	R0.2	6	11	50	4
HGXR2030R0.2 0660	3	R0.2	6	11	60	6
HGXR2030R0.5 0450	3	R0.5	6	11	50	4
HGXR2030R0.5 0660	3	R0.5	6	11	60	6
HGXR2040R0.2 0450	4	R0.2	8	—	50	4
HGXR2040R0.2 0660	4	R0.2	8	11	60	6
HGXR2040R0.5 0450	4	R0.5	8	—	50	4
HGXR2040R0.5 0660	4	R0.5	8	11	60	6
HGXR2040R1.0 0450	4	R1	8	—	50	4
HGXR2040R1.0 0660	4	R1	8	11	60	6
HGXR2060R0.5 0650	6	R0.5	12	—	50	6
HGXR2060R0.5 0660	6	R0.5	12	—	60	6
HGXR2060R0.5 0675	6	R0.5	12	—	75	6
HGXR2060R0.5 06100	6	R0.5	12	—	100	6
HGXR2060R1.0 0650	6	R1	12	—	50	6
HGXR2060R1.0 0660	6	R1	12	—	60	6
HGXR2060R1.0 0675	6	R1	12	—	75	6
HGXR2060R0.5 06100	6	R1	12	—	100	6
HGXR2080R0.5 0860	8	R0.5	16	—	60	8
HGXR2080R0.5 0875	8	R0.5	16	—	75	8
HGXR2080R0.5 08100	8	R0.5	16	—	100	8
HGXR2080R1.0 0860	8	R1	16	—	60	8
HGXR2080R1.0 0875	8	R1	16	—	75	8
HGXR2080R1.0 08100	8	R1	16	—	100	8
HGXR2100R0.5 1075	10	R0.5	20	—	75	10
HGXR2100R0.5 10100	10	R0.5	20	—	100	10

HGXR 2-Flute Corner Radius End Mill

Unit : mm

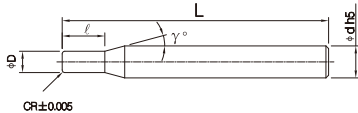
Type No.	Dia.	Corner Radius	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ	γ/°	L	φd
HGXR2100R1.0 1075	10	R1	20	—	75	10
HGXR2100R1.0 10100	10	R1	20	—	100	10
HGXR2120R0.5 1275	12	R0.5	24	—	75	12
HGXR2120R0.5 12100	12	R0.5	24	—	100	12
HGXR2120R1.0 1275	12	R1	24	—	75	12
HGXR2120R1.0 12100	12	R1	24	—	100	12
HGXR2120R2.0 1275	12	R2	24	—	75	12
HGXR2120R2.0 12100	12	R2	24	—	100	12

TABLE OF RECOMMENDED MILLING MATERIALS

○ Very suitable ○ Suitable

CARBON STEELS	ALLOY STEELS	PREHARDENED STEELS, HARDENED STEELS				STAINLESS STEELS	CAST IRON	COPPER ALLOYS	ALUMINUM ALLOY	GRAPHITE	TITANIUM ALLOY	HEAT RESISTANT ALLOYS	PLASTIC
PREHARDENED STEELS	TOOL STEELS						DUCTILE CAST IRON						
~40HRC		~50HRC	~55HRC	~60HRC	~65HRC	~35HRC	~350HB						
○		○	○			○	○	○	○		○	○	

HGXR 4-Flute Corner Radius End Mill



∅ D	D Tolerance
D<3	0~-0.010
3<D<6	0~-0.012
6<D<10	0~-0.015
10<D<18	0~-0.018

Unit : mm

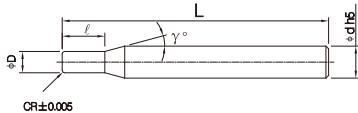
Type No.	Dia.	Corner Radius	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ ₁	γ/°	L	φd
HGXR4008R0.05 0450	0.8	R0.05	1.6	12	50	4
HGXR4008R0.1 0450	0.8	R0.1	1.6	12	50	4
HGXR4010R0.05 0450	1	R0.05	2	12	50	4
HGXR4010R0.1 0450	1	R0.1	2	12	50	4
HGXR4010R0.2 0450	1	R0.2	2	12	50	4
HGXR4010R0.3 0450	1	R0.3	2	12	50	4
HGXR4015R0.05 0450	1.5	R0.05	3	11	50	4
HGXR4015R0.1 0450	1.5	R0.1	3	11	50	4
HGXR4015R0.2 0450	1.5	R0.2	3	11	50	4
HGXR4015R0.3 0450	1.5	R0.3	3	11	50	4
HGXR4020R0.05 0450	2	R0.05	4	11	50	4
HGXR4020R0.1 0450	2	R0.1	4	11	50	4
HGXR4020R0.2 0450	2	R0.2	4	11	50	4
HGXR4020R0.3 0450	2	R0.3	4	11	50	4
HGXR4020R0.5 0450	2	R0.5	4	11	50	4
HGXR4025R0.1 0450	2.5	R0.1	5	11	50	4
HGXR4025R0.2 0450	2.5	R0.2	5	11	50	4
HGXR4025R0.3 0450	2.5	R0.3	5	11	50	4
HGXR4025R0.5 0450	2.5	R0.5	5	11	50	4
HGXR4030R0.1 0450	3	R0.1	6	11	50	4
HGXR4030R0.1 0660	3	R0.1	6	11	60	6
HGXR4030R0.1 0675	3	R0.1	6	11	75	6
HGXR4030R0.2 0450	3	R0.2	6	11	50	4
HGXR4030R0.2 0660	3	R0.2	6	11	60	6
HGXR4030R0.2 0675	3	R0.2	6	11	75	6
HGXR4030R0.3 0450	3	R0.3	6	11	50	4

HGXR 4-Flute Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ ₁	γ/°	L	φd
HGXR4030R0.3 0660	3	R0.3	6	11	60	6
HGXR4030R0.3 0675	3	R0.3	6	11	75	6
HGXR4030R0.5 0450	3	R0.5	6	11	50	4
HGXR4030R0.5 0660	3	R0.5	6	11	60	6
HGXR4030R0.5 0675	3	R0.5	6	11	75	6
HGXR4040R0.1 0450	4	R0.1	8	-	50	4
HGXR4040R0.1 0475	4	R0.1	8	-	75	4
HGXR4040R0.1 0660	4	R0.1	8	11	60	6
HGXR4040R0.1 0675	4	R0.1	8	11	75	6
HGXR4040R0.2 0450	4	R0.2	8	-	50	4
HGXR4040R0.2 0475	4	R0.2	8	-	75	4
HGXR4040R0.2 0650	4	R0.2	8	-	50	6
HGXR4040R0.2 0660	4	R0.2	8	11	60	6
HGXR4040R0.2 0675	4	R0.2	8	11	75	6
HGXR4040R0.3 0450	4	R0.3	8	-	50	4
HGXR4040R0.3 0475	4	R0.3	8	-	75	4
HGXR4040R0.3 0660	4	R0.3	8	11	60	6
HGXR4040R0.3 0675	4	R0.3	8	11	75	6
HGXR4040R0.5 0450	4	R0.5	8	-	50	4
HGXR4040R0.5 0475	4	R0.5	8	-	75	4
HGXR4040R0.5 0650	4	R0.5	8	-	50	6
HGXR4040R0.5 0660	4	R0.5	8	11	60	6
HGXR4040R0.5 0675	4	R0.5	8	11	75	6
HGXR4040R1.0 0450	4	R1	8	-	50	4
HGXR4040R1.0 0475	4	R1	8	-	75	4
HGXR4040R1.0 0660	4	R1	8	11	60	6
HGXR4040R1.0 0675	4	R1	8	11	75	6
HGXR4060R0.1 0650	6	R0.1	12	-	50	6
HGXR4060R0.1 0660	6	R0.1	12	-	60	6
HGXR4060R0.1 0675	6	R0.1	12	-	75	6
HGXR4060R0.1 06100	6	R0.1	12	-	100	6
HGXR4060R0.2 0650	6	R0.2	12	-	50	6

HGXR 4-Flute Corner Radius End Mill



∅ D	D Tolerance
D<3	0~-0.010
3<D<6	0~-0.012
6<D<10	0~-0.015
10<D<18	0~-0.018

Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ ₁	γ/°	L	φd
HGXR4060R0.2 0660	6	R0.2	12	—	60	6
HGXR4060R0.2 0675	6	R0.2	12	—	75	6
HGXR4060R0.2 06100	6	R0.2	12	—	100	6
HGXR4060R0.3 0650	6	R0.3	12	—	50	6
HGXR4060R0.3 0660	6	R0.3	12	—	60	6
HGXR4060R0.3 0675	6	R0.3	12	—	75	6
HGXR4060R0.3 06100	6	R0.3	12	—	100	6
HGXR4060R0.5 0650	6	R0.5	12	—	50	6
HGXR4060R0.5 0660	6	R0.5	12	—	60	6
HGXR4060R0.5 0675	6	R0.5	12	—	75	6
HGXR4060R0.5 06100	6	R0.5	12	—	100	6
HGXR4060R1.0 0650	6	R1	12	—	50	6
HGXR4060R1.0 0660	6	R1	12	—	60	6
HGXR4060R1.0 0675	6	R1	12	—	75	6
HGXR4060R1.0 06100	6	R1	12	—	100	6
HGXR4080R0.1 0860	8	R0.1	16	—	60	8
HGXR4080R0.1 0875	8	R0.1	16	—	75	8
HGXR4080R0.1 08100	8	R0.1	16	—	100	8
HGXR4080R0.2 0860	8	R0.2	16	—	60	8
HGXR4080R0.2 0875	8	R0.2	16	—	75	8
HGXR4080R0.2 08100	8	R0.2	16	—	100	8
HGXR4080R0.3 0860	8	R0.3	16	—	60	8
HGXR4080R0.3 0875	8	R0.3	16	—	75	8
HGXR4080R0.3 08100	8	R0.3	16	—	100	8
HGXR4080R0.5 0860	8	R0.5	16	—	60	8
HGXR4080R0.5 0875	8	R0.5	16	—	75	8

