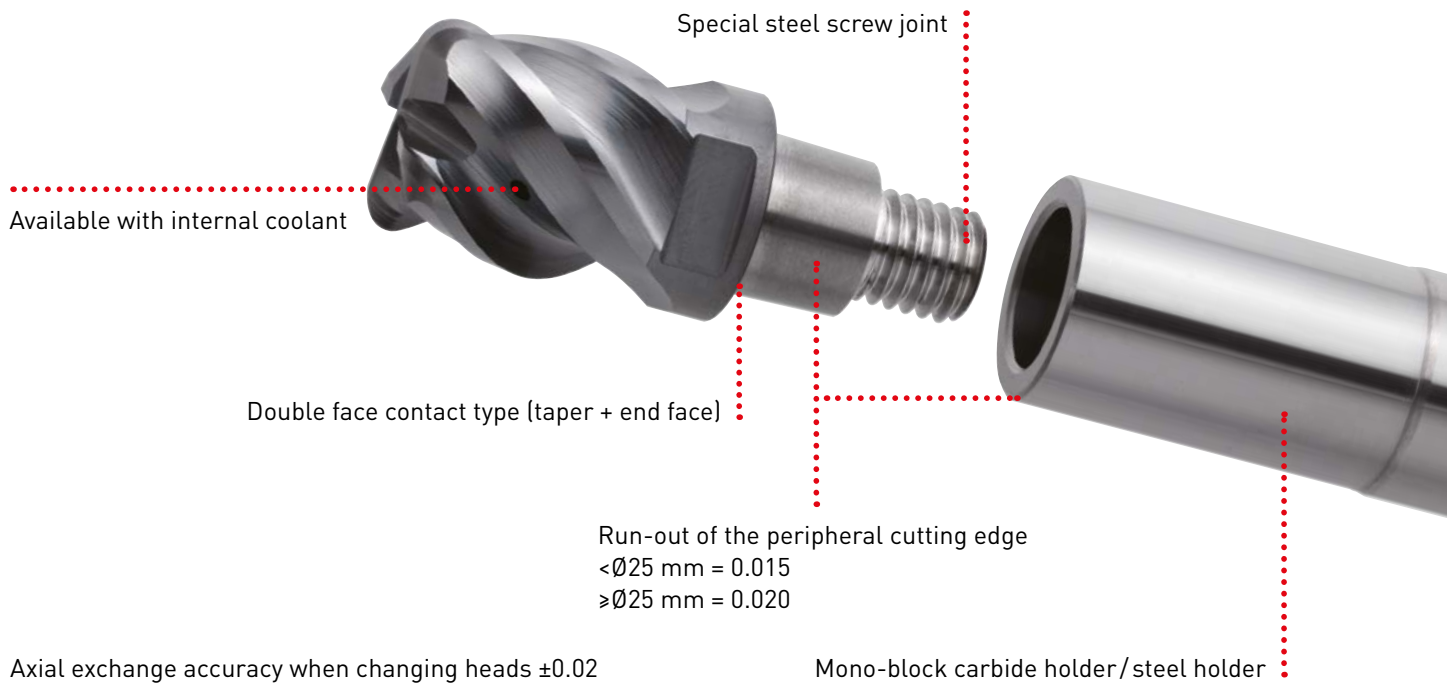

iMX

EXCHANGEABLE HEAD END MILLS



iMX

EXCHANGEABLE HEAD END MILLS

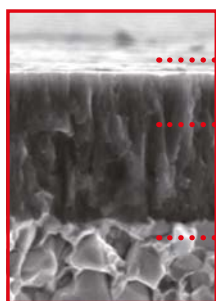


FEATURES

The iMX series is a revolutionary end mill system that enables efficiency, high accuracy and rigidity by combining the advantages of both solid carbide and indexable end mills.

Security and rigidity is close to that of a solid carbide end mill because all clamping faces are solid carbide. Suitable for a variety of applications due to the exchangeable head, therefore excellent for reducing inventory.

HIGHLY VERSATILE GRADES

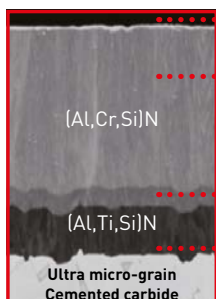


- Smooth "ZERO- μ surface"
- Newly developed [Al, Cr]N group coating
- Super-fine particle, super-hard base material

- **ET2020 (Uncoated)**
- Suitable for milling aluminium.

- **EP7020**
- Suitable for difficult-to-cut materials.

- **EP6120**
- Suitable for high feed milling of steel.



- High lubricity
- High oxidation temperature
- Better wear resistance
- High adhesion

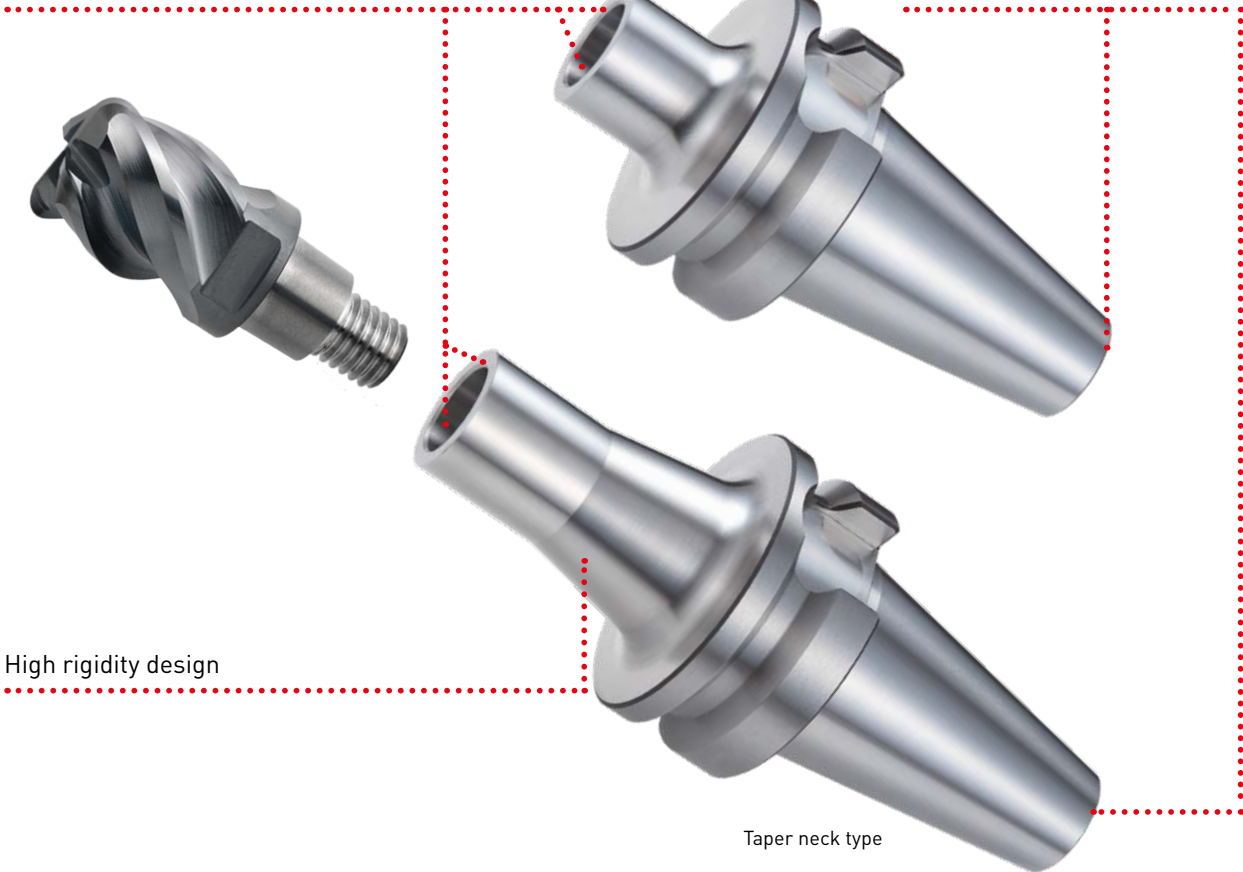
- **EP8110 / EP8120**
- The newly developed [Al,Cr,Si]N coating that has a high oxidation temperature and high lubricity. Together with the [Al,Ti,Si]N coating, for better wear resistance and higher adhesion, allows hardened steel machining with longer tool life to be maintained.

BT30 MONO-BLOCK TYPE – STEEL TOOL HOLDER

New tool holders for the iMX series. High rigidity realises high efficiency machining.

Double face contact type
(Taper + End face)

Compatible with internal,
through coolant tools

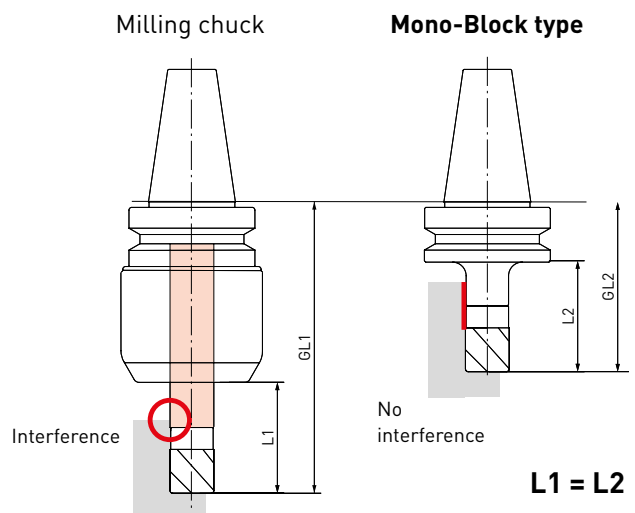


High rigidity design

Taper neck type

BENEFITS OF MONO-BLOCK TYPE HOLDERS

The mono-block type holder greatly reduces tool overhang, allowing stable machining even with larger diameter tools, and thereby achieving high efficiency machining. When a standard milling chuck is used, a screw-in type shank also required. This is negated when using a mono-block type holder, therefore a reduction in costs can be realised. Undercutting the bottom of the neck, makes it suitable for vertical wall machining.



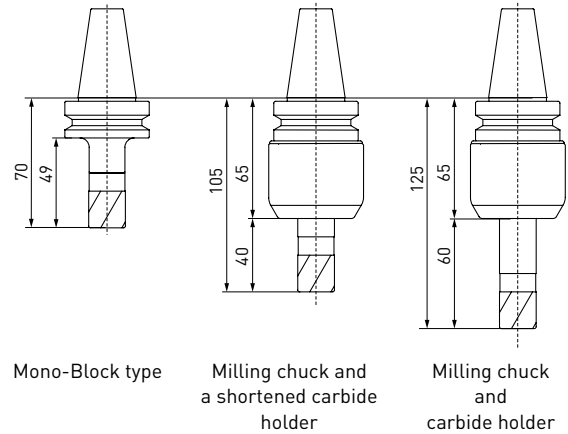
BT30 MONO-BLOCK TYPE STEEL TOOL HOLDER

SHOULDER MILLING COMPARISON WHEN MACHINING 1.4542

Stable machining can be achieved when combined with high-output machine tools. Carbide holders and milling chucks are no longer required, enabling a reduction in costs.

OVERHANG LENGTH COMPARISON

Material	1.4542
Tool	iMX20C4HV200R10020S
Vc (m/min)	100
fz (mm/t.)	0.2
Machine	Machining Centre Max. 10000 min ⁻¹ Spindle Motor 14.2 kw Torque 80 Nm

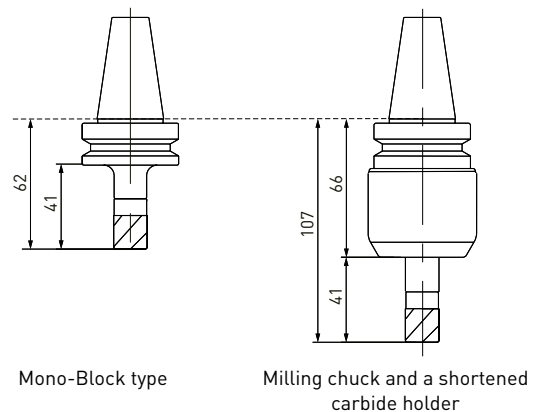
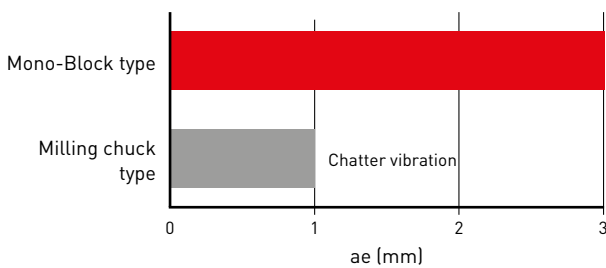


Holder	ae	Vf (mm / min)		
		380	510	640
ap = 10 mm				
Mono-Block holder	3	✓	✓	✓
	6	✓	✓	✓
Milling chuck with a short carbide holder	3	✓	✓	✓
	6	✓	✓	✓
Milling chuck with a standard length carbide holder	3	✓	✓	
	6			✗

SIDE MILLING COMPARISON WHEN MACHINING 1.4301

Achieves high efficiency machining with a depth of cut (ae) that is three times that of a standard milling chuck holder.

OVERHANG LENGTH COMPARISON



Machined Surface Comparison: ae = 1 mm, fz = 0.1 mm/t.



Mono-Block type



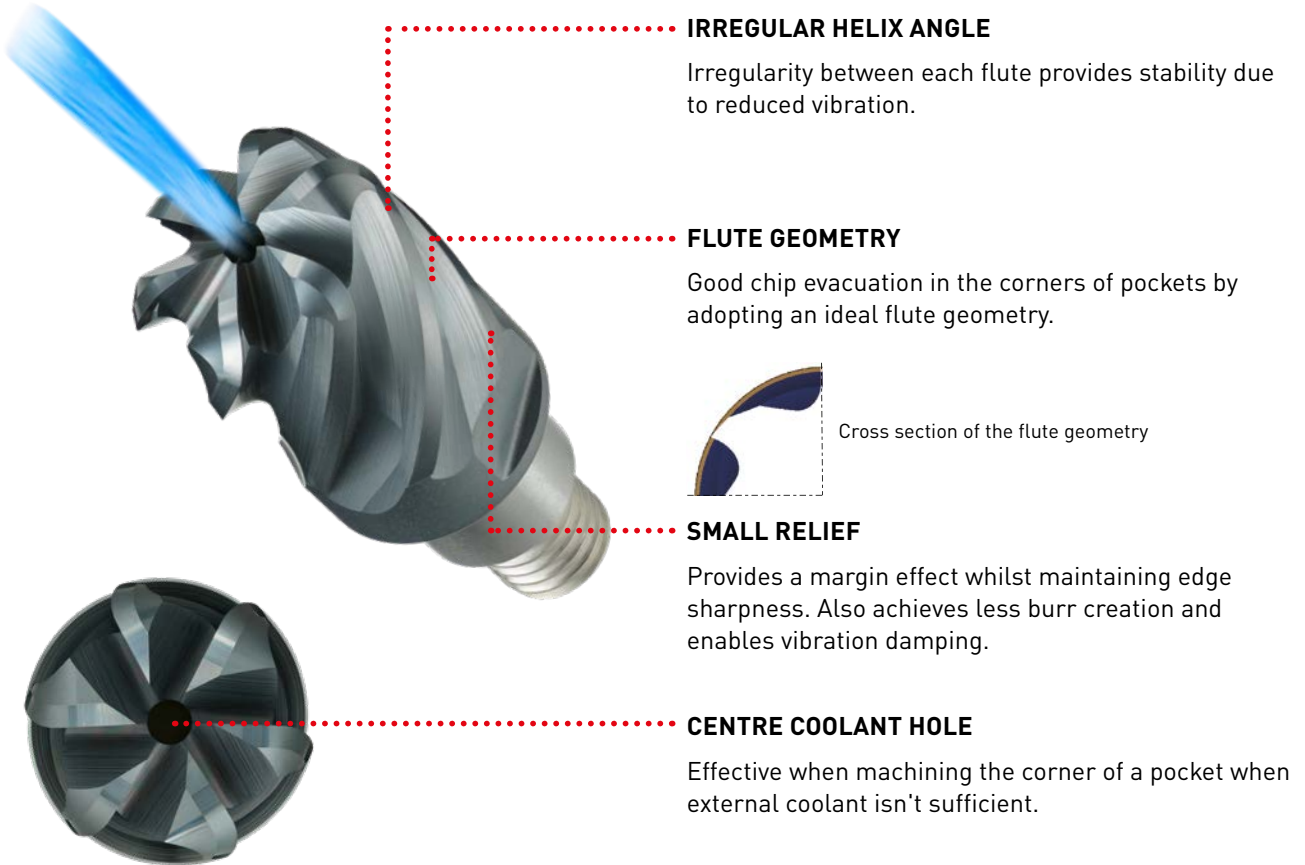
Milling chuck type

Material	1.4301
Tool	iMX16C4HV160R10016
Vc (m/min)	100
Vf (mm/min)	796
ap (mm)	16
Machine	Machining Centre Max. 10000 min ⁻¹ Spindle Motor 14.2 kw Torque 80 Nm

iMX-C6HV-C

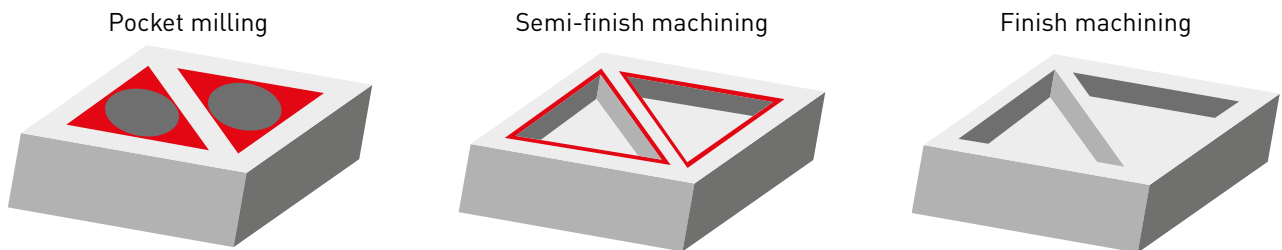
High efficiency machining enables process consolidation.