HGXR 4-Flute Corner Radius End Mill

Unit : mm

Type No.	Dia.	Corner Radius	Length of Cut	Neck Taper Angle	Overall Length	Shank Dia.
	φD	CR	ℓ ₁	γ/°	L	φd
HGXR4080R0.5 08100	8	R0.5	16	—	100	8
HGXR4080R1.0 0860	8	R1	16	—	60	8
HGXR4080R1.0 0875	8	R1	16	—	75	8
HGXR4080R1.0 08100	8	R1	16	—	100	8
HGXR4100R0.2 1075	10	R0.2	20	—	75	10
HGXR4100R0.2 10100	10	R0.2	20	—	100	10
HGXR4100R0.5 1075	10	R0.5	20	—	75	10
HGXR4100R0.5 10100	10	R0.5	20	—	100	10
HGXR4100R1.0 1075	10	R1	20	—	75	10
HGXR4100R1.0 10100	10	R1	20	—	100	10
HGXR4120R0.5 1275	12	R0.5	24	—	75	12
HGXR4120R0.5 12100	12	R0.5	24	—	100	12
HGXR4120R1.0 1275	12	R1	24	—	75	12
HGXR4120R1.0 12100	12	R1	24	—	100	12
HGXR4120R2.0 1275	12	R2	24	—	75	12
HGXR4120R2.0 12100	12	R2	24	—	100	12

TABLE OF RECOMMENDED MILLING MATERIALS

○ Very suitable ○ Suitable

CARBON STEELS	ALLOY STEELS	PREHARDENED STEELS, HARDENED STEELS				STAINLESS STEELS	CAST IRON	COPPER ALLOYS	ALUMINUM ALLOY	GRAPHITE	TITANIUM ALLOY	HEAT RESISTANT ALLOYS	PLASTIC
PREHARDENED STEELS	TOOL STEELS						DUCTILE CAST IRON						
~40HRC		~50HRC	~55HRC	~60HRC	~65HRC	~35HRC	~350HB						
○		○	○			○	○	○	○		○	○	

HGXB2L 2-Flute Long Neck Ball End Mill



φD	D Tolerance	φD	R Tolerance
D<3	0~-0.010	D<1	±0.003
3<D≤6	0~-0.012	1<D≤8	±0.005
6<D≤10	0~-0.015	D>8	±0.008
10<D≤18	0~-0.018		

Unit : mm

Type No.	Radius	Under Neck Length	Length of Cut	Dia.	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	R	ℓ ₁	ℓ	φD	φd ₁	γ/°	L	φd
HGXB2001L0.2 0450	R0.05	0.2	0.07	0.1	0.085	12	50	4
HGXB2001L0.3 0450	R0.05	0.3	0.07	0.1	0.085	12	50	4
HGXB2001L0.5 0450	R0.05	0.5	0.07	0.1	0.085	12	50	4
HGXB2001L0.75 0450	R0.05	0.75	0.07	0.1	0.085	12	50	4
HGXB2001L1 0450	R0.05	1	0.07	0.1	0.085	12	50	4
HGXB20015L0.3 0450	R0.075	0.3	0.1	0.15	0.13	12	50	4
HGXB20015L0.5 0450	R0.075	0.5	0.1	0.15	0.13	12	50	4
HGXB20015L0.75 0450	R0.075	0.75	0.1	0.15	0.13	12	50	4
HGXB20015L1 0450	R0.075	1	0.1	0.15	0.13	12	50	4
HGXB20015L1.5 0450	R0.075	1.5	0.1	0.15	0.13	12	50	4
HGXB2002L0.3 0450	R0.1	0.3	0.15	0.2	0.18	12	50	4
HGXB2002L0.5 0450	R0.1	0.5	0.15	0.2	0.18	12	50	4
HGXB2002L0.75 0450	R0.1	0.75	0.15	0.2	0.18	12	50	4
HGXB2002L1 0450	R0.1	1	0.15	0.2	0.18	12	50	4
HGXB2002L1.25 0450	R0.1	1.25	0.15	0.2	0.18	12	50	4
HGXB2002L1.5 0450	R0.1	1.5	0.15	0.2	0.18	12	50	4
HGXB2002L1.75 0450	R0.1	1.75	0.15	0.2	0.18	12	50	4
HGXB2002L2 0450	R0.1	2	0.15	0.2	0.18	12	50	4
HGXB2003L0.5 0450	R0.15	0.5	0.2	0.3	0.28	12	50	4
HGXB2003L0.6 0450	R0.15	0.6	0.2	0.3	0.28	12	50	4
HGXB2003L0.75 0450	R0.15	0.75	0.2	0.3	0.28	12	50	4
HGXB2003L1 0450	R0.15	1	0.2	0.3	0.28	12	50	4
HGXB2003L1.25 0450	R0.15	1.25	0.2	0.3	0.28	12	50	4
HGXB2003L1.5 0450	R0.15	1.5	0.2	0.3	0.28	12	50	4
HGXB2003L1.75 0450	R0.15	1.75	0.2	0.3	0.28	12	50	4
HGXB2003L2 0450	R0.15	2	0.2	0.3	0.28	12	50	4

HGXB2L 2-Flute Long Neck Ball End Mill

Unit : mm								
Type No.	Radius	Under Neck Length	Length of Cut	Dia.	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	R	ℓ ₁	ℓ	φD	φd ₁	γ/°	L	φd
HGXB2003L2.25 0450	R0.15	2.25	0.2	0.3	0.28	12	50	4
HGXB2003L2.5 0450	R0.15	2.5	0.2	0.3	0.28	12	50	4
HGXB2003L3 0450	R0.15	3	0.2	0.3	0.28	12	50	4
HGXB2004L0.5 0450	R0.2	0.5	0.3	0.4	0.37	12	50	4
HGXB2004L0.8 0450	R0.2	0.8	0.3	0.4	0.37	12	50	4
HGXB2004L1 0450	R0.2	1	0.3	0.4	0.37	12	50	4
HGXB2004L1.5 0450	R0.2	1.5	0.3	0.4	0.37	12	50	4
HGXB2004L2 0450	R0.2	2	0.3	0.4	0.37	12	50	4
HGXB2004L2.5 0450	R0.2	2.5	0.3	0.4	0.37	12	50	4
HGXB2004L3 0450	R0.2	3	0.3	0.4	0.37	12	50	4
HGXB2004L3.5 0450	R0.2	3.5	0.3	0.4	0.37	12	50	4
HGXB2004L4 0450	R0.2	4	0.3	0.4	0.37	12	50	4
HGXB2004L4.5 0450	R0.2	4.5	0.3	0.4	0.37	12	50	4
HGXB2005L1 0450	R0.25	1	0.35	0.5	0.46	12	50	4
HGXB2005L1.5 0450	R0.25	1.5	0.35	0.5	0.46	12	50	4
HGXB2005L2 0450	R0.25	2	0.35	0.5	0.46	12	50	4
HGXB2005L2.5 0450	R0.25	2.5	0.35	0.5	0.46	12	50	4
HGXB2005L3 0450	R0.25	3	0.35	0.5	0.46	12	50	4
HGXB2005L3.5 0450	R0.25	3.5	0.35	0.5	0.46	12	50	4
HGXB2005L4 0450	R0.25	4	0.35	0.5	0.46	12	50	4
HGXB2005L4.5 0450	R0.25	4.5	0.35	0.5	0.46	12	50	4
HGXB2005L5 0450	R0.25	5	0.35	0.5	0.46	12	50	4
HGXB2005L5.5 0450	R0.25	5.5	0.35	0.5	0.46	12	50	4
HGXB2005L6 0450	R0.25	6	0.35	0.5	0.46	12	50	4
HGXB2006L1 0450	R0.3	1	0.45	0.6	0.56	12	50	4
HGXB2006L1.5 0450	R0.3	1.5	0.45	0.6	0.56	12	50	4
HGXB2006L2 0450	R0.3	2	0.45	0.6	0.56	12	50	4
HGXB2006L3 0450	R0.3	3	0.45	0.6	0.56	12	50	4
HGXB2006L4 0450	R0.3	4	0.45	0.6	0.56	12	50	4
HGXB2006L5 0450	R0.3	5	0.45	0.6	0.56	12	50	4
HGXB2006L6 0450	R0.3	6	0.45	0.6	0.56	12	50	4
HGXB2006L7 0450	R0.3	7	0.45	0.6	0.56	12	50	4
HGXB2006L8 0450	R0.3	8	0.45	0.6	0.56	12	50	4
HGXB2007L2 0450	R0.35	2	0.5	0.7	0.66	12	50	4

HGXB2L 2-Flute Long Neck Ball End Mill



Ø D	D Tolerance	Ø D	R Tolerance
D < 3	0 ~ -0.010	D < 1	± 0.003
3 < D ≤ 6	0 ~ -0.012	1 < D ≤ 8	± 0.005
6 < D ≤ 10	0 ~ -0.015	D > 8	± 0.008
10 < D ≤ 18	0 ~ -0.018		

Unit : mm

Type No.	Radius	Under Neck Length	Length of Cut	Dia.	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	R	ℓ ₁	ℓ	φD	φd ₁	γ/°	L	φd
HGXB2007L3 0450	R0.35	3	0.5	0.7	0.66	12	50	4
HGXB2007L4 0450	R0.35	4	0.5	0.7	0.66	12	50	4
HGXB2007L6 0450	R0.35	6	0.5	0.7	0.66	12	50	4
HGXB2007L8 0450	R0.35	8	0.5	0.7	0.66	12	50	4
HGXB2008L2 0450	R0.4	2	0.6	0.8	0.76	12	50	4
HGXB2008L2.5 0450	R0.4	2.5	0.6	0.8	0.76	12	50	4
HGXB2008L3 0450	R0.4	3	0.6	0.8	0.76	12	50	4
HGXB2008L4 0450	R0.4	4	0.6	0.8	0.76	12	50	4
HGXB2008L5 0450	R0.4	5	0.6	0.8	0.76	12	50	4
HGXB2008L6 0450	R0.4	6	0.6	0.8	0.76	12	50	4
HGXB2008L7 0450	R0.4	7	0.6	0.8	0.76	12	50	4
HGXB2008L8 0450	R0.4	8	0.6	0.8	0.76	12	50	4
HGXB2008L10 0450	R0.4	10	0.6	0.8	0.76	12	50	4
HGXB2008L12 0450	R0.4	12	0.6	0.8	0.76	12	50	4
HGXB2008L16 0450	R0.4	16	0.6	0.8	0.76	12	50	4
HGXB2009L2 0450	R0.45	2	0.65	0.9	0.86	12	50	4
HGXB2009L4 0450	R0.45	4	0.65	0.9	0.86	12	50	4
HGXB2009L6 0450	R0.45	6	0.65	0.9	0.86	12	50	4
HGXB2009L8 0450	R0.45	8	0.65	0.9	0.86	12	50	4
HGXB2010L2.5 0450	R0.5	2.5	0.75	1	0.95	12	50	4
HGXB2010L3 0450	R0.5	3	0.75	1	0.95	12	50	4
HGXB2010L4 0450	R0.5	4	0.75	1	0.95	12	50	4
HGXB2010L4 0660	R0.5	4	0.75	1	0.95	12	60	6
HGXB2010L5 0450	R0.5	5	0.75	1	0.95	12	50	4
HGXB2010L6 0450	R0.5	6	0.75	1	0.95	12	50	4
HGXB2010L6 0660	R0.5	6	0.75	1	0.95	12	60	6

HGXB2L 2-Flute Long Neck Ball End Mill

Unit : mm								
Type No.	Radius	Under Neck Length	Length of Cut	Dia.	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	R	ℓ ₁	ℓ	φD	φd ₁	γ/°	L	φd
HGXB2010L7 0450	R0.5	7	0.75	1	0.95	12	50	4
HGXB2010L8 0450	R0.5	8	0.75	1	0.95	12	50	4
HGXB2010L8 0660	R0.5	8	0.75	1	0.95	12	60	6
HGXB2010L9 0450	R0.5	9	0.75	1	0.95	12	50	4
HGXB2010L10 0450	R0.5	10	0.75	1	0.95	12	50	4
HGXB2010L10 0660	R0.5	10	0.75	1	0.95	12	60	6
HGXB2010L12 0450	R0.5	12	0.75	1	0.95	12	50	4
HGXB2010L13 0450	R0.5	13	0.75	1	0.95	12	50	4
HGXB2010L14 0450	R0.5	14	0.75	1	0.95	12	50	4
HGXB2010L16 0450	R0.5	16	0.75	1	0.95	12	50	4
HGXB2010L18 0460	R0.5	18	0.75	1	0.95	12	60	4
HGXB2010L20 0460	R0.5	20	0.75	1	0.95	12	60	4
HGXB2010L22 0460	R0.5	22	0.75	1	0.95	12	60	4
HGXB2012L4 0450	R0.6	4	1	1.2	1.14	11	50	4
HGXB2012L6 0450	R0.6	6	1	1.2	1.14	11	50	4
HGXB2012L8 0450	R0.6	8	1	1.2	1.14	11	50	4
HGXB2012L10 0450	R0.6	10	1	1.2	1.14	11	50	4
HGXB2012L12 0450	R0.6	12	1	1.2	1.14	11	50	4
HGXB2012L14 0450	R0.6	14	1	1.2	1.14	11	50	4
HGXB2014L8 0450	R0.7	8	1.1	1.4	1.34	11	50	4
HGXB2014L12 0450	R0.7	12	1.1	1.4	1.34	11	50	4
HGXB2014L16 0450	R0.7	16	1.1	1.4	1.34	11	50	4
HGXB2015L4 0450	R0.75	4	1.2	1.5	1.42	11	50	4
HGXB2015L6 0450	R0.75	6	1.2	1.5	1.42	11	50	4
HGXB2015L6 0660	R0.75	6	1.2	1.5	1.42	11	60	6
HGXB2015L8 0450	R0.75	8	1.2	1.5	1.42	11	50	4
HGXB2015L8 0660	R0.75	8	1.2	1.5	1.42	11	60	6
HGXB2015L10 0450	R0.75	10	1.2	1.5	1.42	11	50	4
HGXB2015L10 0660	R0.75	10	1.2	1.5	1.42	11	60	6
HGXB2015L12 0450	R0.75	12	1.2	1.5	1.42	11	50	4
HGXB2015L12 0660	R0.75	12	1.2	1.5	1.42	11	60	6
HGXB2015L14 0450	R0.75	14	1.2	1.5	1.42	11	50	4
HGXB2015L16 0450	R0.75	16	1.2	1.5	1.42	11	50	4
HGXB2015L18 0460	R0.75	18	1.2	1.5	1.42	11	60	4

HGXB2L 2-Flute Long Neck Ball End Mill



φD		D Tolerance	
D<3		0~-0.010	
3<D≤6		0~-0.012	
6<D≤10		0~-0.015	
10<D≤18		0~-0.018	

φD		R Tolerance	
D<1		±0.003	
1<D≤8		±0.005	
D>8		±0.008	

Unit : mm

Type No.	Radius	Under Neck Length	Length of Cut	Dia.	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	R	ℓ ₁	ℓ	φD	φd ₁	γ/°	L	φd
HGXB2015L20 0460	R0.75	20	1.2	1.5	1.42	11	60	4
HGXB2016L8 0450	R0.8	8	1.3	1.6	1.52	11	50	4
HGXB2016L12 0450	R0.8	12	1.3	1.6	1.52	11	50	4
HGXB2016L16 0450	R0.8	16	1.3	1.6	1.52	11	50	4
HGXB2020L6 0450	R1	6	1.6	2	1.9	11	50	4
HGXB2020L8 0450	R1	8	1.6	2	1.9	11	50	4
HGXB2020L8 0660	R1	8	1.6	2	1.9	11	60	6
HGXB2020L10 0450	R1	10	1.6	2	1.9	11	50	4
HGXB2020L10 0660	R1	10	1.6	2	1.9	11	60	6
HGXB2020L12 0450	R1	12	1.6	2	1.9	11	50	4
HGXB2020L12 0660	R1	12	1.6	2	1.9	11	60	6
HGXB2020L14 0450	R1	14	1.6	2	1.9	11	50	4
HGXB2020L16 0450	R1	16	1.6	2	1.9	11	50	4
HGXB2020L16 0660	R1	16	1.6	2	1.9	11	60	6
HGXB2020L18 0460	R1	18	1.6	2	1.9	11	60	4
HGXB2020L20 0460	R1	20	1.6	2	1.9	11	60	4
HGXB2020L22 0460	R1	22	1.6	2	1.9	11	60	4
HGXB2020L25 0460	R1	25	1.6	2	1.9	11	60	4
HGXB2020L30 0475	R1	30	1.6	2	1.9	11	75	4
HGXB2020L35 0475	R1	35	1.6	2	1.9	11	75	4
HGXB2020L40 0475	R1	40	1.6	2	1.9	11	75	4
HGXB2025L6 0450	R1.25	6	2	2.5	2.4	11	50	4
HGXB2025L8 0450	R1.25	8	2	2.5	2.4	11	50	4
HGXB2025L10 0450	R1.25	10	2	2.5	2.4	11	50	4
HGXB2025L12 0450	R1.25	12	2	2.5	2.4	11	50	4
HGXB2025L16 0450	R1.25	16	2	2.5	2.4	11	50	4

HGXB2L 2-Flute Long Neck Ball End Mill

Unit : mm								
Type No.	Radius	Under Neck Length	Length of Cut	Dia.	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	R	ℓ ₁	ℓ	φD	φd ₁	γ/°	L	φd
HGXB2025L20 0460	R1.25	20	2	2.5	2.4	11	60	4
HGXB2025L25 0460	R1.25	25	2	2.5	2.4	11	60	4
HGXB2025L30 0475	R1.25	30	2	2.5	2.4	11	75	4
HGXB2025L35 0475	R1.25	35	2	2.5	2.4	11	75	4
HGXB2030L8 0450	R1.5	8	2.4	3	2.9	11	50	4
HGXB2030L10 0450	R1.5	10	2.4	3	2.9	11	50	4
HGXB2030L10 0660	R1.5	10	2.4	3	2.9	11	60	6
HGXB2030L12 0450	R1.5	12	2.4	3	2.9	11	50	4
HGXB2030L12 0660	R1.5	12	2.4	3	2.9	11	60	6
HGXB2030L14 0450	R1.5	14	2.4	3	2.9	11	50	4
HGXB2030L14 0660	R1.5	14	2.4	3	2.9	11	60	6
HGXB2030L16 0450	R1.5	16	2.4	3	2.9	11	50	4
HGXB2030L16 0660	R1.5	16	2.4	3	2.9	11	60	6
HGXB2030L20 0660	R1.5	20	2.4	3	2.9	11	60	6
HGXB2030L25 0675	R1.5	25	2.4	3	2.9	11	75	6
HGXB2030L30 0675	R1.5	30	2.4	3	2.9	11	75	6
HGXB2030L35 0675	R1.5	35	2.4	3	2.9	11	75	6
HGXB2030L40 06100	R1.5	40	2.4	3	2.9	11	100	6
HGXB2035L16 0660	R1.75	16	2.8	3.5	3.4	11	60	6
HGXB2035L20 0660	R1.75	20	2.8	3.5	3.4	11	60	6
HGXB2035L25 0675	R1.75	25	2.8	3.5	3.4	11	75	6
HGXB2035L30 0675	R1.75	30	2.8	3.5	3.4	11	75	6
HGXB2035L35 0675	R1.75	35	2.8	3.5	3.4	11	75	6
HGXB2040L12 0660	R2	12	3.2	4	3.9	11	60	6
HGXB2040L14 0660	R2	14	3.2	4	3.9	11	60	6
HGXB2040L16 0660	R2	16	3.2	4	3.9	11	60	6
HGXB2040L20 0660	R2	20	3.2	4	3.9	11	60	6
HGXB2040L20 0675	R2	20	3.2	4	3.9	11	75	6
HGXB2040L25 0675	R2	25	3.2	4	3.9	11	75	6
HGXB2040L30 0675	R2	30	3.2	4	3.9	11	75	6
HGXB2040L35 0675	R2	35	3.2	4	3.9	11	75	6
HGXB2040L40 06100	R2	40	3.2	4	3.9	11	100	6
HGXB2040L45 06100	R2	45	3.2	4	3.9	11	100	6
HGXB2040L50 06100	R2	50	3.2	4	3.9	11	100	6