CORNER RADIUS HEAD WITH COOLANT HOLE, 6 FLUTE, IRREGULAR HELIX



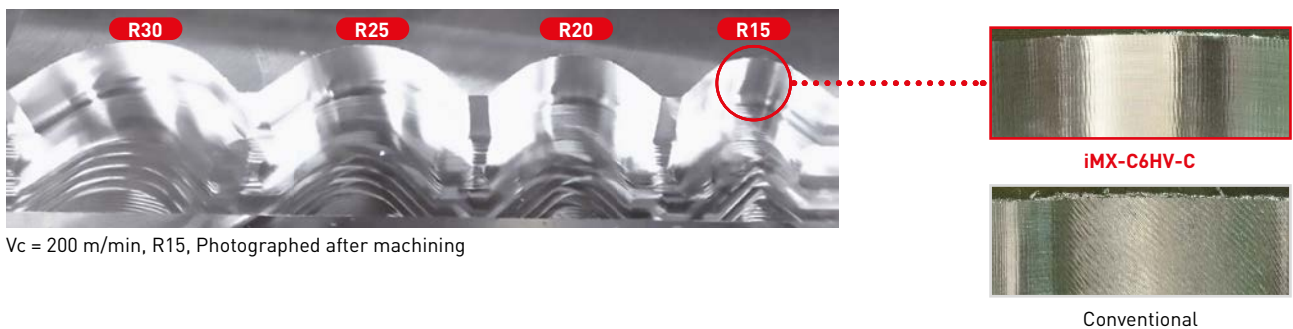
TOOL INTEGRATION ACHIEVED

Multi functionality brings efficiency to the entire machining process.

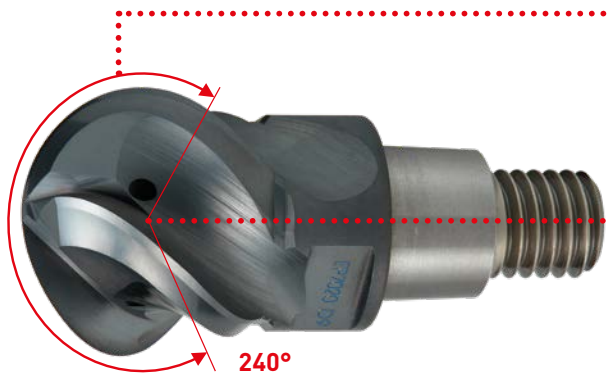


COMPARISON OF ANTI-VIBRATION WHEN MACHINING CORNERS

Excellent vibration damping that prevents the usual problems even when machining corner radii.



iMX-B4WH-S

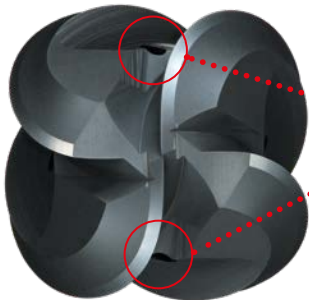


LOLLIPOP SHAPE

With a true round ball cutting edge that extends 240°, making it ideal for finishing undercut surfaces.

HIGH HELIX CUTTING EDGE

The high helix edge geometry reduces cutting resistance. This results in reduced chatter and vibration even when machining with a long tool overhang.



WITH COOLANT HOLES

A stable supply of coolant is maintained even when machining components with complex geometries.

COMPARISON WHEN MACHINING 1.4548 MATERIAL

Cutting speed

40 m/min

60 m/min

80 m/min

iMX-B4WH-S



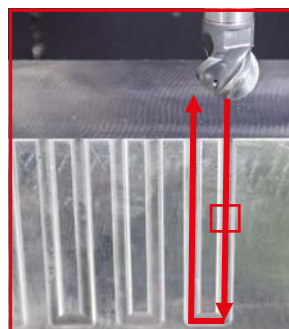
Machined surfaces without chatter

Conventional



Machined surfaces displaying chatter

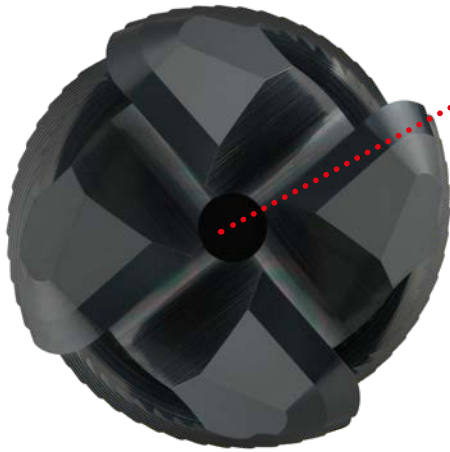
Material	1.4548
Tool	iMX10B4WH12008S
fz (mm/t.)	0.03
ae (mm)	0.3
Overhang length (mm)	60, L/D=5
Coolant	Internal coolant (Emulsion)



Direction of feed

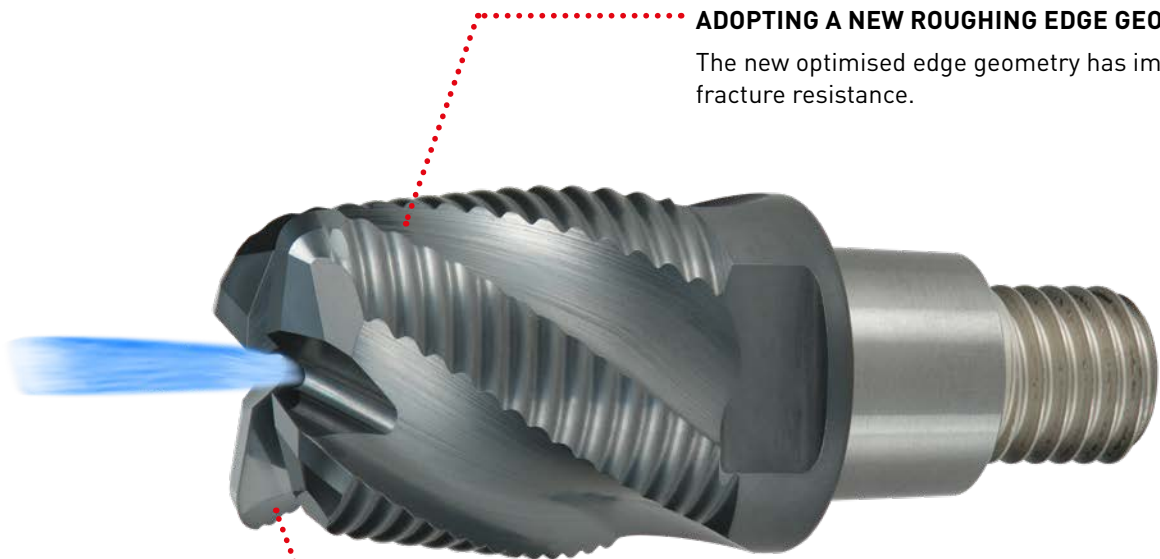
iMX-RC4F-C

A corner radius roughing type with a centre through coolant hole. The roughing edge geometry reduces cutting resistance and is effective for low rigidity and long tool overhang applications.



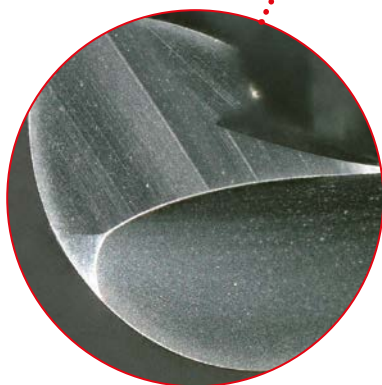
CENTRE THROUGH COOLANT HOLE

For improved chip disposal.



ADOPTING A NEW ROUGHING EDGE GEOMETRY

The new optimised edge geometry has improved fracture resistance.














NEW CORNER RADIUS TYPE

The new corner radius geometry is resistant to cutting edge damage.

iMX

HEAD








Product code	Properties		ZEFP	Size range		Long cutting edge	P	H	M	S	N	
SQUARE												
iMX-S3HV	Square head, 3 flute, Irregular helix		3	Ø 10 - Ø 25			⊙		⊙	⊙	○	12
iMX-S4HV	Square head, 4 flute, Irregular helix		4	Ø 10 - Ø 32			⊙		⊙	⊙	○	16
	Square head, 4 flute, Irregular helix, Long cutting edge type			Ø 16, Ø 20	✓		⊙		⊙	⊙	○	
iMX-S4HV-S	Square head, 4 flute, Irregular helix, with coolant hole		4	Ø 10 - Ø 25	✓		⊙		⊙	⊙	○	17
iMX-S3A	Square head, 3 flute, For aluminium alloy		3	Ø 10 - Ø 28							⊙	23
iMX-R4F	Roughing head, 4 flute		4	Ø 10 - Ø 25			⊙		⊙	⊙	○	26
RADIUS												
iMX-C4HV	Corner radius head, 4 flute, Irregular helix		4	Ø 10 - Ø 28			○		⊙	⊙	○	29
	Corner radius head, 4 flute, Irregular helix, Long cutting edge type			Ø 16, Ø 20	✓		○		⊙	⊙	○	
iMX-C4HV-S	Corner radius head, 4 flute, Irregular helix, with coolant hole		4	Ø 10 - Ø 25	✓		○		⊙	⊙	○	32
iMX-C6HV-C	Corner radius head, 6 flute, Irregular helix, with coolant hole		6	Ø 10 - Ø 25	✓		⊙		⊙	⊙		39
iMX-C6HV			6	Ø 10, Ø 12			⊙		⊙	⊙		
iMX-C10HV	Corner radius head, Multi-flute, Irregular helix		10	Ø 16			⊙		⊙	⊙		41
iMX-C12HV			12	Ø 20, Ø 25			⊙		⊙	⊙		
iMX-C4FD-C	Duplex corner radius head with coolant hole, 4 flute, For high feed		4	Ø 10 - Ø 25	✓		⊙	⊙	⊙	⊙	○	43
iMX-C4FV	Corner radius head for high efficiency machining, 4 flute, Irregular helix		4	Ø 10 - Ø 25			⊙	⊙				45
iMX-C3A	Corner radius head, 3 flute, For aluminium alloy		3	Ø 10 - Ø 28							⊙	47
iMX-C8T			8	Ø 8	✓				⊙	⊙		
iMX-C10T	Corner radius, Taper head, Multi-flute, with coolant hole		10	Ø 10	✓				⊙	⊙		50
iMX-C12T			12	Ø 15, Ø 19	✓				⊙	⊙		
iMX-C15T			15	Ø 15, Ø 19	✓					⊙	⊙	
iMX-RC4F-C	Roughing head with coolant hole, 4 flute		4	Ø 10 - Ø 20	✓		○		○	⊙		52

Product code	Properties	ZEFP	Size range		Long cutting edge						
						P	H	M	S	N	
BALL											
iMX-B4HV	Ball nose head, 4 flute, Irregular helix		4	Ø 10 – Ø 25		⊙		⊙	⊙	○	54
iMX-B4HV-E	Ball nose head, 4 flute, Irregular curve, with coolant hole		4	Ø 10 – Ø 25	✓	⊙		⊙	⊙	○	55
iMX-B6HV	Ball nose head, 6 flute, Irregular helix		6	Ø 10 – Ø 25		⊙		⊙	⊙	○	57
iMX-B2S/ iMX-B4S	Ball nose head, 2 flute, For hardened steel		2	Ø 16 – Ø 20			⊙				59
	Ball nose head, 4 flute, For hardened steel		4	Ø 16 – Ø 20							
iMX-B3FV	Ball nose head, For high efficiency machining, 3 flute, Irregular helix		3	Ø 10 – Ø 20		⊙	⊙				63
iMX-B4WH-S	Lollipop head with coolant hole, 4 flute		4	Ø 12 – Ø 20	✓	⊙		⊙	⊙	○	63
CHAMFER											
iMX-CH3L	Chamfer head, 3 flute		3	Ø 10 – Ø 20		⊙	○	⊙	⊙		66
iMX-CH6V	Chamfer head, 6 flute		6	Ø 12 – Ø 20		⊙	○	⊙	⊙		68

2/2

HOLDER

The undercut type holders are available in medium, semi-long and long lengths.

Type		Length	Taper angle	Material
Under cut		Medium	X	Carbide
		Semi-long		
Straight		Long	X	Carbide
		Medium		
Taper neck		Long	1°	Carbide
NEW Straight		Medium		Steel
NEW Taper neck		Medium		Steel

iMX – IDENTIFICATION

HEAD

Series description • Fastening size

The fastening size of the holder should be the same

Dia.

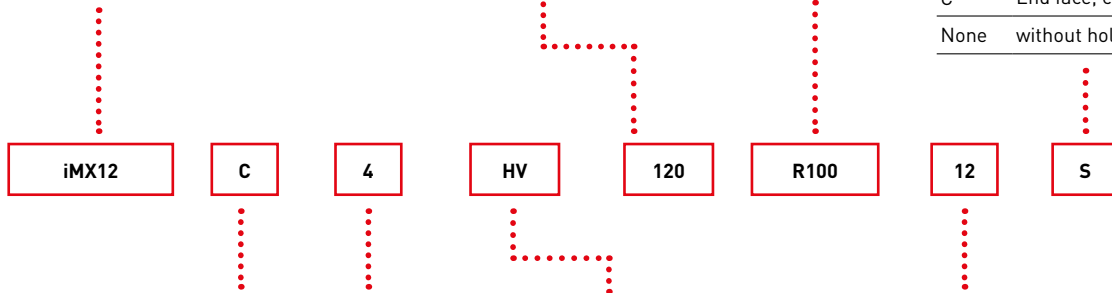
ex.
120 → 12 mm

Corner R.

ex.
R050 → 0.5 mm
R100 → 1 mm

Coolant hole

S	Peripheral (side)
E	End
C	End face, center
None	without hole



Basic configurations

S	Square
C	Corner radius
B	Ball nose
R	Roughing
CH	Chamfer

No. of flutes

ex.
4 → 4 flute

Specifications

H	High helix
V	Vibration control
F	For high efficiency machining
A	For aluminium alloy
D	Duplex corner radius
F	Fine pitch (Roughing)
T	Taper
L	Inclined

Flute length

ex.
12 → 12. mm
(Truncate decimal places)
A45 → Chamfer angle 45°

HOLDER

Hyphen

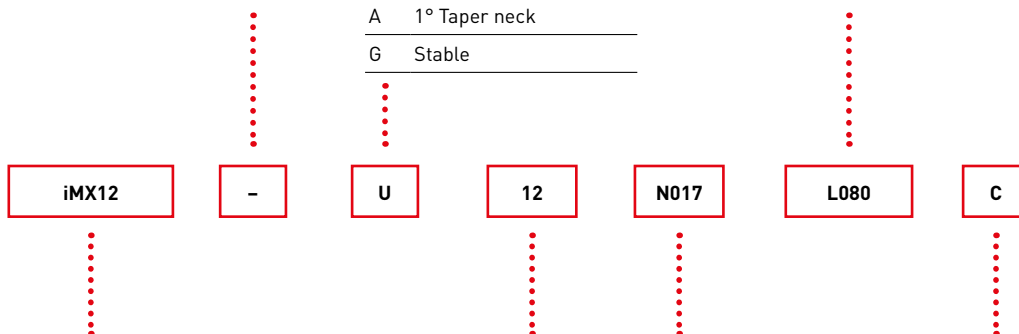
Hyphen indicates these are holders

Figure

S	Straight
U	Undercut
A	1° Taper neck
G	Stable

Overall length

ex.
L080 → 80 mm



Series description • Fastening size

The fastening size of the head should be the same.

Shank diameter

12 → 12 mm

Neck length

ex.
N017 → 17*mm
(Truncate decimal places)

Tool material

C	Carbide
S	Steel

RECOMMENDED CUTTING CONDITIONS

FOR ALL CUTTING CONDITIONS
USE THE OVERHANG FACTOR SHOWN BELOW

Material	L/D	Vc	n	fz	ae
P Carbon steel, Alloy steel, Alloy tool steel, Mild steel, Pre-hardened steel	2	100 %	100 %	100 %	100 %
	3	100 %	100 %	100 %	100 %
	4	80 %	80 %	90 %	70 %
	5	60 %	60 %	80 %	40 %
N Copper, Copper alloy	6	50 %	50 %	70 %	30 %
	7	40 %	40 %	70 %	20 %
	8	40 %	40 %	60 %	10 %
M Precipitation hardening stainless steel, Cobalt chromium alloy, Austenitic and Ferritic stainless steel	9	30 %	30 %	60 %	10 %
	2	100 %	100 %	100 %	100 %
	3	100 %	100 %	100 %	100 %
	4	80 %	80 %	90 %	70 %
	5	60 %	60 %	80 %	40 %
S Heat resistant alloy, Titanium alloy	6	50 %	50 %	70 %	30 %
	7	30 %	30 %	60 %	20 %
	8	30 %	30 %	50 %	10 %
	9	20 %	20 %	50 %	10 %

iMX-S3HV

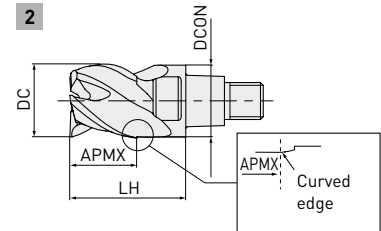
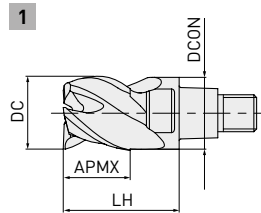


SQUARE HEAD, 3 FLUTE, IRREGULAR HELIX

P M S N



DC < 12	DC > 12
0	0
-0.020	-0.030



Order number	DC	APMX	LH	DCON	ZEFP	EP7020	Type
IMX10S3HV10008	10	8.5	16	9.7	3	●	1
IMX12S3HV12009	12	9.6	19	11.7	3	●	2
IMX16S3HV16012	16	12.8	24	15.5	3	●	2
IMX20S3HV20016	20	16	30	19.5	3	●	2
IMX25S3HV25020	25	20	37.5	24.5	3	●	2

1/1

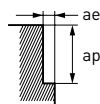


iMX-S3HV

RECOMMENDED CUTTING CONDITIONS

SIDE MILLING

Material	DC	Vc	n	fz	Vf	ap	ae
P Carbon steel, Alloy steel, Mild steel	10	150	4800	0.09	1300	8	2
	12	150	4000	0.09	1100	9.6	2.4
	16	150	3000	0.1	900	12.8	3.2
N Copper, Copper alloy	20	150	2400	0.1	720	16	4
	25	150	1900	0.12	680	20	5
P Pre-hardened steel, Alloy tool steel	10	120	3800	0.06	680	8	2
	12	120	3200	0.065	620	9.6	2.4
	16	120	2400	0.075	540	12.8	3.2
	20	120	1900	0.075	430	16	4
	25	120	1500	0.075	340	20	5
M Precipitation hardening stainless steel, Cobalt chromium alloy	10	75	2400	0.06	430	8	2
	12	75	2000	0.065	390	9.6	2.4
	16	75	1500	0.075	340	12.8	3.2
	20	75	1200	0.075	270	16	4
	25	75	950	0.075	210	20	5
S Heat resistant alloy	10	40	1300	0.04	160	8	1
	12	40	1100	0.045	150	9.6	1.2
	16	40	800	0.05	120	12.8	1.6
	20	40	640	0.05	96	16	2
	25	40	510	0.05	77	20	2.5
M Austenitic and Ferritic stainless steel,	10	100	3200	0.075	720	8	2
	12	100	2700	0.08	650	9.6	2.4
	16	100	2000	0.09	540	12.8	3.2
S Titanium alloy	20	100	1600	0.09	430	16	4
	25	100	1300	0.09	350	20	5



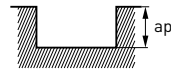
1/3

1. For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.
2. If the depth of cut is shallow, the revolution and feed rate can be increased.
3. Irregular helix flute end mills have a large effect on controlling vibration when compared to standard end mills.
However, if the rigidity of the machine or the workpiece installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.

iMX-S3HV

SLOTTING

Material	DC	Vc	n	fz	Vf	ap
P Carbon steel, Alloy steel, Mild steel	10	100	3200	0.04	380	5
	12	100	2700	0.05	410	6
	16	100	2000	0.07	420	8
N Copper, Copper alloy	20	100	1600	0.07	340	10
	25	100	1300	0.08	310	12
P Pre-hardened steel, Alloy tool steel	10	80	2500	0.03	230	5
	12	80	2100	0.04	250	6
	16	80	1600	0.05	240	8
	20	80	1300	0.05	200	10
	25	80	1000	0.05	150	12
M Precipitation hardening stainless steel, Cobalt chromium alloy	10	60	1900	0.025	100	5
	12	60	1600	0.035	170	6
	16	60	1200	0.05	180	8
	20	60	950	0.05	140	10
	25	60	760	0.05	110	12
S Heat resistant alloy	10	30	950	0.02	57	2
	12	30	800	0.03	72	2.4
	16	30	600	0.05	90	3.2
	20	30	480	0.05	72	4
	25	30	380	0.05	57	5
M Austenitic and Ferritic stainless steel	10	75	2400	0.03	200	5
	12	75	2000	0.04	240	6
	16	75	1500	0.06	270	8
S Titanium alloy	20	75	1200	0.06	220	10
	25	75	950	0.06	170	12



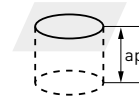
2/3

1. For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.
2. If the depth of cut is shallow, the revolution and feed rate can be increased.
3. Irregular helix flute end mills have a large effect on controlling vibration when compared to standard end mills. However, if the rigidity of the machine or the workpiece installation is poor, vibration or abnormal sound can occur. In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.

iMX-S3HV

PLUNGING

Material	DC	Vc	n	fz	Vf	ap	AZ
P Carbon steel, Alloy steel, Mild steel	10	100	3200	0.14	450	5	2.5
	12	100	2700	0.14	380	6	2.5
	16	100	2000	0.14	280	8	2.5
N Copper, Copper alloy	20	100	1600	0.14	220	10	2.5
	25	100	1300	0.14	180	12.5	2.5
P Pre-hardened steel, Alloy tool steel	10	70	2200	0.09	200	5	2
	12	70	1900	0.09	170	6	2
	16	70	1400	0.09	130	8	2
	20	70	1100	0.09	99	10	2
	25	70	890	0.09	80	12.5	2
M Precipitation hardening stainless steel, Cobalt chromium alloy	10	40	1300	0.03	39	5	0.6
	12	40	1100	0.03	33	6	0.6
	16	40	800	0.03	24	8	0.6
	20	40	640	0.03	19	10	0.6
	25	40	510	0.03	15	12.5	0.6
M Austenitic and Ferritic stainless steel,	10	60	1900	0.03	57	5	0.6
	12	60	1600	0.03	48	6	0.6
	16	60	1200	0.03	36	8	0.6
S Titanium alloy	20	60	950	0.03	29	10	0.6
	25	60	760	0.03	23	12.5	0.6



3/3

1. For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.
2. Irregular helix flute end mills have a larger effect on controlling vibration when compared to standard end mills. However, if the rigidity of the machine or the workpiece installation is poor, vibration or abnormal sound can occur. In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.

iMX-S4HV

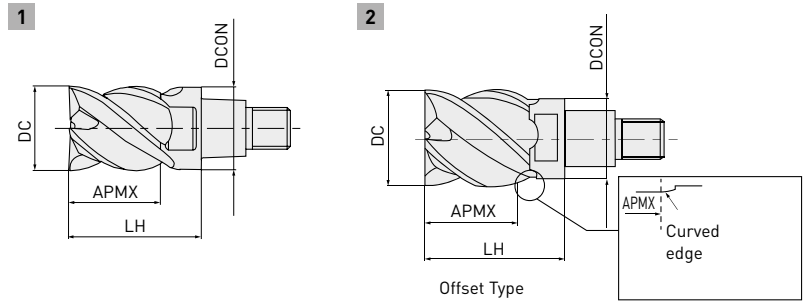


SQUARE HEAD, 4 FLUTE, IRREGULAR HELIX

P M S N



DC < 12	DC > 12
0	0
-0.020	-0.030

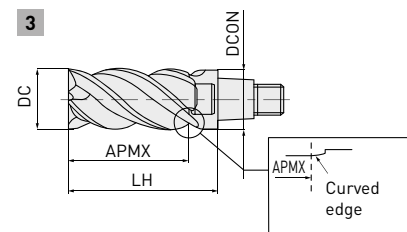


Order number	EP7020	DC	APMX	LH	DCON	ZEFP	Type
IMX10S4HV10010	●	10	10.5	16	9.7	4	1
IMX10S4HV12012	●	12	12.5	19	9.7	4	2
IMX12S4HV12012	●	12	12.5	19	11.7	4	1
IMX12S4HV14014	●	14	14.5	22.5	11.7	4	2
IMX16S4HV16016	●	16	16.5	24	15.5	4	1
IMX16S4HV18018	●	18	18.5	27	15.5	4	2
IMX20S4HV20020	●	20	20	30	19.5	4	2
IMX20S4HV22023	●	22	23	33	19.5	4	2
IMX25S4HV25025	●	25	25	37.5	24.5	4	2
IMX25S4HV28029	●	28	29	41.5	24.5	4	2
IMX25S4HV30031	●	30	31	43.5	24.5	4	2
IMX25S4HV32033	●	32	33	45.5	24.5	4	2

1/1



LONG CUTTING EDGE TYPE



Order number	DC	APMX	LH	DCON	ZEFP	EP7020	Type
IMX16S4HV16032	16	32	40	15.5	4	●	3
IMX20S4HV20040	20	40	50	19.5	4	●	3

1/1

iMX-S4HV-S

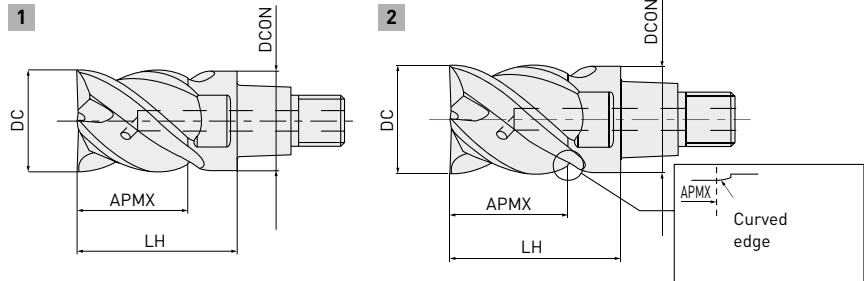


SQUARE HEAD, 4 FLUTE, IRREGULAR HELIX,
WITH COOLANT HOLE

P **M** **S** **N**



[Peripheral cutting edge with coolant hole]



	DC < 12	DC > 12
	0	0
	-0.020	-0.030

Order number	EP7020	DC	APMX	LH	DCON	ZEFP	Type
IMX10S4HV10010S	●	10	10.5	16	9.7	4	1
IMX12S4HV12012S	●	12	12.5	19	11.7	4	1
IMX16S4HV16016S	●	16	16.5	24	15.5	4	1
IMX20S4HV20020S	●	20	20	30	19.5	4	2
IMX25S4HV25025S	●	25	25	37.5	24.5	4	2

1/1

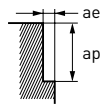


iMX-S4HV / S4HV-S

RECOMMENDED CUTTING CONDITIONS

SIDE MILLING

Material	DC	Vc	n	fz	Vf	ap	ae
P Carbon steel, Alloy steel, Mild steel	10	150	4800	0.09	1700	10	2
	12	150	4000	0.09	1400	12	2.4
	16	150	3000	0.1	1200	16	3.2
N Copper, Copper alloy	20	150	2400	0.1	960	20	4
	25	150	1900	0.12	910	25	5
P Pre-hardened steel, Alloy tool steel	10	120	3800	0.06	910	10	2
	12	120	3200	0.065	830	12	2.4
	16	120	2400	0.075	720	16	3.2
	20	120	1900	0.075	570	20	4
	25	120	1500	0.075	450	25	5
M Precipitation hardening stainless steel, Cobalt chromium alloy	10	75	2400	0.06	580	10	2
	12	75	2000	0.065	520	12	2.4
	16	75	1500	0.075	450	16	3.2
	20	75	1200	0.075	360	20	4
	25	75	950	0.075	290	25	5
S Heat resistant alloy	10	40	1300	0.04	210	10	1
	12	40	1100	0.045	200	12	1.2
	16	40	800	0.05	160	16	1.6
	20	40	640	0.05	130	20	2
	25	40	510	0.05	100	25	2.5
M Austenitic and Ferritic stainless steel	10	100	3200	0.075	960	10	2
	12	100	2700	0.08	860	12	2.4
	16	100	2000	0.09	720	16	3.2
S Titanium alloy	20	100	1600	0.09	580	20	4
	25	100	1300	0.09	470	25	5



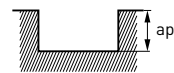
1/1

1. For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.
2. If the depth of cut is shallow, the revolution and feed rate can be increased.
3. Irregular helix flute end mills have a large effect on controlling vibration when compared to standard end mills.
However, if the rigidity of the machine or the workpiece installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.