HGXB2L 2-Flute Long Neck Ball End Mill



φD D Tolerance		φD R Tolerance	
D<3	0~-0.010	D<1	±0.003
3<D≤6	0~-0.012	1<D≤8	±0.005
6<D≤10	0~-0.015	D>8	±0.008
10<D≤18	0~-0.018		

Unit : mm

Type No.	Radius	Under Neck Length	Length of Cut	Dia.	Neck Dia.	Neck Taper Angle	Overall Length	Shank Dia.
	R	ℓ ₁	ℓ	φD	φd ₁	γ/°	L	φd
HGXB2050L16 0660	R2.5	16	4	5	4.85	11	60	6
HGXB2050L20 0660	R2.5	20	4	5	4.85	11	60	6
HGXB2050L25 0675	R2.5	25	4	5	4.85	11	75	6
HGXB2050L30 0675	R2.5	30	4	5	4.85	11	75	6
HGXB2050L35 0675	R2.5	35	4	5	4.85	11	75	6
HGXB2050L40 06100	R2.5	40	4	5	4.85	11	100	6
HGXB2050L45 06100	R2.5	45	4	5	4.85	11	100	6
HGXB2050L50 06100	R2.5	50	4	5	4.85	11	100	6

TABLE OF RECOMMENDED MILLING MATERIALS

○ Very suitable ○ Suitable

CARBON STEELS PREHARDENED STEELS	ALLOY STEELS TOOL STEELS	PREHARDENED STEELS, HARDENED STEELS				STAINLESS STEELS	CAST IRON DUCTILE CAST IRON	COPPER ALLOYS	ALUMINUM ALLOY	GRAPHITE	TITANIUM ALLOY	HEAT RESISTANT ALLOYS	PLASTIC
		~50HRC	~55HRC	~60HRC	~65HRC								
○		○	○			○	○	○	○		○	○	

Cutting Parameter

HGXB 2-Flute Ball End Mill

Workpiece	Carbon Steels, Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45~55HRC)			
	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm
HGXB2001	40000	150	0.003	0.005	40000	100	0.003	0.005	40000	70	0.002	0.003
HGXB20015	40000	200	0.003	0.005	40000	180	0.003	0.005	40000	100	0.003	0.004
HGXB2002	35000	300	0.005	0.008	35000	284	0.005	0.008	32000	200	0.005	0.008
HGXB2003	32000	500	0.01	0.01	30000	400	0.01	0.01	32000	364	0.008	0.01
HGXB2004	28000	600	0.01	0.03	28000	600	0.01	0.03	28000	600	0.01	0.03
HGXB2005	25000	720	0.01	0.03	25000	720	0.01	0.03	25000	720	0.01	0.03
HGXB2006	22000	800	0.02	0.03	22000	800	0.02	0.03	22000	800	0.02	0.03
HGXB2008	20000	1000	0.02	0.03	20000	1000	0.02	0.03	20000	1000	0.02	0.03
HGXB2010	18000	1200	0.03	0.05	18000	1200	0.03	0.05	18000	1200	0.03	0.05
HGXB2012	17000	1350	0.03	0.05	17000	1350	0.03	0.05	17000	1350	0.03	0.05
HGXB2015	16000	1500	0.03	0.05	16000	1500	0.03	0.05	16000	1500	0.03	0.05
HGXB2020	14800	1560	0.04	0.06	148000	1560	0.04	0.06	148000	1560	0.04	0.06
HGXB2025	14400	1680	0.04	0.06	14400	1680	0.04	0.06	14400	1680	0.04	0.06
HGXB2030	13000	2000	0.05	0.08	13000	2000	0.05	0.08	13000	2000	0.05	0.08
HGXB2040	12000	2400	0.05	0.1	12000	2400	0.05	0.1	2000	2400	0.05	0.1
HGXB2050	10000	2500	0.05	0.1	10000	2500	0.05	0.1	1000	2500	0.05	0.1
HGXB2060	9000	2800	0.05	0.15	9000	2800	0.05	0.15	9000	2800	0.05	0.15
HGXB2080	8000	3000	0.08	0.2	8000	3000	0.08	0.2	8000	3000	0.05	0.2
HGXB2100	7200	3000	0.08	0.25	7200	3000	0.08	0.2	7200	3000	0.06	0.25
HGXB2120	6400	3200	0.1	0.25	6400	3200	0.1	0.25	6400	3200	0.08	0.25
HGXB2160	6000	3600	0.1	0.3	6000	3600	0.1	0.3	6000	3600	0.1	0.3

Cutting Parameter

HGXE 2-Flute End End Mill

Workpiece	Carbon Steels、Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Type No.	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
HGX E2001 0450	48000	150	0.006	0.06	40000	150	0.005	0.06	32000	120	0.003	0.05
HGX E20015 0450	48000	150	0.006	0.09	40000	180	0.005	0.09	32000	80	0.003	0.05
HGX E2002 0450	36000	240	0.006	0.12	3000	240	0.005	0.12	24000	200	0.003	0.1
HGX E2003 0450	36000	300	0.01	0.2	30000	300	0.01	0.2	24000	300	0.01	0.2
HGX E2004 0450	33880	325	0.03	0.28	30800	300	0.03	0.28	28000	300	0.03	0.28
HGX E2005 0450	30250	363	0.03	0.3	27500	330	0.03	0.3	25000	300	0.03	0.3
HGX E2006 0450	26620	425	0.04	0.42	24200	385	0.04	0.42	22000	350	0.04	0.42
HGX E2007 0450	25000	450	0.04	0.49	23200	420	0.04	0.49	21000	380	0.04	0.49
HGX E2008 0450	24200	484	0.04	0.56	22000	440	0.04	0.56	20000	400	0.04	0.56
HGX E2010 0450	21780	605	0.05	0.7	19800	550	0.05	0.7	18000	500	0.05	0.7
HGX E2012 0450	21080	650	0.05	0.84	11900	550	0.05	0.84	17000	500	0.05	0.84
HGX E2014 0450	19580	695	0.05	0.91	17500	600	0.05	0.91	16000	550	0.05	0.91
HGX E2015 0450	18150	726	0.05	1.05	16500	660	0.05	1.05	15000	600	0.05	1.05
HGX E2016 0450	16620	800	0.05	1.12	14500	750	0.05	1.12	13500	650	0.05	1.12
HGX E2020 0450	15125	900	0.1	1.5	13750	825	0.1	1.5	12500	750	0.05	1.5
HGX E2025 0450	12100	1210	0.1	1.75	11000	1100	0.1	1.75	10000	1000	0.05	1.75
HGX E2030 0450	9680	1210	0.1	2.1	8800	1100	0.1	2.1	8000	1000	0.05	2.1
HGX E2040 0450	7865	1210	0.1	2.8	7150	1100	0.1	2.8	6500	11000	0.05	2.8
HGX E2050 0650	7260	1210	0.1	3.5	6600	1100	0.1	3.5	6000	1000	0.1	3.5
HGX E2060 0650	6050	726	0.1	4.2	5500	660	0.1	4.2	5000	600	0.1	4.2
HGX E2080 0860	5445	726	0.2	5.6	4950	660	0.1	5.6	4500	600	0.1	5.6
HGX E2100 1075	4840	605	0.2	7	4400	550	0.2	7	4000	500	0.1	7
HGX E2120 1275	4235	605	0.2	8.4	3850	550	0.2	8.4	3500	500	0.1	8.4
HGX E2140 1475	3630	605	0.2	9.6	3300	550	0.2	9.6	3000	500	0.1	9.6
HGX E2160 16100	3388	605	0.2	11.2	3080	550	0.2	11.2	2800	500	0.1	11.2
HGX E2200 20100	3025	605	0.2	14	2750	550	0.2	14	2500	500	0.1	14

Cutting Parameter

HGXE 4-Flute End End Mill

Workpiece	Carbon Steels、Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Type No.	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm
HGXE4008 0450	22000	1200	0.03	0.56	21600	1160	0.03	0.56	19800	720	0.03	0.56
HGXE4010 0450	21780	1400	0.05	0.7	19800	1240	0.05	0.7	18000	800	0.05	0.7
HGXE4012 0450	20000	1500	0.05	0.8	18000	1280	0.05	0.8	17000	850	0.05	0.8
HGXE4014 0450	18800	1680	0.05	1	17200	1320	0.05	1	16000	900	0.05	1
HGXE4015 0450	18150	1680	0.05	1.05	16500	1488	0.05	1.05	15000	960	0.05	1.05
HGXE4016 0450	18150	1680	0.05	1.1	16500	1488	0.05	1.1	15000	960	0.05	1.1
HGXE4020 0450	15125	2100	0.1	1.5	13750	1860	0.1	1.5	12500	1200	0.05	1.5
HGXE4025 0450	12100	2800	0.1	1.75	11000	2480	0.1	1.75	1100	1600	0.05	1.75
HGXE4030 0450	9680	2800	0.1	2.1	8800	2480	0.1	2.1	8000	1600	0.05	2.1
HGXE4040 0450	7865	2800	0.1	2.8	7150	2480	0.1	2.8	6500	1600	0.05	2.8
HGXE4050 0650	7260	2100	0.1	3.5	6600	1860	0.1	3.5	6000	1200	0.1	3.5
HGXE4060 0650	6050	1680	0.1	4.2	5500	1488	0.1	4.2	5000	960	0.1	4.2
HGXE4080 0860	5445	1680	0.2	5.6	4950	1488	0.2	5.6	4500	960	0.1	5.6
HGXE4100 1075	4840	1400	0.2	7	4400	1240	0.2	7	4000	800	0.1	7
HGXE4120 1275	4235	1400	0.2	8.4	3850	1240	0.2	8.4	3500	800	0.1	8.4
HGXE4140 1475	3630	1400	0.2	9.6	3300	1240	0.2	9.6	3000	800	0.1	9.6
HGXE4160 16100	3388	1400	0.2	11.2	3080	1240	0.2	11.2	2800	800	0.1	11.2
HGXE4200 20100	3025	1400	0.2	14	2750	1240	0.2	14	2500	800	0.1	14