iMX-S4HV/S4HV-S

SLOTTING

	Material	DC	Vc	n	fz	Vf	ap
P	Carbon steel, Alloy steel, Mild steel	10	100	3200	0.04	510	5
		12	100	2700	0.05	540	6
		16	100	2000	0.07	560	8
N	Copper, Copper alloy	20	100	1600	0.07	450	10
		25	100	1300	0.08	420	12
P	Pre-hardened steel, Alloy tool steel	10	80	2500	0.03	300	5
		12	80	2100	0.04	340	6
		16	80	1600	0.05	320	8
		20	80	1300	0.05	260	10
		25	80	1000	0.05	200	12
M	Precipitation hardening stainless steel, Cobalt chromium alloy	10	60	1900	0.025	190	5
		12	60	1600	0.035	220	6
		16	60	1200	0.05	240	8
		20	60	950	0.05	190	10
		25	60	760	0.05	150	12
S	Heat resistant alloy	10	30	950	0.02	76	2
		12	30	800	0.03	96	2.4
		16	30	600	0.05	120	3.2
		20	30	480	0.05	96	4
		25	30	380	0.05	76	5
M	Austenitic and Ferritic stainless steel	10	75	2400	0.03	290	5
		12	75	2000	0.04	320	6
		16	75	1500	0.06	360	8
S	Titanium alloy	20	75	1200	0.06	290	10
		25	75	950	0.06	230	12



iMX-S4HV/S4HV-S

SIDE MILLING

Material	L/D	DC	Vc	n	fz	Vf	ap	ae
P Carbon steel, Alloy steel, Mild steel	≤3	12	150	4000	0.09	1400	12	1.2
		14	150	3400	0.09	1200	14	1.4
		18	150	2700	0.1	1100	18	1.8
		22	150	2200	0.1	880	22	2.2
		28	150	1700	0.12	820	28	2.8
		30	150	1600	0.12	770	30	3
	5	32	150	1500	0.12	720	32	3.2
		12	90	2400	0.07	670	12	0.5
		14	90	2000	0.07	560	14	0.6
		18	90	1600	0.08	510	18	0.7
		22	90	1300	0.08	420	22	0.9
		28	90	1000	0.1	400	28	1.1
		30	90	950	0.1	380	30	1.2
		32	90	900	0.1	360	32	1.3
N Copper, Copper alloy	7	12	60	1600	0.06	380	12	0.2
		14	60	1400	0.06	340	14	0.3
		18	60	1100	0.07	310	18	0.4
		22	60	870	0.07	240	22	0.4
		28	60	680	0.08	220	28	0.6
		30	60	640	0.08	200	30	0.6
P Pre-hardened steel, Alloy tool steel	≤3	12	120	3200	0.06	770	12	1.2
		14	120	2700	0.065	700	14	1.4
		18	120	2100	0.075	630	18	1.8
		22	120	1700	0.075	510	22	2.2
		28	120	1400	0.075	420	28	2.8
		30	120	1300	0.075	390	30	3
	5	32	120	1200	0.075	360	32	3.2
		12	70	1900	0.05	380	12	0.5
		14	70	1600	0.05	320	14	0.6
		18	70	1200	0.06	290	18	0.7
		22	70	1000	0.06	240	22	0.9
		28	70	800	0.06	190	28	1.1
		30	70	740	0.06	180	30	1.2
		32	70	700	0.06	170	32	1.3
	7	12	50	1300	0.04	210	12	0.2
		14	50	1100	0.05	220	14	0.3
		18	50	880	0.05	180	18	0.4
		22	50	720	0.05	140	22	0.4
28		50	570	0.05	110	28	0.6	
30		50	530	0.05	110	30	0.6	
32	50	500	0.05	100	32	0.6		

iMX-S4HV/S4HV-S

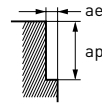
SIDE MILLING

Material	L/D	DC	Vc	n	fz	Vf	ap	ae	
M Precipitation hardening stainless steel, Cobalt chromium alloy	≤3	12	75	2000	0.06	480	12	1.2	
		14	75	1700	0.065	440	14	1.4	
		18	75	1300	0.075	390	18	1.8	
		22	75	1100	0.075	330	22	2.2	
		28	75	850	0.075	260	28	2.8	
		30	75	800	0.075	240	30	3	
		32	75	750	0.075	230	32	3.2	
	5	12	50	1300	0.05	260	12	0.5	
		14	50	1100	0.05	220	14	0.6	
		18	50	880	0.06	210	18	0.7	
		22	50	720	0.06	170	22	0.9	
		28	50	570	0.06	140	28	1.1	
		30	50	530	0.06	130	30	1.2	
		32	50	500	0.06	120	32	1.3	
	7	12	24	640	0.04	100	12	0.2	
		14	24	550	0.05	110	14	0.3	
		18	24	420	0.05	84	18	0.4	
		22	24	350	0.05	70	22	0.4	
		28	24	270	0.05	54	28	0.6	
		30	24	250	0.05	50	30	0.6	
		32	24	240	0.05	48	32	0.6	
	S Heat resistant alloy	≤3	12	30	800	0.04	130	12	0.9
			14	30	680	0.045	120	14	1.1
			18	40	710	0.05	140	18	1.4
			22	40	580	0.05	120	22	1.7
			28	40	450	0.05	90	28	2.1
			30	40	420	0.05	84	30	2.3
			32	40	400	0.05	80	32	2.4
5		12	10	270	0.03	32	12	0.4	
		14	10	230	0.04	37	14	0.4	
		18	19	340	0.04	54	18	0.6	
		22	19	270	0.04	43	22	0.7	
		28	19	220	0.04	35	28	0.8	
		30	19	200	0.04	32	30	0.9	
		32	19	190	0.04	30	32	1.0	
7		12	—	—	—	—	—	—	
		14	—	—	—	—	—	—	
		18	—	—	—	—	—	—	
		22	—	—	—	—	—	—	
		28	—	—	—	—	—	—	
		30	—	—	—	—	—	—	
		32	—	—	—	—	—	—	

iMX-S4HV/S4HV-S

SIDE MILLING

Material	L/D	DC	Vc	n	fz	Vf	ap	ae
M Austenitic and Ferritic stainless steel	≤3	12	100	2700	0.075	810	12	1.2
		14	100	2300	0.08	740	14	1.4
		18	100	1800	0.09	650	18	1.8
		22	100	1400	0.09	500	22	2.2
		28	100	1100	0.09	400	28	2.8
		30	100	1100	0.09	400	30	3
		32	100	990	0.09	360	32	3.2
	5	12	60	1600	0.06	380	12	0.5
		14	60	1400	0.06	340	14	0.6
		18	60	1100	0.07	310	18	0.7
		22	60	870	0.07	240	22	0.9
		28	60	680	0.07	190	28	1.1
		30	60	640	0.07	180	30	1.2
		32	60	600	0.07	170	32	1.3
S Titanium alloy	7	12	32	850	0.05	170	12	0.2
		14	32	730	0.06	180	14	0.3
		18	32	570	0.06	140	18	0.4
		22	32	460	0.06	110	22	0.4
		28	32	360	0.06	86	28	0.6
		30	32	340	0.06	82	30	0.6
		32	32	320	0.06	77	32	0.6



3/3

1. For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.
2. If the depth of cut is shallow, the revolution and feed rate can be increased.
3. Irregular helix flute end mills have a large effect on controlling vibration when compared to standard end mills.
However, if the rigidity of the machine or the workpiece installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.

iMX-S3A

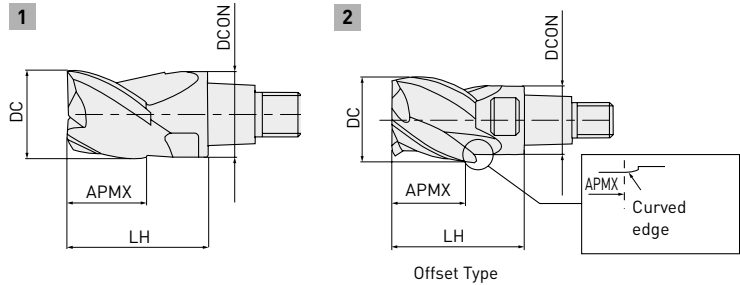


37.5°



SQUARE HEAD, 3 FLUTE, FOR ALUMINIUM ALLOY

N



	DC < 12	DC > 12
	0	0
	-0.020	-0.030

Order number	ET2020	DC	APMX	LH	DCON	ZEFP	Type
IMX10S3A10008	●	10	8.5	16	9.7	3	1
IMX10S3A12010	●	12	10.1	19	9.7	3	2
IMX12S3A12009	●	12	9.6	19	11.7	3	2
IMX12S3A14011	●	14	11.7	22.5	11.7	3	2
IMX16S3A16012	●	16	12.8	24	15.5	3	2
IMX16S3A18014	●	18	14.9	27	15.5	3	2
IMX20S3A20016	●	20	16	30	19.5	3	2
IMX20S3A22018	●	22	18.6	33	19.5	3	2
IMX25S3A25020	●	25	20	37.5	24.5	3	2
IMX25S3A28023	●	28	23.4	41.5	24.5	3	2

1/1

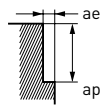


iMX-S3A

RECOMMENDED CUTTING CONDITIONS

SIDE MILLING

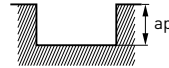
Material	DC	Vc	n	fz	Vf	ap	ae
N Aluminium alloy	10	500	16000	0.117	5600	8	3
	12	500	13000	0.118	4600	9.6	3.6
	16	500	10000	0.153	4600	12.8	4.8
	20	500	8000	0.175	4200	16	6
	25	500	6000	0.211	3800	20	7.5



1/1

SLOTTING

Material	DC	Vc	n	fz	Vf	ap
N Aluminium alloy	10	500	16000	0.068	3300	5
	12	500	13000	0.072	2800	6
	16	500	10000	0.093	2800	8
	20	500	8000	0.108	2600	10
	25	500	6000	0.127	2300	12.5

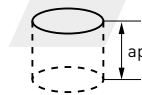


1/1

iMX-S3A

PLUNGING

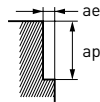
Material	DC	Vc	n	fz	Vf	ap	AZ
N Aluminium alloy	10	300	9600	0.1	960	5	2.5
	12	300	8000	0.1	800	6	2.5
	16	300	6000	0.1	600	8	2.5
	20	300	4800	0.1	480	10	2.5
	25	300	3800	0.1	380	12.5	2.5



1/1

SIDE MILLING

Material	L/D	DC	Vc	n	fz	Vf	ap	ae
N Aluminium alloy	≤3	12	500	13000	0.117	4600	9.6	2.4
		14	500	11000	0.118	3900	11.2	2.8
		18	500	8800	0.153	4000	14.4	3.6
		22	500	7200	0.175	3800	17.6	4.4
		28	500	5700	0.211	3600	22.4	5.6
	5	12	300	8000	0.09	2200	9.6	1.0
		14	300	6800	0.09	1800	11.2	1.1
		18	300	5300	0.12	1900	14.4	1.4
		22	300	4300	0.14	1800	17.6	1.8
		28	300	3400	0.17	1700	22.4	2.2
	7	12	200	5300	0.08	1300	9.6	0.5
		14	200	4500	0.08	1100	11.2	0.6
		18	200	3500	0.11	1200	14.4	0.7
		22	200	2900	0.12	1000	17.6	0.9
		28	200	2300	0.15	1000	22.4	1.1



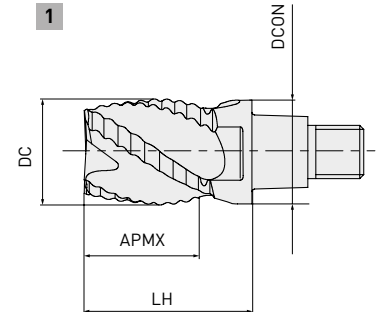
1/1

1. The use of water-soluble coolant is recommended.
2. Vibration may occur if the rigidity of the machine or workpiece is low.
In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.

iMX-R4F



ROUGHING HEAD, 4 FLUTE



Order number	EP7020	DC	APMX	LH	DCON	ZEFP	Type
IMX10R4F10010	●	10	10.5	16	9.7	4	1
IMX12R4F12012	●	12	12.5	19	11.7	4	
IMX16R4F16016	●	16	16.5	24	15.5	4	
IMX20R4F20021	●	20	21	30	19.5	4	
IMX25R4F25026	●	25	26	37.5	24.5	4	

1/1

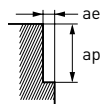


iMX-R4F

RECOMMENDED CUTTING CONDITIONS

SIDE MILLING

Material	DC	Vc	n	fz	Vf	ap	ae
P Carbon steel, Alloy steel, Mild steel	10	150	4800	0.045	860	8	4
	12	150	4000	0.045	720	9.6	4.8
	16	150	3000	0.05	600	12.8	6.4
N Copper, Copper alloy	20	150	2400	0.05	480	16	8
	25	150	1900	0.06	460	20	10
P Pre-hardened steel, Alloy tool steel	10	120	3800	0.03	460	8	4
	12	120	3200	0.033	420	9.6	4.8
	16	120	2400	0.038	360	12.8	6.4
	20	120	1900	0.038	290	16	8
	25	120	1500	0.038	230	20	10
M Precipitation hardening stainless steel, Cobalt chromium alloy	10	75	2400	0.03	290	8	4
	12	75	2000	0.033	260	9.6	4.8
	16	75	1500	0.038	230	12.8	6.4
	20	75	1200	0.038	180	16	8
	25	75	950	0.038	140	20	10
S Heat resistant alloy	10	40	1300	0.04	210	8	1
	12	40	1100	0.045	200	9.6	1.2
	16	40	800	0.05	160	12.8	1.6
	20	40	640	0.05	130	16	2
	25	40	510	0.05	100	20	2.5
M Austenitic and Ferritic stainless steel	10	100	3200	0.038	480	8	4
	12	100	2700	0.04	430	9.6	4.8
	16	100	2000	0.045	360	12.8	6.4
S Titanium alloy	20	100	1600	0.045	290	16	8
	25	100	1300	0.045	230	20	10



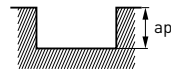
1/1

1. For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.
2. If the depth of cut is shallow, the revolution and feed rate can be increased.
3. Vibration may occur if the rigidity of machine or workpiece is low.
In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.

iMX-R4F

SLOTTING

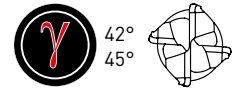
Material	DC	Vc	n	fz	Vf	ap
P Carbon steel, Alloy steel, Mild steel	10	100	3200	0.04	510	5
	12	100	2700	0.045	490	6
	16	100	2000	0.05	400	8
N Copper, Copper alloy	20	100	1600	0.05	320	10
	25	100	1300	0.06	310	12
P Pre-hardened steel, Alloy tool steel	10	80	2500	0.03	300	5
	12	80	2100	0.032	270	6
	16	80	1600	0.038	240	8
	20	80	1300	0.038	200	10
	25	80	1000	0.038	150	12
M Precipitation hardening stainless steel, Cobalt chromium alloy	10	40	1300	0.016	83	4
	12	40	1100	0.02	88	4.8
	16	40	800	0.024	77	6.4
	20	40	640	0.027	70	8
	25	40	510	0.027	55	10
M Austenitic and Ferritic stainless steel	10	60	1900	0.02	150	4
	12	60	1600	0.025	160	4.8
	16	60	1200	0.03	140	6.4
S Titanium alloy	20	60	950	0.034	130	8
	25	60	760	0.034	100	10



1/1

1. For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.
2. If the depth of cut is shallow, the revolution and feed rate can be increased.
3. Vibration may occur if the rigidity of machine or workpiece is low. In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.

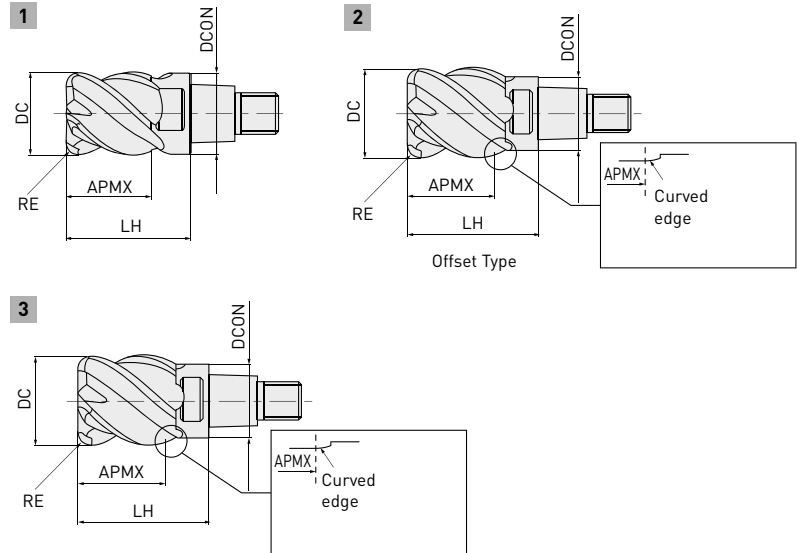
iMX-C4HV



CORNER RADIUS HEAD, 4 FLUTE, IRREGULAR HELIX



	RE
	±0.020
	DC < 12
	DC > 12
	0
	0
	-0.020
	-0.030



Order number	EP7020	DC	RE	APMX	LH	DCON	ZEFP	Type
IMX10C4HV100R03010	●	10	0.3	10	16	9.7	4	3
IMX10C4HV100R05010	●	10	0.5	10.5	16	9.7	4	1
IMX10C4HV100R10010	●	10	1	10.5	16	9.7	4	1
IMX10C4HV100R15010	●	10	1.5	10.5	16	9.7	4	1
IMX10C4HV100R20010	●	10	2	10.5	16	9.7	4	1
IMX10C4HV100R25010	●	10	2.5	10.5	16	9.7	4	1
IMX10C4HV100R30010	●	10	3	10.5	16	9.7	4	1
IMX10C4HV110R05011	●	11	0.5	11.5	16	9.7	4	2
IMX10C4HV110R10011	★	11	1	11.5	16	9.7	4	2
IMX10C4HV120R03012	●	12	0.3	12.5	19	9.7	4	2
IMX10C4HV120R05012	●	12	0.5	12.5	19	9.7	4	2
IMX10C4HV120R10012	●	12	1	12.5	19	9.7	4	2
IMX10C4HV120R20012	●	12	2	12.5	19	9.7	4	2
IMX12C4HV120R03012	●	12	0.3	12	19	11.7	4	3
IMX12C4HV120R05012	●	12	0.5	12.5	19	11.7	4	1
IMX12C4HV120R10012	●	12	1	12.5	19	11.7	4	1
IMX12C4HV120R15012	●	12	1.5	12.5	19	11.7	4	1
IMX12C4HV120R20012	●	12	2	12.5	19	11.7	4	1
IMX12C4HV120R25012	●	12	2.5	12.5	19	11.7	4	1
IMX12C4HV120R30012	●	12	3	12.5	19	11.7	4	1
IMX12C4HV120R40012	●	12	4	12	19	11.7	4	1
IMX12C4HV130R05013	★	13	0.5	13.5	21.5	11.7	4	2
IMX12C4HV130R10013	★	13	1	13.5	21.5	11.7	4	2

1/2

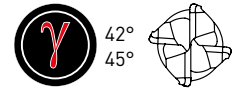
iMX-C4HV

Order number	EP7020	DC	RE	APMX	LH	DCON	ZEFP	Type
IMX12C4HV140R03014	●	14	0.3	14.5	22.5	11.7	4	2
IMX12C4HV140R05014	●	14	0.5	14.5	22.5	11.7	4	2
IMX12C4HV140R10014	●	14	1	14.5	22.5	11.7	4	2
IMX12C4HV140R20014	●	14	2	14.5	22.5	11.7	4	2
IMX16C4HV160R03016	●	16	0.3	16	24	15.5	4	3
IMX16C4HV160R05016	●	16	0.5	16.5	24	15.5	4	1
IMX16C4HV160R10016	●	16	1	16.5	24	15.5	4	1
IMX16C4HV160R15016	●	16	1.5	16.5	24	15.5	4	1
IMX16C4HV160R20016	●	16	2	16.5	24	15.5	4	1
IMX16C4HV160R25016	●	16	2.5	16.5	24	15.5	4	1
IMX16C4HV160R30016	●	16	3	16.5	24	15.5	4	1
IMX16C4HV160R40016	●	16	4	16.5	24	15.5	4	1
IMX16C4HV160R50016	●	16	5	16.5	24	15.5	4	1
IMX16C4HV170R05017	★	17	0.5	17.5	26	15.5	4	2
IMX16C4HV170R10017	★	17	1	17.5	26	15.5	4	2
IMX16C4HV180R03018	●	18	0.3	18.5	27	15.5	4	2
IMX16C4HV180R05018	●	18	0.5	18.5	27	15.5	4	2
IMX16C4HV180R10018	●	18	1	18.5	27	15.5	4	2
IMX16C4HV180R20018	●	18	2	18.5	27	15.5	4	2
IMX16C4HV180R30018	●	18	3	18.5	27	15.5	4	2
IMX20C4HV200R03020	●	20	0.3	20	30	19.5	4	3
IMX20C4HV200R05020	●	20	0.5	20	30	19.5	4	3
IMX20C4HV200R10020	●	20	1	20	30	19.5	4	3
IMX20C4HV200R15020	●	20	1.5	20	30	19.5	4	3
IMX20C4HV200R20020	●	20	2	20	30	19.5	4	3
IMX20C4HV200R25020	●	20	2.5	20	30	19.5	4	3
IMX20C4HV200R30020	●	20	3	20	30	19.5	4	3
IMX20C4HV200R40020	●	20	4	20	30	19.5	4	3
IMX20C4HV200R50020	●	20	5	20	30	19.5	4	3
IMX20C4HV200R60020	●	20	6	20	30	19.5	4	3
IMX20C4HV200R63520	●	20	6.35	20	30	19.5	4	3
IMX20C4HV220R05023	★	22	0.5	23	33	19.5	4	2
IMX20C4HV220R10023	●	22	1	23	33	19.5	4	2
IMX20C4HV220R20023	●	22	2	23	33	19.5	4	2
IMX20C4HV220R30023	●	22	3	23	33	19.5	4	2
IMX25C4HV250R10025	●	25	1	25	37.5	24.5	4	3
IMX25C4HV250R20025	●	25	2	25	37.5	24.5	4	3
IMX25C4HV250R30025	●	25	3	25	37.5	24.5	4	3
IMX25C4HV250R40025	●	25	4	25	37.5	24.5	4	3
IMX25C4HV250R50025	●	25	5	25	37.5	24.5	4	3
IMX25C4HV250R60025	●	25	6	25	37.5	24.5	4	3
IMX25C4HV250R63525	●	25	6.35	25	37.5	24.5	4	3
IMX25C4HV250R63526	●	25	6.35	26	37.5	24.5	4	1
IMX25C4HV280R10029	●	28	1	29	41.5	24.5	4	2
IMX25C4HV280R30029	●	28	3	29	41.5	24.5	4	2

2/2

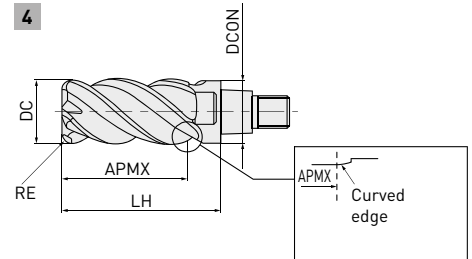


iMX-C4HV



CORNER RADIUS HEAD, 4 FLUTE, IRREGULAR HELIX, LONG CUTTING EDGE TYPE

P **M** **S** **N**



	RE	
	±0.020	
	DC < 12	DC > 12
	0	0
	-0.020	-0.030

Order number	EP7020	DC	RE	APMX	LH	DCON	ZEFP	Type
IMX16C4HV160R10032	●	16	1	32	40	15.5	4	4
IMX16C4HV160R30032	●	16	3	32	40	15.5	4	
IMX20C4HV200R10040	●	20	1	40	50	19.5	4	
IMX20C4HV200R30040	●	20	3	40	50	19.5	4	

1/1



iMX-C4HVS



CORNER RADIUS HEAD, 4 FLUTE, IRREGULAR HELIX, WITH COOLANT HOLE

P M S N



RE

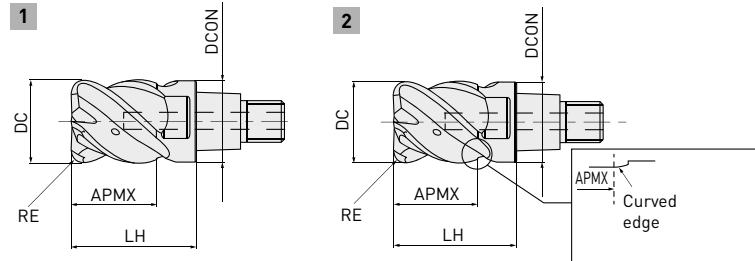
±0.020



DC < 12 DC > 12

0 0

-0.020 -0.030



Order number	EP7020	DC	RE	APMX	LH	DCON	ZEPF	Type
IMX10C4HV100R03010S	●	10	0.3	10	16	9.7	4	2
IMX10C4HV100R05010S	●	10	0.5	10	16	9.7	4	2
IMX10C4HV100R10010S	●	10	1	10.5	16	9.7	4	1
IMX10C4HV100R15010S	●	10	1.5	10	16	9.7	4	2
IMX10C4HV100R20010S	●	10	2	10	16	9.7	4	2
IMX10C4HV100R30010S	●	10	3	10	16	9.7	4	2
IMX12C4HV120R03012S	●	12	0.3	12	19	11.7	4	2
IMX12C4HV120R05012S	●	12	0.5	12	19	11.7	4	2
IMX12C4HV120R10012S	●	12	1	12.5	19	11.7	4	1
IMX12C4HV120R15012S	●	12	1.5	12	19	11.7	4	2
IMX12C4HV120R20012S	●	12	2	12	19	11.7	4	2
IMX12C4HV120R30012S	●	12	3	12	19	11.7	4	2
IMX12C4HV120R40012S	●	12	4	12	19	11.7	4	2
IMX16C4HV160R05016S	●	16	0.5	16	24	15.5	4	2
IMX16C4HV160R10016S	●	16	1	16.5	24	15.5	4	1
IMX16C4HV160R15016S	●	16	1.5	16	24	15.5	4	2
IMX16C4HV160R20016S	●	16	2	16	24	15.5	4	2
IMX16C4HV160R30016S	●	16	3	16	24	15.5	4	2
IMX16C4HV160R40016S	●	16	4	16	24	15.5	4	2
IMX20C4HV200R05020S	●	20	0.5	20	30	19.5	4	2
IMX20C4HV200R10020S	●	20	1	20	30	19.5	4	2
IMX20C4HV200R15020S	●	20	1.5	20	30	19.5	4	2
IMX20C4HV200R20020S	●	20	2	20	30	19.5	4	2
IMX20C4HV200R30020S	●	20	3	20	30	19.5	4	2
IMX20C4HV200R40020S	●	20	4	20	30	19.5	4	2
IMX20C4HV200R60020S	●	20	6	20	30	19.5	4	2
IMX20C4HV200R63520S	●	20	6.35	20	30	19.5	4	2

1/2

iMX-C4HVS

Order number	EP7020	DC	RE	APMX	LH	DCON	ZEFP	Type
IMX25C4HV250R10025S	●	25	1	25	37.5	24.5	4	2
IMX25C4HV250R15025S	●	25	1.5	25	37.5	24.5	4	2
IMX25C4HV250R20025S	●	25	2	25	37.5	24.5	4	2
IMX25C4HV250R30025S	●	25	3	25	37.5	24.5	4	2
IMX25C4HV250R40025S	●	25	4	25	37.5	24.5	4	2
IMX25C4HV250R60025S	●	25	6	25	37.5	24.5	4	2
IMX25C4HV250R63525S	●	25	6.35	25	37.5	24.5	4	2

2/2

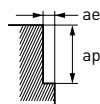
34 

iMX-C4HV / C4HV-S

RECOMMENDED CUTTING CONDITIONS

SIDE MILLING

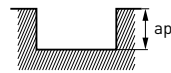
Material	DC	Vc	n	fz	Vf	ap	ae
P Carbon steel, Alloy steel, Mild steel	10	150	4800	0.09	1700	10	2
	12	150	4000	0.09	1400	12	2.4
	16	150	3000	0.1	1200	16	3.2
N Copper, Copper alloy	20	150	2400	0.1	960	20	4
	25	150	1900	0.12	910	25	5
P Pre-hardened steel, Alloy tool steel	10	120	3800	0.06	910	10	2
	12	120	3200	0.065	830	12	2.4
	16	120	2400	0.075	720	16	3.2
	20	120	1900	0.075	570	20	4
	25	120	1500	0.075	450	25	5
M Precipitation hardening stainless steel, Cobalt chromium alloy	10	75	2400	0.06	580	10	2
	12	75	2000	0.065	520	12	2.4
	16	75	1500	0.075	450	16	3.2
	20	75	1200	0.075	360	20	4
	25	75	950	0.075	290	25	5
S Heat resistant alloy	10	40	1300	0.04	210	10	1
	12	40	1100	0.045	200	12	1.2
	16	40	800	0.05	160	16	1.6
	20	40	640	0.05	130	20	2
	25	40	510	0.05	100	25	2.5
M Austenitic and Ferritic stainless steel	10	100	3200	0.075	960	10	2
	12	100	2700	0.08	860	12	2.4
	16	100	2000	0.09	720	16	3.2
S Titanium alloy	20	100	1600	0.09	580	20	4
	25	100	1300	0.09	470	25	5



iMX-C4HV/C4HV-S

SLOTTING

Material	DC	Vc	n	fz	Vf	ap
P Carbon steel, Alloy steel, Mild steel	10	100	3200	0.04	510	5
	12	100	2700	0.05	540	6
	16	100	2000	0.07	560	8
N Copper, Copper alloy	20	100	1600	0.07	450	10
	25	100	1300	0.08	420	12
P Pre-hardened steel, Alloy tool steel	10	80	2500	0.03	300	5
	12	80	2100	0.04	340	6
	16	80	1600	0.05	320	8
	20	80	1300	0.05	260	10
	25	80	1000	0.05	200	12
M Precipitation hardening stainless steel, Cobalt chromium alloy	10	60	1900	0.025	190	5
	12	60	1600	0.035	220	6
	16	60	1200	0.05	240	8
	20	60	950	0.05	190	10
	25	60	760	0.05	150	12
S Heat resistant alloy	10	30	950	0.02	76	2
	12	30	800	0.03	96	2.4
	16	30	600	0.05	120	3.2
	20	30	480	0.05	96	4
	25	30	380	0.05	76	5
M Austenitic and Ferritic stainless steel	10	75	2400	0.03	290	5
	12	75	2000	0.04	320	6
	16	75	1500	0.06	360	8
S Titanium alloy	20	75	1200	0.06	290	10
	25	75	950	0.06	230	12