Cutting Parameter

HGXEF 4-Flute End Mill-45°

Workpiece	Carbon Steels、Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Type No.	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm
HGXEF4010 0450	18150	320	2	0.1	16500	320	2	0.05	15000	250	1.5	0.05
HGXEF4012 0450	18150	320	2.4	0.1	16500	320	2.4	0.05	15000	250	1.8	0.05
HGXEF4014 0450	15000	350	2.8	0.1	14000	340	2.8	0.1	13500	280	2.1	0.05
HGXEF4015 0450	14520	360	3	0.1	13200	360	3	0.1	12000	300	2.25	0.05
HGXEF4016 0450	14000	380	3.2	0.1	12500	400	3.2	0.1	11800	320	2.4	0.05
HGXEF4020 0450	12100	400	4	0.15	11000	400	4	0.1	11000	350	3	0.05
HGXEF4025 0450	10285	440	5	0.15	9350	440	5	0.1	8500	400	3.75	0.05
HGXEF4030 0450	9075	480	6	0.15	8250	480	6	0.1	7500	450	4.5	0.05
HGXEF4040 0450	7018	600	8	0.15	6380	600	8	0.1	5800	550	6	0.08
HGXEF4050 0650	6050	700	10	0.2	5500	700	10	0.1	5000	580	7.5	0.1
HGXEF4060 06100	5445	1000	12	0.2	4950	1000	12	0.1	4500	600	9	0.1
HGXEF4080 0875	4598	1500	16	0.3	4180	1500	16	0.2	3800	600	12	0.1
HGXEF4100 1075	4235	2000	20	0.3	3850	2000	20	0.2	3500	550	15	0.1
HGXEF4120 1275	3388	2500	24	0.3	3080	2500	24	0.2	2800	500	18	0.1
HGXEF4140 1475	3025	2000	28	0.3	2750	2000	28	0.2	2500	500	21	0.1
HGXEF4160 16100	2662	2000	32	0.3	2420	2000	32	0.2	2200	450	24	0.1
HGXEF4200 20100	2420	2000	40	0.3	2200	2000	40	0.2	2000	400	30	0.1

Cutting Parameter

HGXR 2-Flute Corner Radius End Mill

Workpiece	Carbon Steels、Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Type No.	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm
HGXR2002R_	36000	360	0.006	0.12	30000	300	0.005	0.12	23000	200	0.003	0.1
HGXR2003R_	36000	350	0.008	0.18	30000	350	0.007	0.18	22000	300	0.003	0.15
HGXR2004R_	36000	500	0.012	0.28	30000	450	0.01	0.24	20000	400	0.005	0.2
HGXR2005R_	30000	600	0.016	0.14	25000	500	0.008	0.15	18500	400	0.006	0.1
HGXR2006R_	30000	600	0.016	0.2	25000	480	0.01	0.15	18000	384	0.007	0.1
HGXR2007R_	30000	840	0.016	0.25	25000	700	0.012	0.25	16800	560	0.01	0.15
HGXR2008R_	28000	1020	0.02	0.3	25000	850	0.014	0.25	15280	680	0.012	0.16
HGXR2009R_	25000	1200	0.05	0.3	25000	900	0.03	0.3	14000	800	0.02	0.2
HGXR2010R_	20000	1400	0.05	0.5	18000	1260	0.05	0.4	13600	1120	0.05	0.32
HGXR2015R_	17950	1500	0.05	0.65	16155	1350	0.05	0.52	13000	1200	0.05	0.4
HGXR2020R_	15890	1600	0.1	1	14301	1440	0.1	0.8	12712	1280	0.1	0.64
HGXR2030R_	12285	1800	0.1	1.5	11056	1620	0.1	1.2	9828	1440	0.1	0.96
HGXR2040R_	9680	2000	0.2	2	8712	1800	0.2	1.6	7744	1600	0.2	1.08
HGXR2060R_	7260	2500	0.2	3	6534	2250	0.2	2.4	5808	2000	0.2	1.96
HGXR2080R_	6050	2500	0.2	4	5445	2250	0.2	3.2	4840	2000	0.2	2.52
HGXR2100R_	5445	3000	0.2	5	4900	2700	0.2	4	4356	2400	0.2	3.2
HGXR2120R_	4840	3200	0.2	6	4356	2880	0.2	4.8	3872	2560	0.2	3.84

Cutting Parameter

HGXR 4-Flute Corner Radius End Mill-Planing

Workpiece	Carbon Steels、Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Type No.	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm	Spindle Speed min	Feed mm/min	Ap mm	Ae mm
HGXR4008R_	28000	1500	0.02	0.3	25000	850	0.014	0.25	23000	680	0.012	0.16
HGXR4009R_	25000	1600	0.05	0.3	25000	900	0.03	0.3	20000	800	0.02	0.2
HGXR4010R_	20000	1800	0.05	0.5	18000	1620	0.05	0.4	16000	1440	0.05	0.32
HGXR4015R_	17950	2000	0.05	0.65	16155	1800	0.05	0.52	14360	1600	0.05	0.4
HGXR4020R_	15890	2200	0.1	1	14301	1980	0.1	0.8	12712	1760	0.1	0.64
HGXR4025R_	13500	2300	0.1	1.25	12080	2040	0.1	1	10080	1820	0.1	0.82
HGXR4030R_	12285	2400	0.1	1.5	11056	2160	0.1	1.2	9828	1920	0.1	0.96
HGXR4040R_	9680	2800	0.2	2	8712	2520	0.2	1.6	7744	2240	0.2	1.08
HGXR4060R_	7260	3000	0.2	3	6534	2700	0.2	2.4	5808	2400	0.2	1.96
HGXR4080R_	6050	3500	0.2	4	5445	3150	0.2	3.2	4840	2800	0.2	2.52
HGXR4100R_	5445	3500	0.2	5	4900	3150	0.2	4	4356	2800	0.2	3.2
HGXR4120R_	4840	3600	0.2	6	4356	3240	0.2	4.8	3872	2880	0.2	3.84

Cutting Parameter

HGXR 4-Flute Corner Radius End Mill--Side Milling

Workpiece	Carbon Steels、Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Type No.	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
HGXR4008R_	28000	1500	0.02	0.02	25000	850	0.014	0.02	23000	680	0.012	0.015
HGXR4009R_	25000	1600	0.02	0.03	25000	900	0.03	0.03	20000	800	0.02	0.015
HGXR4010R_	20000	1800	0.05	0.03	18000	1620	0.05	0.03	16000	1440	0.05	0.02
HGXR4015R_	17950	2000	0.05	0.05	16155	1800	0.05	0.05	14360	1600	0.05	0.02
HGXR4020R_	15890	2200	0.1	0.05	14301	1980	0.1	0.05	12712	1760	0.1	0.03
HGXR4025R_	13520	2300	0.1	0.05	12080	2040	0.1	0.05	10080	1840	0.1	0.03
HGXR4030R_	12285	2400	0.1	0.05	11056	2160	0.1	0.05	9828	1920	0.1	0.03
HGXR4040R_	9680	2800	0.2	0.05	8712	2520	0.2	0.05	7744	2240	0.2	0.05
HGXR4060R_	7260	3000	0.2	0.08	6534	2700	0.2	0.08	5808	2400	0.2	0.05
HGXR4080R_	6050	3500	0.2	0.08	5445	3150	0.2	0.08	4840	2800	0.2	0.05
HGXR4100R_	5445	3500	0.2	0.1	4900	3150	0.2	0.1	4356	2800	0.2	0.05
HGXR4120R_	4840	3600	0.2	0.1	4356	3240	0.2	0.1	3872	2880	0.2	0.05