iMX-C4HV/C4HV-S

SIDE MILLING

Material	L/D	DC	Vc	n	fz	Vf	ap	ae
P Carbon steel, Alloy steel, Mild steel	≤3	12	150	4000	0.09	1400	12	1.2
		14	150	3400	0.09	1200	14	1.4
		18	150	2700	0.1	1100	18	1.8
		22	150	2200	0.1	880	22	2.2
		28	150	1700	0.12	820	28	2.8
		30	150	1600	0.12	770	30	3
	5	32	150	1500	0.12	720	32	3.2
		12	90	2400	0.07	670	12	0.5
		14	90	2000	0.07	560	14	0.6
		18	90	1600	0.08	510	18	0.7
		22	90	1300	0.08	420	22	0.9
		28	90	1000	0.1	400	28	1.1
		30	90	950	0.1	380	30	1.2
		32	90	900	0.1	360	32	1.3
N Copper, Copper alloy	7	12	60	1600	0.06	380	12	0.2
		14	60	1400	0.06	340	14	0.3
		18	60	1100	0.07	310	18	0.4
		22	60	870	0.07	240	22	0.4
		28	60	680	0.08	220	28	0.6
		30	60	640	0.08	200	30	0.6
P Pre-hardened steel, Alloy tool steel	≤3	12	120	3200	0.06	770	12	1.2
		14	120	2700	0.065	700	14	1.4
		18	120	2100	0.075	630	18	1.8
		22	120	1700	0.075	510	22	2.2
		28	120	1400	0.075	420	28	2.8
		30	120	1300	0.075	390	30	3
	5	32	120	1200	0.075	360	32	3.2
		12	70	1900	0.05	380	12	0.5
		14	70	1600	0.05	320	14	0.6
		18	70	1200	0.06	290	18	0.7
		22	70	1000	0.06	240	22	0.9
		28	70	800	0.06	190	28	1.1
		30	70	740	0.06	180	30	1.2
		32	70	700	0.06	170	32	1.3
	7	12	50	1300	0.04	210	12	0.2
		14	50	1100	0.05	220	14	0.3
		18	50	880	0.05	180	18	0.4
		22	50	720	0.05	140	22	0.4
28		50	570	0.05	110	28	0.6	
30		50	530	0.05	110	30	0.6	
32	50	500	0.05	100	32	0.6		

iMX-C4HV/C4HV-S

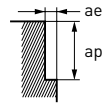
SIDE MILLING

Material	L/D	DC	Vc	n	fz	Vf	ap	ae	
M Precipitation hardening stainless steel, Cobalt chromium alloy	≤3	12	75	2000	0.06	480	12	1.2	
		14	75	1700	0.065	440	14	1.4	
		18	75	1300	0.075	390	18	1.8	
		22	75	1100	0.075	330	22	2.2	
		28	75	850	0.075	260	28	2.8	
		30	75	800	0.075	240	30	3	
		32	75	750	0.075	230	32	3.2	
	5	12	50	1300	0.05	260	12	0.5	
		14	50	1100	0.05	220	14	0.6	
		18	50	880	0.06	210	18	0.7	
		22	50	720	0.06	170	22	0.9	
		28	50	570	0.06	140	28	1.1	
		30	50	530	0.06	130	30	1.2	
		32	50	500	0.06	120	32	1.3	
	7	12	24	640	0.04	100	12	0.2	
		14	24	550	0.05	110	14	0.3	
		18	24	420	0.05	84	18	0.4	
		22	24	350	0.05	70	22	0.4	
		28	24	270	0.05	54	28	0.6	
		30	24	250	0.05	50	30	0.6	
		32	24	240	0.05	48	32	0.6	
	S Heat resistant alloy	≤3	12	30	800	0.04	130	12	0.9
			14	30	680	0.045	120	14	1.1
			18	40	710	0.05	140	18	1.4
			22	40	580	0.05	120	22	1.7
			28	40	450	0.05	90	28	2.1
			30	40	420	0.05	84	30	2.3
			32	40	400	0.05	80	32	2.4
5		12	10	270	0.03	32	12	0.4	
		14	10	230	0.04	37	14	0.4	
		18	19	340	0.04	54	18	0.6	
		22	19	270	0.04	43	22	0.7	
		28	19	220	0.04	35	28	0.8	
		30	19	200	0.04	32	30	0.9	
		32	19	190	0.04	30	32	1.0	
7		12	—	—	—	—	—	—	
		14	—	—	—	—	—	—	
		18	—	—	—	—	—	—	
		22	—	—	—	—	—	—	
		28	—	—	—	—	—	—	
		30	—	—	—	—	—	—	
		32	—	—	—	—	—	—	

iMX-C4HV/C4HV-S

SIDE MILLING

Material	L/D	DC	Vc	n	fz	Vf	ap	ae
M Austenitic and Ferritic stainless steel	≤3	12	100	2700	0.075	810	12	1.2
		14	100	2300	0.08	740	14	1.4
		18	100	1800	0.09	650	18	1.8
		22	100	1400	0.09	500	22	2.2
		28	100	1100	0.09	400	28	2.8
		30	100	1100	0.09	400	30	3
		32	100	990	0.09	360	32	3.2
	5	12	60	1600	0.06	380	12	0.5
		14	60	1400	0.06	340	14	0.6
		18	60	1100	0.07	310	18	0.7
		22	60	870	0.07	240	22	0.9
		28	60	680	0.07	190	28	1.1
		30	60	640	0.07	180	30	1.2
		32	60	600	0.07	170	32	1.3
S Titanium alloy	7	12	32	850	0.05	170	12	0.2
		14	32	730	0.06	180	14	0.3
		18	32	570	0.06	140	18	0.4
		22	32	460	0.06	110	22	0.4
		28	32	360	0.06	86	28	0.6
		30	32	340	0.06	82	30	0.6
		32	32	320	0.06	77	32	0.6



3/3

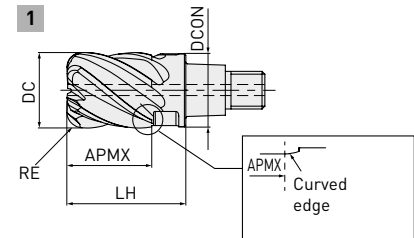
1. For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.
2. If the depth of cut is shallow, the revolution and feed rate can be increased.
3. Irregular helix flute end mills have a large effect on controlling vibration when compared to standard end mills.
However, if the rigidity of the machine or the workpiece installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.



iMX-C6HV-C



CORNER RADIUS HEAD, 6 FLUTE, IRREGULAR HELIX,
WITH COOLANT HOLE

P M S



	RE			
	±0.020			
	DC < 12	12 < DC < 12	20 < DC < 25	
	0	0	0	
	-0.030	-0.040	-0.050	

Order number	EP7020	DC	RE	APMX	LH	DCON	ZEFP	Type
IMX10C6HV100R05010C	●	10	0.5	10	16	9.7	6	1
IMX10C6HV100R10010C	●	10	1	10	16	9.7	6	
IMX12C6HV120R05012C	●	12	0.5	12	19	11.7	6	
IMX12C6HV120R10012C	●	12	1	12	19	11.7	6	
IMX16C6HV160R10016C	●	16	1	16	24	15.5	6	
IMX16C6HV160R30016C	●	16	3	16	24	15.5	6	
IMX20C6HV200R10020C	●	20	1	20	30	19.5	6	
IMX20C6HV200R30020C	●	20	3	20	30	19.5	6	
IMX25C6HV250R10025C	●	25	1	25	37.5	24.5	6	
IMX25C6HV250R30025C	●	25	3	25	37.5	24.5	6	

1/1

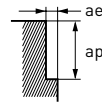
40 

iMX-C6HV-C

RECOMMENDED CUTTING CONDITIONS

SIDE MILLING

Material	DC	Vc	n	fz	Vf	ap	ae
P Pre-hardened steel, Carbon steel, Alloy steel, Alloy tool steel	10	200	6400	0.07	2700	10	1.0
	12	200	5300	0.085	2700	12	1.2
	16	200	4000	0.088	2100	16	1.6
	20	200	3200	0.1	1900	20	2.0
	25	200	2500	0.1	1500	25	2.5
M Austenitic and Ferritic stainless steel	10	150	4800	0.07	2000	10	1.0
	12	150	4000	0.085	2000	12	1.2
	16	150	3000	0.088	1600	16	1.6
	20	150	2400	0.1	1400	20	2.0
	25	150	1900	0.1	1100	25	2.5
S Heat resistant alloy	10	40	1300	0.033	260	10	0.5
	12	40	1100	0.035	230	12	0.6
	16	40	800	0.038	180	16	0.8
	20	40	640	0.04	150	20	1.0
	25	40	510	0.04	120	25	1.3
M Precipitation hardening stainless steel, Cobalt chromium alloy	10	100	3200	0.07	1300	10	1.0
	12	100	2700	0.085	1400	12	1.2
	16	100	2000	0.088	1100	16	1.6
S Titanium alloy	20	100	1600	0.1	1000	20	2.0
	25	100	1300	0.1	800	25	2.5



1/1

1. For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.
2. If the depth of cut is shallow, the revolution and feed rate can be increased.
3. Irregular helix flute end mills have a large effect on controlling vibration when compared to standard end mills. However, if the rigidity of the machine or the workpiece installation is poor, vibration or abnormal sound can occur. In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.

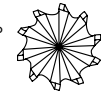
iMX-C6HV/C10HV/C12HV



43.5°
45°



44.5°
45°



CORNER RADIUS HEAD, MULTI-FLUTE, IRREGULAR HELIX

P **M** **S**



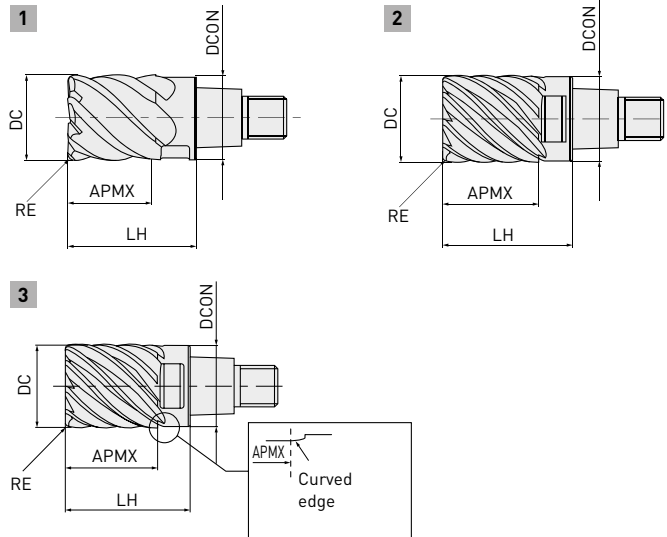
RE

±0.020



DC < 12 DC > 12

0 0
- 0.020 - 0.030



Order number	EP7020	DC	RE	APMX	LH	DCON	ZEFP	Type
IMX10C6HV100R05010	●	10	0.5	10.5	16	9.7	6	1
IMX10C6HV100R10010	●	10	1	10.5	16	9.7	6	1
IMX12C6HV120R10012	●	12	1	12.5	19	11.7	6	1
IMX16C10HV160R10016	●	16	1	16.5	24	15.5	10	2
IMX20C12HV200R10020	●	20	1	20	30	19.5	12	3
IMX25C12HV250R10025	●	25	1	25	37.5	24.5	12	3

1/1

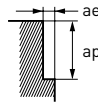


iMX-C6HV/C10HV/C12HV

RECOMMENDED CUTTING CONDITIONS

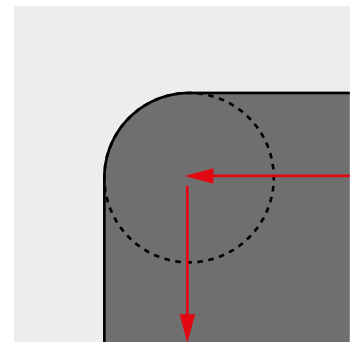
SIDE MILLING

Material	DC	ZEFP	Vc	n	fz	Vf	ap	ae
P Pre-hardened steel, Carbon steel, Alloy steel, Alloy tool steel	10	6	200	6400	0.07	2700	10	1
	12	6	200	5300	0.085	2700	12	1.2
	16	10	200	4000	0.07	2800	16	0.6
	20	12	200	3200	0.08	3100	20	0.8
	25	12	200	2500	0.08	2400	25	1
M Austenitic and Ferritic stainless steel	10	6	150	4800	0.07	2000	10	1
	12	6	150	4000	0.085	2000	12	1.2
	16	10	150	3000	0.088	2600	16	0.64
	20	12	150	2400	0.1	2900	20	0.8
	25	12	150	1900	0.1	2300	25	1
S Heat resistant alloy	10	6	40	1300	0.033	260	10	0.5
	12	6	40	1100	0.035	230	12	0.6
	16	10	40	800	0.038	300	16	0.6
	20	12	40	640	0.04	310	20	0.8
	25	12	40	510	0.04	240	25	1
M Precipitation hardening stainless steel, Cobalt chromium alloy	10	6	100	3200	0.07	1300	10	1
	12	6	100	2700	0.085	1400	12	1.2
	16	10	100	2000	0.07	1400	16	0.6
S Titanium alloy	20	12	100	1600	0.08	1500	20	0.8
	25	12	100	1300	0.08	1200	25	1



1/1

1. For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.
2. If the depth of cut is shallow, the revolution and feed rate can be increased.
3. Irregular helix flute end mills have a large effect on controlling vibration when compared to standard end mills. However, if the rigidity of the machine or the workpiece installation is poor, vibration or abnormal sound can occur. In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.
4. If the machining radius at the corner is the same as the tool radius when using the head with more than 10 flutes, please set the depth of cut and feed rate to half of the above.



iMX-C4FD-C



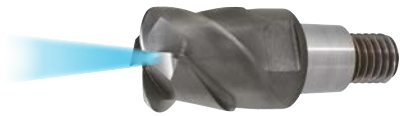
DUPLEX CORNER RADIUS HEAD WITH COOLANT HOLE, 4 FLUTE, FOR HIGH FEED

P

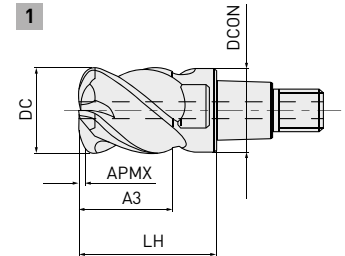
M

S

H



DC < 12	DC > 12
0	0
-0.020	-0.030



Order number	EP7020	DC	RE1*	APMX	A3	LH	DCON	RPMX	ZEFP	Type
IMX10C4FD10010C	●	10	1.99	0.7	10.5	16	9.7	2.1	4	1
IMX12C4FD12012C	●	12	2.1	0.8	12.5	19	11.7	2.8	4	
IMX16C4FD16016C	●	16	2.75	1	16.5	24	15.5	3	4	
IMX20C4FD20021C	●	20	3.07	1.3	21	30	19.5	3.3	4	
IMX25C4FD25026C	●	25	4.21	1.6	26	37.5	24.5	4.5	4	

1/1

* RE1: Approximate Radius

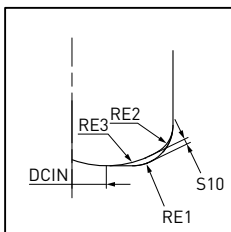
1. The fastening size of the holder and head should be the same. [refer to page 10]
2. Duplex corner radius end mill is not suitable for corner radius machining due to the possibility of leaving unmachined areas.



NOTE FOR PROGRAMMING

Order number	Duplex corner radius			
	S10*	DCIN	RE2	RE3
IMX10C4FD10010C	0.27	3.4	1.5	5
IMX12C4FD12012C	0.33	4.5	1.5	6
IMX16C4FD16016C	0.42	6.2	2	8
IMX20C4FD20021C	0.59	8	2	10
IMX25C4FD25026C	0.67	10	3	12

1/1



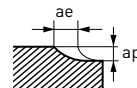
* S10 = Uncut portion

iMX-C4FD-C

RECOMMENDED CUTTING CONDITIONS

SIDE MILLING

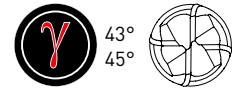
Material	DC	Vc	n	fz	Vf	ap	ae
P Carbon steel, Alloy steel, Mild steel	10	150	4800	0.4	7700	0.5	6
	12	150	4000	0.45	7200	0.6	7.2
	16	150	3000	0.5	6000	0.8	9.6
N Copper, Copper alloy	20	150	2400	0.5	4800	1	12
	25	150	1900	0.5	3800	1.25	15
P Pre-hardened steel, Alloy tool steel	10	135	4300	0.4	6900	0.5	6
	12	135	3600	0.45	6500	0.6	7.2
	16	135	2700	0.5	5400	0.8	9.6
	20	135	2100	0.5	4200	1	12
	25	135	1700	0.5	3400	1.25	15
M Austenitic stainless steel, Cobalt chromium alloy	10	40	1300	0.2	1000	0.5	6
	12	40	1100	0.2	880	0.6	7.2
	16	40	800	0.3	960	0.8	9.6
	20	40	640	0.3	770	1	12
	25	40	510	0.3	610	1.25	15
S Heat resistant alloy	10	25	800	0.1	320	0.5	6
	12	25	660	0.1	260	0.6	7.2
	16	25	500	0.15	300	0.8	9.6
	20	25	400	0.15	240	1	12
	25	25	320	0.15	190	1.25	15
S Titanium alloy	10	40	1300	0.2	1000	0.5	6
	12	40	1100	0.2	880	0.6	7.2
	16	40	800	0.3	960	0.8	9.6
	20	40	640	0.3	770	1	12
	25	40	510	0.3	610	1.25	15
M Precipitation hardening stainless steel, Austenitic and Ferritic stainless steel	10	120	3800	0.3	4600	0.5	6
	12	120	3200	0.3	3800	0.6	7.2
	16	120	2400	0.4	3800	0.8	9.6
	20	120	1900	0.4	3000	1	12
H Hardened steel (≤ 55 HRC)	25	120	1500	0.4	2400	1.25	15



1/1

1. For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.
2. If the depth of cut is shallow, the revolution and feed rate can be increased.
3. Irregular helix flute end mills have a large effect on controlling vibration when compared to standard end mills.
However, if the rigidity of the machine or the workpiece installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.
4. Reduce the feed by 1/2 for ramping process.

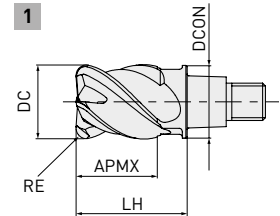
iMX-C4FV



CORNER RADIUS HEAD FOR HIGH EFFICIENCY MACHINING, 4 FLUTE, IRREGULAR HELIX

P

H



RE<4	RE=4
±0.010	±0.020



DC<12	DC>12
0	0
-0.020	-0.030

Order number	EP6120	DC	RE	APMX	LH	DCON	ZEFP	Type
IMX10C4FV100R20010	●	10	2	10.5	16	9.7	4	1
IMX12C4FV120R20012	●	12	2	12.5	19	11.7	4	
IMX16C4FV160R30016	●	16	3	16.5	24	15.5	4	
IMX20C4FV200R30021	●	20	3	21	30	19.5	4	
IMX25C4FV250R40026	●	25	4	26	37.5	24.5	4	

1/1

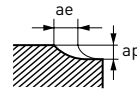


iMX-C4FV

RECOMMENDED CUTTING CONDITIONS

HIGH DEPTH OF CUT CONDITIONS

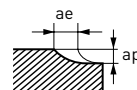
Material	DC	RE	Vc	n	fz	Vf	ap	ae	
P Carbon steel, Alloy steel, Gray Cast Iron	10	2	90	2900	0.25	2900	1.2	4.5	
	12	2	90	2400	0.25	2400	1.8	6	
	16	3	90	1800	0.25	1800	1.8	7.5	
	20	3	90	1400	0.25	1400	1.8	9	
	25	4	90	1100	0.25	1100	2.4	11.5	
	Pre-hardened steel, Alloy tool steel	10	2	75	2400	0.21	2000	1	4.5
		12	2	75	2000	0.21	1700	1.4	6
		16	3	75	1500	0.2	1200	1.4	7.5
		20	3	75	1200	0.2	1000	1.4	9
		25	4	75	950	0.2	750	1.8	11.5
H Hardened steel (45 – 55HRC)	10	2	60	1900	0.22	1700	0.7	4.5	
	12	2	60	1600	0.22	1400	0.9	6	
	16	3	60	1200	0.22	1100	0.9	7.5	
	20	3	60	950	0.22	850	0.9	9	
	25	4	60	750	0.22	650	1.2	11.5	



1/1

HIGH SPEED MILLING

Material	DC	RE	Vc	n	fz	Vf	ap	ae	
P Carbon steel, Alloy steel, Gray Cast Iron	10	2	150	4800	0.51	9800	0.6	4.5	
	12	2	150	4000	0.56	9000	0.9	6	
	16	3	150	3000	0.6	7200	0.9	7.5	
	20	3	150	2400	0.6	5800	0.9	9	
	25	4	150	1900	0.6	4500	1.2	11.5	
	Pre-hardened steel, Alloy tool steel	10	2	125	4000	0.43	6900	0.46	4.5
		12	2	125	3300	0.48	6400	0.7	6
		16	3	125	2500	0.53	5300	0.7	7.5
		20	3	125	2000	0.37	3000	0.7	9
		25	4	125	1600	0.39	2500	0.9	11.5
H Hardened steel (45 – 55HRC)	10	2	100	3200	0.43	5500	0.36	4.5	
	12	2	100	2700	0.47	5100	0.45	6	
	16	3	100	2000	0.54	4300	0.45	7.5	
	20	3	100	1600	0.39	2500	0.45	9	
	25	4	100	1300	0.39	2000	0.6	11.5	



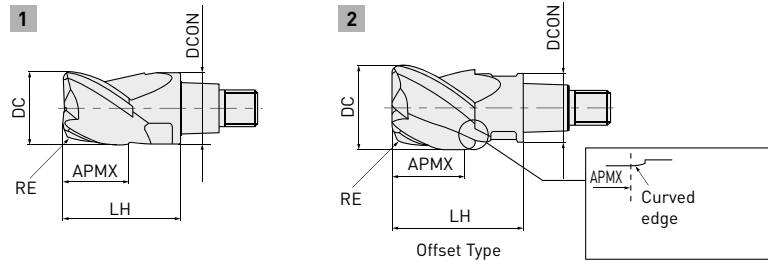
1/1

1. If the depth of cut is shallow, the revolution and feed rate can be increased.
2. Air blow or oil mist is recommended for good chip evacuation.
3. For profile machining such as moulds, machining conditions may differ considerably depending on the workpiece geometry, machining methods and depth of cut. Reduce the feed rate especially when machining the corner sections of a workpiece.
4. Irregular helix flute end mills have a larger effect on controlling vibration when compared to standard end mills. However, if the rigidity of the machine or the workpiece installation is poor, vibration or abnormal sound can occur. In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.

iMX-C3A



CORNER RADIUS HEAD, 3 FLUTE, FOR ALUMINIUM ALLOY

N


RE

±0.020



DC < 12

DC > 12

0

0

- 0.020

- 0.030

Order number	ET2020	DC	RE	APMX	LH	DCON	ZEFP	Type
IMX10C3A100R10008	●	10	1	8.5	16	9.7	3	1
IMX10C3A100R25008	●	10	2.5	8.5	16	9.7	3	1
IMX12C3A120R10009	●	12	1	9.6	19	11.7	3	2
IMX12C3A120R32009	●	12	3.2	9.6	19	11.7	3	2
IMX12C3A120R10010	●	12	1	10.1	19	11.7	3	1
IMX12C3A140R10011	●	14	1	11.7	22.5	11.7	3	2
IMX16C3A160R10012	●	16	1	12.8	24	15.5	3	2
IMX16C3A160R32012	●	16	3.2	12.8	24	15.5	3	2
IMX16C3A180R32014	●	18	3.2	14.9	27	15.5	3	2
IMX20C3A200R10016	●	20	1	16	30	19.5	3	2
IMX20C3A200R32016	●	20	3.2	16	30	19.5	3	2
IMX20C3A220R32018	●	22	3.2	18.6	33	19.5	3	2
IMX25C3A250R10020	●	25	1	20	37.5	24.5	3	1
IMX25C3A250R32020	●	25	3.2	20	37.5	24.5	3	2
IMX25C3A250R50020	●	25	5	20	37.5	24.5	3	2
IMX25C3A280R32023	●	28	3.2	23.4	41.5	24.5	3	2

1/1

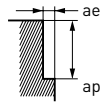


iMX-C3A

RECOMMENDED CUTTING CONDITIONS

SIDE MILLING

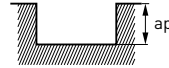
Material	DC	Vc	n	fz	Vf	ap	ae
N Aluminium alloy	10	500	16000	0.117	5600	8	3
	12	500	13000	0.118	4600	9.6	3.6
	16	500	10000	0.153	4600	12.8	4.8
	20	500	8000	0.175	4200	16	6
	25	500	6000	0.211	3800	20	7.5



1/1

SLOTTING

Material	DC	Vc	n	fz	Vf	ap
N Aluminium alloy	10	500	16000	0.068	3300	5
	12	500	13000	0.072	2800	6
	16	500	10000	0.093	2800	8
	20	500	8000	0.108	2600	10
	25	500	6000	0.127	2300	12.5

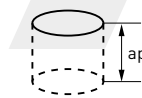


1/1

iMX-C3A

PLUNGING

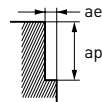
Material	DC	Vc	n	fz	Vf	ap	AZ
N Aluminium alloy	10	300	9600	0.1	960	5	2.5
	12	300	8000	0.1	800	6	2.5
	16	300	6000	0.1	600	8	2.5
	20	300	4800	0.1	480	10	2.5
	25	300	3800	0.1	380	12.5	2.5



1/1

SIDE MILLING

Material	L/D	DC	Vc	n	fz	Vf	ap	ae
N Aluminium alloy	≤3	12	500	13000	0.117	4600	9.6	2.4
		14	500	11000	0.118	3900	11.2	2.8
		18	500	8800	0.153	4000	14.4	3.6
		22	500	7200	0.175	3800	17.6	4.4
		28	500	5700	0.211	3600	22.4	5.6
	5	12	300	8000	0.09	2200	9.6	1.0
		14	300	6800	0.09	1800	11.2	1.1
		18	300	5300	0.12	1900	14.4	1.4
		22	300	4300	0.14	1800	17.6	1.8
		28	300	3400	0.17	1700	22.4	2.2
	7	12	200	5300	0.08	1300	9.6	0.5
		14	200	4500	0.08	1100	11.2	0.6
		18	200	3500	0.11	1200	14.4	0.7
		22	200	2900	0.12	1000	17.6	0.9
		28	200	2300	0.15	1000	22.4	1.1



1/1

1. The use of water-soluble coolant is recommended.
2. Vibration may occur if the rigidity of the machine or workpiece is low.
In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.

iMX-C8T/C10T/C12T/C15T



35°



CORNER RADIUS HEAD, TAPER HEAD, MULTI-FLUTE,
WITH COOLANT HOLE

M

S

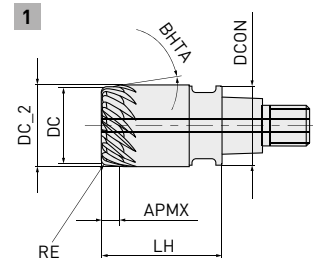


RE

±0.015



DC < 12 DC > 12

0 0
- 0.020 - 0.030

Order number	EP7020	DC	RE	APMX	DC_2	LH	DCON	BHTA	ZEFP	Type
IMX10C8T080R05T080C	●	8	0.5	7.12	10	16.0	9.7	8°	8	1
IMX10C8T080R10T080C	●	8	1	7.12	10	16.0	9.7	8°	8	
IMX12C10T100R05T080C	●	10	0.5	7.12	12	19.0	11.7	8°	10	
IMX12C10T100R10T080C	●	10	1	7.12	12	19.0	11.7	8°	10	
IMX16C15T150R05T080C	●	15	0.5	3.56	16	24.0	15.5	8°	15	
IMX16C15T150R10T080C	●	15	1	3.56	16	24.0	15.5	8°	15	
IMX16C12T150R20T080C	●	15	2	3.56	16	24.0	15.5	8°	12	
IMX20C15T190R05T080C	●	19	0.5	3.56	20	30.0	19.5	8°	15	
IMX20C15T190R10T080C	●	19	1	3.56	20	30.0	19.5	8°	15	
IMX20C12T190R20T080C	●	19	2	3.56	20	30.0	19.5	8°	12	

1/1

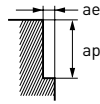


iMX-C8T/C10T/C12T/C15T

RECOMMENDED CUTTING CONDITIONS

SIDE MILLING

Material	DC	ZEFP	Vc	n	fz	Vf	ap	ae
M Precipitation hardening stainless steel, Cobalt chromium alloy	8	8	300	12000	0.10	9600	0.3	1.2
	10	10	300	9500	0.10	9500	0.3	1.5
	15	12	300	6400	0.12	9200	0.3	2.2
	15	15	300	6400	0.10	9600	0.3	2.2
	19	12	300	5000	0.12	7200	0.3	2.8
	19	15	300	5000	0.10	7500	0.3	2.8
S Heat resistant alloy	8	8	60	2400	0.08	1500	0.3	0.8
	10	10	60	1900	0.08	1500	0.3	1.0
	15	12	60	1300	0.10	1600	0.3	1.5
	15	15	60	1300	0.08	1600	0.3	1.5
	19	12	60	1000	0.10	1200	0.3	1.9
	19	15	60	1000	0.08	1200	0.3	1.9
M Austenitic and Ferritic stainless steel	8	8	200	8000	0.10	6400	0.3	1.2
	10	10	200	6400	0.10	6400	0.3	1.5
	15	12	200	4200	0.12	6000	0.3	2.2
S Titanium alloy	15	15	200	4200	0.10	6300	0.3	2.2
	19	12	200	3400	0.12	4900	0.3	2.8
	19	15	200	3400	0.10	5100	0.3	2.8



1/1

1. The use of water-soluble coolant is recommended.
2. Vibration may occur if the rigidity of the machine or workpiece is low.
In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.

iMX-RC4F-C

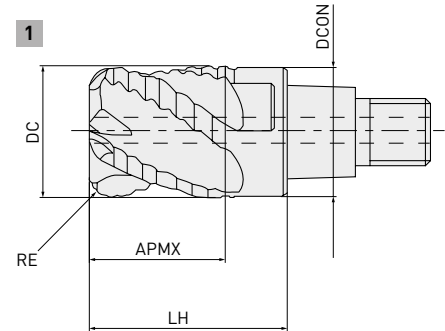


ROUGHING HEAD WITH COOLANT HOLE, 4 FLUTE

P

M

S



Order number	EP7020	APMX	DC	DCON	RE	LH	ZEFP	Type
IMX10RC4F100R05010C	●	10.5	10	9.7	0.5	16	4	
IMX10RC4F100R10010C	●	10.5	10	9.7	1	16	4	
IMX12RC4F120R05012C	●	12.5	12	11.7	0.5	19	4	
IMX12RC4F120R10012C	●	12.5	12	11.7	1	19	4	
IMX12RC4F120R15012C	●	12.5	12	11.7	1.5	19	4	
IMX12RC4F120R20012C	●	12.5	12	11.7	2	19	4	
IMX16RC4F160R05016C	●	16.5	16	15.5	0.5	24	4	
IMX16RC4F160R10016C	●	16.5	16	15.5	1	24	4	1
IMX16RC4F160R15016C	●	16.5	16	15.5	1.5	24	4	
IMX16RC4F160R20016C	●	16.5	16	15.5	2	24	4	
IMX16RC4F160R30016C	●	16.5	16	15.5	3	24	4	
IMX20RC4F200R05021C	●	21	20	19.5	0.5	30	4	
IMX20RC4F200R10021C	●	21	20	19.5	1	30	4	
IMX20RC4F200R20021C	●	21	20	19.5	2	30	4	
IMX20RC4F200R30021C	●	21	20	19.5	3	30	4	

1/1

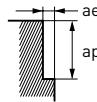


iMX-RC4F-C

RECOMMENDED CUTTING CONDITIONS

SHOULDER MILLING

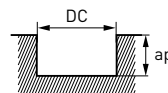
Material	DC	Vc	n	fz	ap	ae
P Carbon steel, Alloy steel, Mild steel	10	150	4800	860	8	4
	12	150	4000	800	9.6	4.8
	16	150	3000	600	12.8	6.4
	20	150	2400	530	16	8
M Austenitic and Ferritic stainless steel	10	70	2000	320	8	4
	12	70	1900	340	9.6	4.8
	16	70	1400	280	12.8	6.4
S Titanium alloy	20	70	1100	220	16	8
	10	60	1900	230	8	4
M Precipitation hardening stainless steel	12	60	1600	230	9.6	4.8
	16	60	1200	200	12.8	6.4
	20	60	950	180	16	8