Cutting Parameter

HGXB2L 2-Flute Long Neck Ball End Mill

Workpiece		Carbon Steels、Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
R0.05	0.2	40000	120	0.003	0.005	40000	100	0.002	0.005	40000	70	0.002	0.003
	0.3	40000	100	0.003	0.005	40000	70	0.002	0.005	40000	50	0.002	0.003
	0.5	40000	70	0.002	0.003	40000	50	0.001	0.003	40000	30	0.001	0.002
	0.75	40000	70	0.002	0.003	40000	50	0.001	0.003	40000	30	0.001	0.002
	1	40000	50	0.002	0.003	40000	30	0.001	0.003	40000	30	0.001	0.002
R0.075	0.3	40000	180	0.003	0.005	40000	150	0.002	0.005	40000	100	0.002	0.003
	0.5	40000	150	0.003	0.005	40000	120	0.002	0.005	40000	70	0.002	0.003
	0.75	40000	70	0.002	0.003	40000	50	0.001	0.003	40000	30	0.001	0.002
	1	40000	70	0.002	0.003	40000	50	0.001	0.003	40000	30	0.001	0.002
	1.5	40000	50	0.002	0.003	40000	30	0.001	0.003	40000	30	0.001	0.002
R0.1	0.3	40000	350	0.01	0.01	40000	300	0.006	0.005	36000	200	0.003	0.003
	0.5	40000	320	0.008	0.01	39600	280	0.005	0.005	36000	180	0.003	0.003
	0.75	40000	280	0.005	0.01	39600	200	0.003	0.005	36000	150	0.002	0.003
	1	40000	250	0.003	0.005	39600	160	0.002	0.003	36000	120	0.001	0.002
	1.25	40000	180	0.003	0.005	39600	140	0.002	0.003	36000	100	0.001	0.002
	1.5	40000	150	0.003	0.005	39600	120	0.002	0.003	36000	80	0.001	0.002
	1.75	40000	120	0.002	0.003	39600	100	0.001	0.002	36000	60	0.001	0.002
	2	40000	100	0.002	0.003	39600	80	0.001	0.002	36000	50	0.001	0.001
	2.5	40000	70	0.001	0.002	39600	60	0.001	0.001	36000	40	0.001	0.001
	3	40000	50	0.001	0.001	39600	40	0.001	0.001	36000	30	0.001	0.001
R0.15	0.5	36300	350	0.01	0.015	33000	300	0.007	0.01	30000	280	0.003	0.005
	0.6	36300	350	0.007	0.01	33000	300	0.005	0.007	30000	250	0.003	0.005
	0.75	36300	330	0.007	0.01	33000	280	0.005	0.007	30000	230	0.003	0.005
	1	36300	320	0.007	0.01	33000	250	0.005	0.007	30000	200	0.003	0.005
	1.25	36300	280	0.005	0.007	33000	200	0.003	0.005	30000	160	0.002	0.003
	1.5	36300	230	0.005	0.007	33000	180	0.003	0.005	30000	120	0.002	0.003
	1.75	36300	180	0.003	0.005	33000	150	0.002	0.003	30000	100	0.002	0.002
	2	36300	150	0.003	0.005	33000	120	0.002	0.003	30000	90	0.002	0.002
	2.25	36300	120	0.002	0.003	33000	100	0.001	0.002	30000	80	0.001	0.001
	2.5	36300	100	0.002	0.003	33000	80	0.001	0.002	30000	70	0.001	0.001
	3	36300	80	0.001	0.003	33000	70	0.001	0.002	30000	60	0.001	0.001
	3.5	36300	70	0.001	0.002	33000	60	0.001	0.001	30000	50	0.001	0.001

Cutting Parameter

HGXB2L 2-Flute Long Neck Ball End Mill

Workpiece		Carbon Steels、Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
R0.15	4	36300	60	0.001	0.002	33000	50	0.001	0.001	30000	40	0.001	0.001
	0.5	36300	800	0.03	0.05	33000	720	0.03	0.03	30000	580	0.009	0.02
	0.8	36300	800	0.02	0.05	33000	720	0.02	0.03	30000	580	0.008	0.02
	1	36300	800	0.02	0.05	33000	720	0.02	0.03	30000	580	0.008	0.02
	1.5	36300	620	0.01	0.03	33000	500	0.01	0.02	30000	400	0.005	0.01
R0.2	2	36300	500	0.01	0.02	33000	380	0.01	0.01	30000	300	0.005	0.007
	2.5	36300	420	0.007	0.01	33000	300	0.005	0.007	30000	260	0.003	0.005
	3	36300	300	0.007	0.01	33000	240	0.005	0.007	30000	200	0.003	0.005
	3.5	36300	230	0.005	0.007	33000	160	0.003	0.005	30000	120	0.002	0.003
	4	30000	160	0.005	0.005	30000	120	0.003	0.003	30000	90	0.002	0.003
	4.5	30000	100	0.003	0.005	30000	80	0.002	0.003	30000	60	0.001	0.002
	5	30000	70	0.002	0.003	30000	50	0.001	0.002	30000	40	0.001	0.002
	6	30000	50	0.001	0.002	30000	40	0.001	0.001	30000	30	0.001	0.001
	8	30000	50	0.001	0.002	30000	40	0.001	0.001	30000	30	0.001	0.001
	1	37500	650	0.01	0.025	34800	590	0.01	0.025	30000	500	0.01	0.025
R0.25	1.5	37500	650	0.009	0.02	34800	590	0.009	0.02	30000	500	0.009	0.02
	2	37500	520	0.008	0.02	34800	470	0.008	0.02	30000	400	0.008	0.02
	2.5	35000	520	0.007	0.015	32480	470	0.007	0.015	28000	400	0.007	0.015
	3	35000	468	0.007	0.01	32480	420	0.007	0.01	28000	360	0.007	0.01
	3.5	31250	468	0.006	0.01	29000	420	0.006	0.01	25000	360	0.006	0.01
	4	31250	390	0.005	0.008	29000	350	0.005	0.008	25000	300	0.005	0.008
	4.5	31250	338	0.004	0.008	29000	300	0.004	0.008	25000	260	0.004	0.008
	5	31250	338	0.004	0.008	29000	300	0.004	0.008	25000	260	0.004	0.008
	5.5	31250	312	0.004	0.006	29000	280	0.004	0.006	25000	240	0.004	0.006
	6	27500	156	0.003	0.005	25520	140	0.003	0.005	22000	120	0.003	0.005
	8	25000	104	0.003	0.003	23200	90	0.003	0.003	20000	80	0.003	0.003
	10	25000	65	0.003	0.003	23200	60	0.003	0.003	20000	50	0.003	0.003
R0.3	1	33000	975	0.02	0.03	31320	700	0.02	0.03	28800	600	0.02	0.03
	1.5	33000	975	0.02	0.03	31320	700	0.02	0.03	28800	600	0.02	0.03
	2	33000	780	0.02	0.03	31320	560	0.02	0.03	28800	480	0.02	0.03
	2.5	30800	780	0.015	0.02	29232	560	0.015	0.02	26880	480	0.015	0.02
	3	30800	702	0.015	0.02	29232	500	0.015	0.02	26880	432	0.015	0.02

Cutting Parameter

HGXB2L 2-Flute Long Neck Ball End Mill

Workpiece		Carbon Steels、Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
R0.3	3.5	27500	702	0.01	0.02	26100	500	0.01	0.02	24000	432	0.01	0.02
	4	27500	585	0.01	0.02	26100	420	0.01	0.02	24000	360	0.01	0.02
	4.5	27500	507	0.01	0.02	26100	360	0.01	0.02	24000	312	0.01	0.02
	5	27500	507	0.01	0.02	26100	360	0.01	0.02	24000	312	0.01	0.02
	5.5	27500	468	0.008	0.01	26100	336	0.008	0.01	24000	288	0.008	0.01
	6	24200	234	0.008	0.01	22968	168	0.008	0.01	21120	144	0.008	0.01
	7	22000	156	0.006	0.008	20880	108	0.006	0.008	19200	96	0.006	0.008
	8	22000	97.5	0.005	0.008	20880	70	0.005	0.008	19200	60	0.005	0.008
	9	19040	85	0.005	0.008	18188	65	0.005	0.008	18048	50	0.005	0.008
	10	19040	80	0.003	0.005	18188	60	0.003	0.005	18000	40	0.003	0.005
	12	19040	60	0.003	0.005	18188	50	0.003	0.005	18000	30	0.003	0.005
R0.35	2	42500	1625	0.02	0.035	41200	1300	0.02	0.035	36000	1000	0.02	0.035
	3	40000	1200	0.02	0.03	40000	960	0.02	0.03	30000	800	0.02	0.03
	4	40000	1025	0.015	0.02	40000	820	0.015	0.02	30000	600	0.015	0.02
	6	30000	625	0.006	0.01	30000	500	0.006	0.01	25000	420	0.006	0.01
R0.4	8	25000	475	0.004	0.006	20000	380	0.004	0.006	20000	250	0.004	0.006
	2	24200	2000	0.03	0.05	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	2.5	24200	2000	0.03	0.05	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	3	24200	2000	0.03	0.05	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	4	24200	1600	0.03	0.05	22000	1200	0.03	0.05	20000	860	0.03	0.05
	5	24200	1600	0.02	0.03	22000	1000	0.02	0.03	20000	620	0.02	0.03
	6	21780	1200	0.02	0.03	19800	760	0.02	0.03	18000	560	0.02	0.03
	7	21780	1000	0.02	0.03	19800	680	0.02	0.03	18000	520	0.02	0.03
	8	21780	820	0.01	0.02	19800	600	0.01	0.02	18000	480	0.01	0.02
	10	19360	450	0.008	0.015	17600	380	0.008	0.015	16000	320	0.008	0.015
	12	18150	320	0.006	0.012	16500	260	0.006	0.012	15000	200	0.006	0.012
	16	18150	320	0.005	0.01	16500	260	0.005	0.01	15000	200	0.005	0.01
R0.45	2	24200	2000	0.03	0.05	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	4	24200	1600	0.03	0.05	22000	1200	0.03	0.05	20000	860	0.03	0.05
	6	21780	1200	0.02	0.03	19800	760	0.02	0.03	18000	560	0.02	0.03
	8	21780	820	0.01	0.02	19800	600	0.01	0.02	18000	480	0.01	0.02
R0.5	2.5	24000	2000	0.03	0.06	22000	1600	0.03	0.05	20000	1200	0.03	0.05

Cutting Parameter

HGXB2L 2-Flute Long Neck Ball End Mill

Workpiece		Carbon Steels、Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
R0.5	3	24000	2000	0.03	0.06	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	4	24000	2000	0.03	0.06	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	5	24000	2000	0.03	0.05	22000	1600	0.03	0.05	20000	920	0.03	0.05
	6	21600	1800	0.05	0.05	19800	1200	0.03	0.05	18000	740	0.02	0.05
	7	21600	1200	0.04	0.05	19800	950	0.03	0.04	18000	680	0.02	0.03
	8	21600	1000	0.04	0.05	19800	860	0.03	0.04	18000	560	0.02	0.03
	9	19200	820	0.03	0.05	17600	750	0.02	0.03	16000	500	0.01	0.02
	10	18000	750	0.03	0.05	16500	620	0.02	0.03	15000	450	0.01	0.02
	12	18000	600	0.01	0.03	16500	520	0.007	0.02	15000	400	0.005	0.01
	14	16800	420	0.005	0.01	15400	360	0.003	0.007	14000	320	0.002	0.005
	16	16800	300	0.005	0.005	15400	250	0.003	0.005	14000	200	0.002	0.003
	18	16800	180	0.003	0.005	15400	120	0.002	0.005	14000	85	0.002	0.002
	20	14400	100	0.003	0.003	13200	75	0.002	0.003	12000	60	0.002	0.002
	22	12000	50	0.002	0.003	11000	40	0.002	0.002	10000	35	0.001	0.002
R0.6	4	24000	2000	0.03	0.06	22000	1600	0.03	0.05	20000	1200	0.03	0.05
	6	21600	1800	0.05	0.05	19800	1200	0.04	0.05	18000	740	0.02	0.05
	8	21600	1000	0.04	0.05	19800	860	0.03	0.04	18000	560	0.02	0.03
	10	18000	750	0.03	0.05	16500	620	0.02	0.03	15000	450	0.01	0.02
	12	18000	600	0.01	0.03	16500	520	0.007	0.02	15000	400	0.005	0.01
	14	16800	420	0.005	0.01	15400	360	0.003	0.007	14000	320	0.002	0.005
R0.7	16	16800	300	0.005	0.005	15400	250	0.003	0.005	14000	200	0.002	0.003
	8	21600	2500	0.03	0.05	19800	1600	0.03	0.05	18000	1200	0.03	0.05
	12	18000	1800	0.02	0.05	16500	920	0.02	0.05	15000	780	0.02	0.05
	16	18000	720	0.01	0.02	16500	650	0.01	0.02	15000	580	0.01	0.02
R0.75	4	21600	3000	0.03	0.05	19800	2500	0.03	0.05	18000	2000	0.03	0.05
	6	21600	3000	0.03	0.05	19800	2000	0.03	0.05	18000	1600	0.03	0.05
	8	21600	2500	0.03	0.05	19800	1600	0.03	0.05	18000	1200	0.03	0.05
	10	21600	2500	0.02	0.05	19800	1200	0.02	0.05	18000	860	0.02	0.05
	12	18000	1800	0.02	0.05	16500	920	0.02	0.05	15000	780	0.02	0.05
	14	18000	1200	0.02	0.03	16500	820	0.02	0.03	15000	650	0.02	0.03
	16	18000	720	0.01	0.02	16500	650	0.01	0.02	15000	580	0.01	0.02
	18	16800	550	0.008	0.015	15400	400	0.008	0.015	14000	400	0.008	0.015

Cutting Parameter

HGXB2L 2-Flute Long Neck Ball End Mill

Workpiece		Carbon Steels、Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
R0.75	20	16800	450	0.007	0.01	15400	360	0.007	0.01	14000	300	0.007	0.01
	25	14400	330	0.007	0.007	13200	250	0.007	0.007	12000	200	0.007	0.007
	30	9600	80	0.003	0.003	8800	60	0.003	0.003	8000	40	0.003	0.003
R0.8	8	21600	2500	0.03	0.05	19800	1600	0.03	0.05	18000	1200	0.03	0.05
	12	18000	1800	0.02	0.05	16500	920	0.02	0.05	15000	780	0.02	0.05
	16	18000	720	0.01	0.02	16500	650	0.01	0.02	15000	580	0.01	0.02
	20	16800	450	0.007	0.01	15400	360	0.007	0.01	14000	300	0.007	0.01
R1	6	18000	1920	0.04	0.06	16500	1760	0.04	0.06	15000	1600	0.04	0.06
	8	18000	1440	0.03	0.05	16500	1320	0.03	0.05	15000	1200	0.03	0.05
	10	16800	1440	0.03	0.05	15400	1320	0.03	0.05	14000	1200	0.03	0.05
	12	14400	1128	0.02	0.05	13200	1034	0.02	0.05	12000	940	0.02	0.05
	14	14400	1128	0.015	0.04	13200	1034	0.015	0.04	12000	940	0.015	0.04
	16	14400	1128	0.015	0.04	13200	1034	0.015	0.04	12000	940	0.015	0.04
	18	12000	1020	0.01	0.03	11000	935	0.01	0.03	10000	850	0.01	0.03
	20	12000	864	0.01	0.03	11000	792	0.01	0.03	10000	720	0.01	0.03
	22	12000	720	0.008	0.02	11000	660	0.008	0.02	10000	600	0.008	0.02
	25	10200	504	0.008	0.02	9350	462	0.008	0.02	8500	420	0.008	0.02
	30	10200	288	0.005	0.01	9350	264	0.005	0.01	8500	240	0.005	0.01
	35	8160	120	0.005	0.007	7480	110	0.005	0.007	6800	100	0.005	0.007
R1.25	40	8160	60	0.002	0.005	7480	55	0.002	0.005	6800	50	0.002	0.005
	6	18000	1920	0.04	0.06	16500	1760	0.04	0.06	15000	1600	0.04	0.06
	8	18000	1440	0.03	0.05	16500	1320	0.03	0.05	15000	1200	0.03	0.05
	10	16800	1440	0.03	0.05	15400	1320	0.03	0.05	14000	1200	0.03	0.05
	12	15000	1320	0.02	0.05	13800	1180	0.02	0.04	13000	1080	0.02	0.04
	16	14400	1128	0.015	0.04	13200	1034	0.015	0.04	12000	940	0.015	0.04
	20	12000	864	0.01	0.03	11000	792	0.01	0.03	10000	720	0.01	0.03
	25	10200	504	0.008	0.02	9350	462	0.008	0.02	8500	420	0.008	0.02
	30	10200	288	0.005	0.01	9350	264	0.005	0.01	8500	240	0.005	0.01
	35	8160	120	0.005	0.007	7480	110	0.005	0.007	6800	100	0.005	0.007
R1.5	8	16800	2500	0.04	0.08	15400	2200	0.04	0.08	14000	2000	0.04	0.08
	10	16800	1875	0.03	0.07	15400	1650	0.03	0.07	14000	1500	0.03	0.07
	12	14400	1875	0.03	0.07	13200	1650	0.03	0.07	12000	1500	0.03	0.07

Cutting Parameter

HGXB2L 2-Flute Long Neck Ball End Mill

Workpiece		Carbon Steels、Alloy Steels (≤35HRC)				Pre-Hardened Steels (35~45HRC)				Hardened Steels (45-55HRC)			
Type No.		Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm	Spindle Speed min ⁻¹	Feed mm/min	Ap mm	Ae mm
R1.5	14	14400	1500	0.03	0.07	13200	1320	0.03	0.07	12000	1200	0.03	0.07
	16	14400	1500	0.02	0.05	13200	1320	0.02	0.05	12000	1200	0.02	0.05
	20	12000	1200	0.02	0.05	11000	1056	0.02	0.05	10000	960	0.02	0.05
	25	10320	1000	0.015	0.05	9460	880	0.015	0.05	8600	800	0.015	0.05
	30	8640	750	0.015	0.04	7920	660	0.015	0.04	7200	600	0.015	0.04
	35	7680	525	0.01	0.03	7040	462	0.01	0.03	6400	420	0.01	0.03
	40	7200	325	0.01	0.03	6600	286	0.01	0.03	6000	260	0.01	0.03
	16	14400	1500	0.02	0.05	13200	1320	0.02	0.05	12000	1200	0.02	0.05
R1.75	20	12000	1200	0.02	0.05	11000	1056	0.02	0.05	10000	960	0.02	0.05
	25	10320	1000	0.015	0.05	9460	880	0.015	0.05	8600	800	0.015	0.05
	30	8640	750	0.015	0.04	7920	660	0.015	0.04	7200	600	0.015	0.04
	35	7680	525	0.01	0.03	7040	462	0.01	0.03	6400	420	0.01	0.03
	40	7200	325	0.01	0.03	6600	286	0.01	0.03	6000	260	0.01	0.03
	45	6800	300	0.01	0.03	6500	264	0.01	0.03	6000	200	0.01	0.03
	12	13200	3000	0.04	0.08	12100	2500	0.04	0.08	11000	2000	0.04	0.08
R2	14	13200	3000	0.04	0.08	12100	2000	0.04	0.08	11000	1600	0.04	0.08
	16	12000	3000	0.03	0.06	11000	2000	0.03	0.06	10000	1600	0.03	0.06
	20	12000	2400	0.03	0.06	11000	1800	0.03	0.06	10000	1400	0.03	0.06
	25	10800	1600	0.03	0.05	9900	1200	0.03	0.05	9000	1000	0.03	0.05
	30	9600	1600	0.03	0.05	8800	1200	0.03	0.05	8000	1000	0.03	0.05
	35	9000	1200	0.03	0.05	8250	1000	0.03	0.05	7500	820	0.03	0.05
	40	8160	1200	0.02	0.04	7480	1000	0.02	0.04	6800	820	0.02	0.04
	45	7800	750	0.02	0.04	7150	620	0.02	0.04	6500	500	0.02	0.04
	50	6600	550	0.015	0.03	6050	500	0.015	0.03	5500	420	0.015	0.03
	16	12000	3000	0.03	0.06	11000	2000	0.03	0.06	10000	1600	0.03	0.06
	20	12000	2400	0.03	0.06	11000	1800	0.03	0.06	10000	1400	0.03	0.06
	25	10800	1600	0.03	0.05	9900	1200	0.03	0.05	9000	1000	0.03	0.05
	30	9600	1600	0.03	0.05	8800	1200	0.03	0.05	8000	1000	0.03	0.05
	35	8500	1450	0.025	0.045	8000	1100	0.025	0.045	7500	950	0.025	0.045
	40	8160	1200	0.02	0.04	7480	1000	0.02	0.04	6800	820	0.02	0.04
	45	7800	750	0.02	0.04	7150	620	0.02	0.04	6500	500	0.02	0.04
	50	6600	550	0.015	0.03	6050	500	0.015	0.03	5500	420	0.015	0.03

Key Factors for Machining

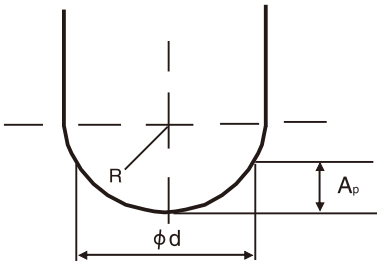
Factor	Instrucion and Advice
Rigidity of Machine	① Use a rigid machine.
	② Adjust cutting conditions according to the rigidity of machine.
Run out Adjustment	① Use a rigid and precise collect chuck.
	② Minimize the run out of end mill.
Work Clamp+choice	① Work piece must be firmly clamped.
	② In case work piece cannot be firmly clamped,change Ap and Ae.
Cutting Fluid and Chips	① Give a sufficient cutting fluid.
	② Recommend water-base cutting fluid for heavy cutting.
	③ Some end mills apply dry cutting only.
	④ Use air blow for dry cutting.
	⑤ Remove chips from working area.
Selection of End Mill	① Select most suitable end mills according to work material and dimension.
	② Refer to the index table on front page.
Cutting Conditions	① Refer to recommended milling condition table.
	② It is necessary to adjust conditions according to the machine rigidity and clamping condition of work piece
Overhang of End Mill from tool holder	① Overhang of end mill must be as short as possible from tool holder.
	② In case overhang cannot be shorten,change Ap and Ae.

Troubleshooting for End Mill Machining

Symptoms of troubles	Cause	Solution
Chattering	- Excessive spindle speed - Excessive feed - Excessive long of effective length or overhang of end mill - Work piece is not firmly clamped - Wear of cutting edge progressed - Excessive chucking runout	- Reduce spindle speed - Reduce feed - Adjust effective length and overhang as short as possible - Clamp work piece firmly - Use new end mill or regrind - Adjust chucking runout
Breakage of end mill	- Excessive depth of cut - Chips clogged - Excessive feed per tooth - Wear of cutting edge progressed	- Reduce depth of cut - Adjust coolant nozzle to right direction to dispose chips - Reduce feed per tooth - Use new end mill or regrind
Chipping of cutting edge	- Excessive depth of cut - Excessive feed - Work piece is not firmly clamped - Excessive spindle speed - Excessive long of effective length or overhang of end mill - Wear of cutting edge progressed - Built up edge - Excessive cooling	- Reduce depth of cut - Reduce feed - Clamp work piece firmly - Reduce spindle speed - Adjust effective length and overhang as short as possible - Use new end mill or regrind - Choose appropriate coating - Use air blow or oil mist
Abnormal wear		
Clogging and Depositing	- Chips are not well disposed - Excessive feed - Excessive depth of cut - Inappropriate number of flute - Wear of cutting edge progressed	- Chips are not well disposed - Excessive feed - Excessive depth of cut - Inappropriate number of flute - Wear of cutting edge progressed
Deflection of end mill	- Excessive feed - Excessive depth of cut - Excessive long of effective length or overhang of end mill - Large helix angle of flutes	- Excessive feed - Excessive depth of cut - Excessive long of effective length or overhang of end mill - Large helix angle of flutes
Burr on finished surface	- Wear of cutting edge progressed - Small helix angle of flutes - Excessive depth of cut	- Use new end mill or regrind - Use larger helix angle - Reduce depth of cut
Unsmooth Application Surface	- Wear of cutting edge progressed - Chip bite - Excessive feed - Excessive long of effective length or overhang of end mill - Too low spindle speed - Stock removals vary for finishing - Excessive chunking runout	- Use new end mill or regrind - Use coolant to remove chips - Reduce feed - Adjust effective length and overhang as short as possible - Increase spindle speed - Improve semi-finishing process - Adjust chucking runout
Poor machining accuracy	- Inconsistent thermal extension of spindle - Stock removals vary for finishing - Excessive feed - Excessive chunking runout	- Warm up spindle by idling before starting operation - Improve semi-finishing process - Reduce feed - Adjust chunking runout

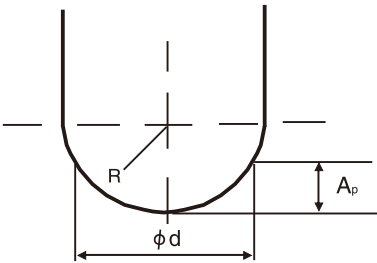
Ball End Mill Actual Cutting Diameter

Milling Amount										
R \ A _p	0.01	0.02	0.03	0.04	0.05	0.1	0.15	0.2	0.25	0.3
R 0.1	0.087	0.120	0.143	0.160	0.173	0.200	-	-	-	-
R 0.15	0.108	0.150	0.180	0.204	0.224	0.283	0.300	-	-	-
R 0.2	0.125	0.174	0.211	0.240	0.265	0.346	0.387	0.400	-	-
R 0.25	0.140	0.196	0.237	0.271	0.300	0.400	0.458	0.490	0.500	-
R 0.3	0.154	0.215	0.262	0.299	0.332	0.447	0.520	0.566	0.592	0.600
R 0.4	0.178	0.250	0.304	0.349	0.387	0.529	0.624	0.693	0.742	0.770
R 0.5	0.199	0.280	0.341	0.398	0.436	0.600	0.714	0.800	0.866	0.917
R 0.6	0.218	0.307	0.375	0.431	0.480	0.663	0.794	0.894	0.975	1.039
R 0.7	0.236	0.332	0.400	0.466	0.520	0.721	0.866	0.980	1.072	1.149
R 0.75	0.240	0.340	0.420	0.480	0.540	0.740	0.900	1.020	1.120	1.200
R 0.8	0.252	0.356	0.434	0.500	0.557	0.775	0.933	1.058	1.162	1.249
R 0.9	0.268	0.377	0.461	0.531	0.592	0.825	0.995	1.131	1.245	1.342
R 1	0.282	0.398	0.486	0.560	0.624	0.872	1.054	1.200	1.323	1.428
R 1.5	0.346	0.488	0.597	0.688	0.768	1.077	1.308	1.497	1.658	1.800
R 2	0.399	0.564	0.690	0.796	0.889	1.249	1.520	1.744	1.936	2.107
R 2.5	0.447	0.631	0.772	0.981	0.995	1.400	1.706	1.960	2.179	2.375
R 3	0.489	0.692	0.846	0.977	1.091	1.536	1.873	2.154	2.398	2.615
R 4	0.565	0.799	0.978	1.129	1.261	1.778	2.175	2.498	2.784	3.040
R 5	0.632	0.894	1.094	1.262	1.411	1.990	2.431	2.800	3.122	3.412
R 6	0.693	0.979	1.198	1.383	1.546	2.182	2.666	3.072	3.428	3.747
R 8	0.800	1.130	1.384	1.598	1.786	2.522	3.084	3.566	3.969	4.34
R 10	0.894	1.264	1.584	1.788	1.998	2.822	3.452	3.980	4.444	4.862
R 12.5	1.000	1.414	1.732	1.998	2.234	3.156	3.862	4.454	4.974	5.444
R 15	1.096	1.548	1.896	2.190	2.448	3.458	4.232	4.882	5.454	5.970



Ball End Mill Actual Cutting Diameter: $\phi d=2\sqrt{A_p(2R-A_p)}$

Milling Amount										
0.4	0.5	0.6	0.7	0.8	0.9	1	1.5	2	2.5	3
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
0.800	-	-	-	-	-	-	-	-	-	-
0.980	1.000	-	-	-	-	-	-	-	-	-
1.131	1.183	1.200	-	-	-	-	-	-	-	-
1.265	1.342	1.386	1.400	-	-	-	-	-	-	-
1.326	1.414	1.470	1.496	-	-	-	-	-	-	-
1.386	1.483	1.549	1.587	1.600	-	-	-	-	-	-
1.497	1.612	1.697	1.755	1.789	1.800	-	-	-	-	-
1.600	1.732	1.833	1.908	1.960	1.990	2.000	-	-	-	-
2.040	2.236	2.400	2.538	2.653	2.750	2.828	3.000	-	-	-
2.400	2.646	2.857	3.040	3.200	3.341	3.464	3.873	4.000	-	-
2.713	3.000	3.250	3.470	3.666	3.842	4.000	4.583	4.899	5.000	-
2.993	3.317	3.600	3.852	4.079	4.285	4.472	5.196	5.657	5.916	6.000
3.487	3.873	4.214	4.521	4.800	5.056	5.292	6.245	6.928	7.416	7.746
3.919	4.359	4.750	5.103	5.426	5.724	6.000	7.141	8.000	8.660	9.165
4.308	4.798	5.231	5.625	5.987	6.321	6.633	7.937	8.944	9.747	10.392
4.996	5.568	6.080	6.546	6.974	7.372	7.746	9.382	10.584	11.618	12.490
5.600	6.244	6.824	7.352	7.838	8.292	8.718	10.536	12.000	13.228	14.282
6.274	7.000	7.652	8.248	8.800	9.314	9.798	11.946	13.564	15.000	16.248
6.882	7.682	8.400	9.058	9.666	10.236	10.770	13.076	14.966	16.584	18.000



$\phi d=2\sqrt{A_p(2R-A_p)}$

1. Vc(m/min) Velocity

$$V_c = \frac{\pi \times D \times N}{1000}$$

π=3.14(the circular constant)
D=Outside Diameter
N=Spindle Speed

2. N (r.p.m) Spindle Speed

$$N = \frac{1000 \times v_c}{\pi \times D}$$

Vc=Velocity
π=3.14(the circular constant)
D=Outside Diameter

3. F (mm/min)

$$F = N \times Z \times f_z$$

N=Spindle Speed
Z=Number of flutes
fz=Feed per tooth

4. fz (mm/Z)

$$f_z = \frac{F}{N \times Z}$$

F=Feed
N=Spindle Speed
Z=Number of flutes