1/1

SLOT MILLING

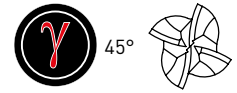
Material	DC	Vc	n	fz	ap
P Carbon steel, Alloy steel, Mild steel	10	100	3200	510	5
	12	100	2700	490	6
	16	100	2000	400	8
	20	100	1600	350	10
M Austenitic and Ferritic stainless steel	10	60	1900	230	5
	12	60	1600	260	6
	16	60	1200	220	8
S Titanium alloy	20	60	950	170	10
	10	40	1300	100	5
M Precipitation hardening stainless steel	12	40	1100	110	6
	16	40	800	96	8
	20	40	640	90	10



1/1

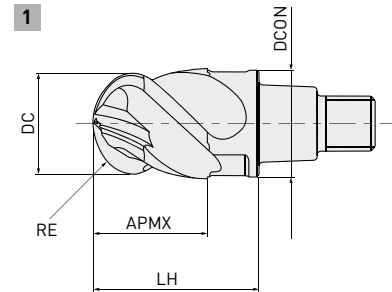
1. Vibration may occur if the rigidity of machine or workpiece is low. In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.
2. If the depth of cut is shallow, the revolution and feed rate can be increased.
3. For stainless steel, titanium alloy, the use of water-soluble coolant is effective.

iMX-B4HV



BALL NOSE HEAD, 4 FLUTE, IRREGULAR HELIX

P M S N



	RE <	RE > 6
	±0.010	±0.020
	DC < 12	DC > 12
	0	0
	-0.020	-0.030

Order number	EP7020	RE	DC	APMX	LH	DCON	ZEFP	Type
IMX10B4HV10010	●	5	10	10.5	16	9.7	4	1
IMX12B4HV12012	●	6	12	12.5	19	11.7	4	
IMX16B4HV16016	●	8	16	16.5	24	15.5	4	
IMX20B4HV20021	●	10	20	21	30	19.5	4	
IMX25B4HV25026	●	12.5	25	26	37.5	24.5	4	

1/1

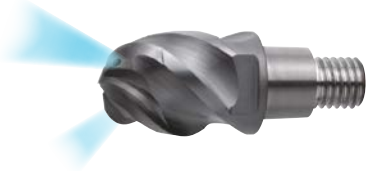
56

iMX-B4HV-E

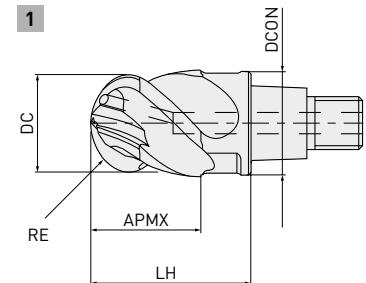


**BALL NOSE HEAD, 4 FLUTE, IRREGULAR HELIX,
WITH COOLANT HOLE**

P M S N



	RE < 6	RE > 6
	±0.010	±0.020
	DC < 12	DC > 12
	0	0
	-0.020	-0.030



Order number	EP7020	RE	DC	APMX	LH	DCON	ZEFP	Type
IMX10B4HV10010E	●	5	10	10.5	16	9.7	4	1
IMX12B4HV12012E	●	6	12	12.5	19	11.7	4	
IMX16B4HV16016E	●	8	16	16.5	24	15.5	4	
IMX20B4HV20021E	●	10	20	21	30	19.5	4	
IMX25B4HV25026E	●	12.5	25	26	37.5	24.5	4	

1/1

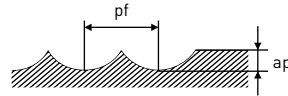


iMX-B4HV-E

RECOMMENDED CUTTING CONDITIONS

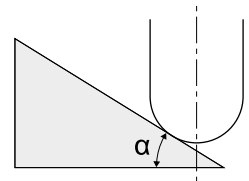
SIDE MILLING

Material	DC	RE	Inclination angle $\alpha < 15^\circ$				Inclination angle $\alpha > 15^\circ$				ap	pf
			Vc	n	fz	Vf	Vc	n	fz	Vf		
P Carbon steel, Alloy steel, Mild steel	10	5	300	9600	0.106	4100	200	6400	0.07	1800	1	2.5
	12	6	300	8000	0.125	4000	200	5300	0.085	1800	1.2	3
	16	8	300	6000	0.134	3200	200	4000	0.088	1400	1.6	4
N Copper, Copper alloy	20	10	300	4800	0.156	3000	200	3200	0.1	1300	2	5
	25	12.5	300	3800	0.16	2400	200	2500	0.1	1000	2.5	6
S Heat resistant alloy	10	5	60	1900	0.055	420	40	1300	0.035	180	0.5	1
	12	6	60	1600	0.055	350	40	1100	0.035	150	0.6	1.2
	16	8	60	1200	0.062	300	40	800	0.04	130	0.8	1.6
	20	10	60	1000	0.062	250	40	640	0.04	100	1	2
	25	12.5	60	760	0.062	190	40	510	0.04	80	1.2	2.5
M Austenitic and Ferritic stainless steel, Precipitation hardening stainless steel	10	5	225	7200	0.105	3000	150	4800	0.067	1300	1	2.5
	12	6	225	6000	0.125	3000	150	4000	0.08	1300	1.2	3
	16	8	225	4500	0.14	2500	150	3000	0.09	1100	1.6	4
S Titanium alloy	20	10	225	3600	0.16	2300	150	2400	0.105	1000	2	5
	25	12.5	225	2900	0.16	1900	150	1900	0.105	800	2.5	6

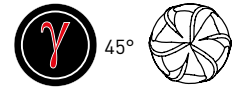


1/1

1. For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.
2. If the depth of cut is shallow, the revolution and feed rate can be increased.
3. Irregular helix flute end mills have a large effect on controlling vibration when compared to standard end mills.
However, if the rigidity of the machine or the workpiece installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.
4. α is the inclination angle of the machined surface.

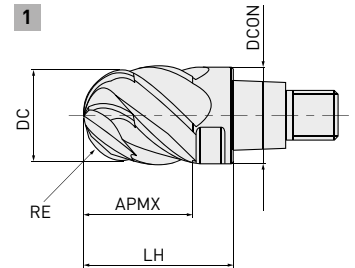


iMX-B6HV



BALL NOSE HEAD, 6 FLUTE, IRREGULAR HELIX

P **M** **S**



	RE<6	RE>6
	±0.010	±0.020
	DC<12	DC>12
	0	0
	-0.020	-0.030

Order number	EP7020	RE	DC	APMX	LH	DCON	ZEFP	Type
IMX10B6HV10010	●	5	10	10.5	16	9.7	6	
IMX12B6HV12012	●	6	12	12.5	19	11.7	6	
IMX16B6HV16016	●	8	16	16.5	24	15.5	6	1
IMX20B6HV20021	●	10	20	21	30	19.5	6	
IMX25B6HV25026	●	12.5	25	26	37.5	24.5	6	

1/1

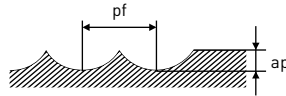


iMX-B6HV

RECOMMENDED CUTTING CONDITIONS

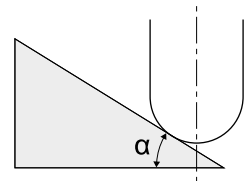
SIDE MILLING

Material	DC	RE	Inclination angle $\alpha < 15^\circ$				Inclination angle $\alpha > 15^\circ$				ap	pf
			Vc	n	fz	Vf	Vc	n	fz	Vf		
P Carbon steel, Alloy steel, Mild steel	10	5	300	9600	0.106	6100	200	6400	0.07	2700	0.5	2
	12	6	300	8000	0.125	6000	200	5300	0.085	2700	0.6	2.4
	16	8	300	6000	0.134	4800	200	4000	0.088	2100	0.8	3.2
N Copper, Copper alloy	20	10	300	4800	0.156	4500	200	3200	0.1	1900	1	4
	25	12.5	300	3800	0.16	3600	200	2500	0.1	1500	1.2	5
S Heat resistant alloy	10	5	60	1900	0.055	630	40	1300	0.035	270	0.5	1
	12	6	60	1600	0.055	520	40	1100	0.035	220	0.6	1.2
	16	8	60	1200	0.062	450	40	800	0.04	190	0.8	1.6
	20	10	60	1000	0.062	370	40	640	0.04	150	1	2
	25	12.5	60	760	0.062	300	40	510	0.04	120	1.2	2.5
M Austenitic and Ferritic stainless steel, Precipitation hardening stainless steel	10	5	225	7200	0.105	4500	150	4800	0.067	1900	0.5	2
	12	6	225	6000	0.125	4500	150	4000	0.08	1900	0.6	2.4
	16	8	225	4500	0.14	3700	150	3000	0.09	1600	0.8	3.2
S Titanium alloy	20	10	225	3600	0.16	3400	150	2400	0.105	1500	1	4
	25	12.5	225	2900	0.16	2800	150	1900	0.105	1200	1.2	5



1/1

1. For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.
2. If the depth of cut is shallow, the revolution and feed rate can be increased.
3. Irregular helix flute end mills have a large effect on controlling vibration when compared to standard end mills.
However, if the rigidity of the machine or the workpiece installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.
4. α is the inclination angle of the machined surface.



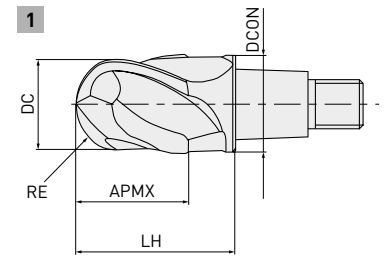
iMX-B2S / iMX-B4S



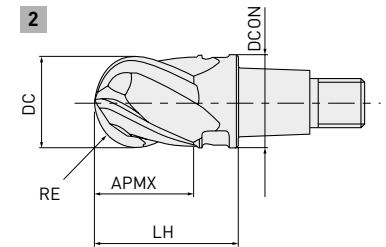
**BALL NOSE HEAD, 2 FLUTE / 4 FLUTE,
FOR HARDENED STEEL**

H

iMX-B2S



iMX-B4S



RE>8
±0.020

Order number	EP8110	RE	DC	APMX	LH	DCON	ZEFP	Type
IMX16B2S16016	★	8	16	16	24	15.5	2	1
IMX20B2S20020	★	10	20	20	30	19.5	2	1
IMX16B4S16016	★	8	16	16	24	15.5	4	2
IMX20B4S20020	★	10	20	20	30	19.5	4	2

1/1

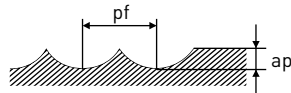


iMX-B2S / iMX-B4S

RECOMMENDED CUTTING CONDITIONS

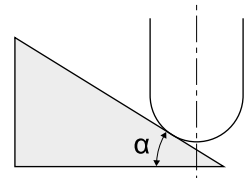
iMX-B2S

Material	DC	RE	Inclination angle $\alpha < 15^\circ$				Inclination angle $\alpha > 15^\circ$				ap	pf
			Vc	n	fz	Vf	Vc	n	fz	Vf		
H Hardened steel [55 - 65 HRC]	16	8	300	6000	0.14	1700	150	3000	0.08	480	0.3	1.6
	20	10	300	4800	0.14	1300	150	2400	0.08	380	0.3	2



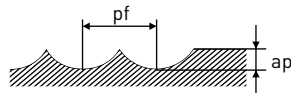
1/1

1. If the depth of cut is shallow, the revolution and feed rate can be increased.
2. α is the inclination angle of the machined surface.



iMX-B4S

Material	DC	RE	Inclination angle $\alpha < 15^\circ$				Inclination angle $\alpha > 15^\circ$				ap	pf
			Vc	n	fz	Vf	Vc	n	fz	Vf		
H Hardened steel [55 - 65 HRC]	16	8	300	6000	0.07	1700	150	3000	0.06	720	0.3	1.6
	20	10	300	4800	0.07	1300	150	2400	0.06	580	0.3	2



1/1

1. If the depth of cut is shallow, the revolution and feed rate can be increased.
2. α is the inclination angle of the machined surface.

iMX-B3FV



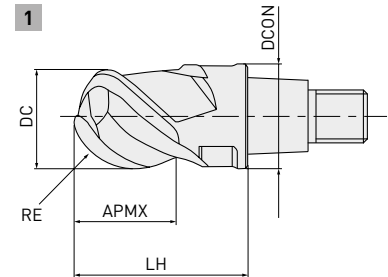
**BALL NOSE HEAD, FOR HIGH EFFICIENCY MACHINING,
3 FLUTE, IRREGULAR HELIX**

P

H



RE<6	RE>6
±0.010	±0.020



Order number	EP8120	RE	DC	APMX	LH	DCON	ZEFP	Type
IMX10B3FV10008	★	5	10	8	16	9.7	3	1
IMX12B3FV12009	★	6	12	9.6	19	11.7	3	
IMX16B3FV16012	★	8	16	12.8	24	15.5	3	
IMX20B3FV20016	★	10	20	16	30	19.5	3	

1/1

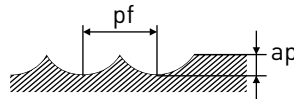


iMX-B3FV

RECOMMENDED CUTTING CONDITIONS

SIDE MILLING

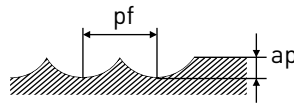
Material	DC	RE	Inclination angle $\alpha < 15^\circ$				Inclination angle $\alpha > 15^\circ$				ap	pf
			Vc	n	fz	Vf	Vc	n	fz	Vf		
P Pre-hardened steel, Alloy tool steel	10	5	175	5600	0.22	3700	115	3700	0.15	1700	0.7	2.6
	12	6	175	4600	0.22	3000	115	3100	0.15	1400	1	3.2
	16	8	175	3500	0.22	2300	115	2300	0.15	1000	1.1	3.8
	20	10	175	2800	0.22	1800	115	1800	0.15	810	1.2	4.8
H Hardened steel (40 – 55 HRC)	10	5	150	4800	0.18	2600	100	3200	0.12	1200	0.5	2
	12	6	150	4000	0.18	2200	100	2700	0.12	970	0.7	2.5
	16	8	150	3000	0.18	1600	100	2000	0.12	720	0.9	3.5
	20	10	150	2400	0.18	1300	100	1600	0.12	580	1.1	4.2



1/1

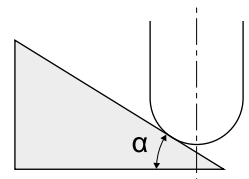
SIDE MILLING (L/D=7)

Material	DC	RE	Inclination angle $\alpha < 15^\circ$				Inclination angle $\alpha > 15^\circ$				ap	pf
			Vc	n	fz	Vf	Vc	n	fz	Vf		
P Pre-hardened steel, Alloy tool steel	10	5	120	3800	0.2	2300	80	2500	0.13	980	0.5	1.3
	12	6	120	3200	0.2	1900	80	2100	0.13	820	0.7	1.6
	16	8	120	2400	0.2	1400	80	1600	0.13	620	0.8	1.9
	20	10	120	1900	0.2	1100	80	1300	0.13	510	0.9	2.4
H Hardened steel (40 – 55 HRC)	10	5	100	3200	0.13	1200	65	2100	0.085	540	0.4	1
	12	6	100	2700	0.13	1100	65	1700	0.085	430	0.6	1.3
	16	8	100	2000	0.13	780	65	1300	0.085	330	0.7	1.8
	20	10	100	1600	0.13	620	65	1000	0.085	260	0.8	2.1



1/1

1. If the depth of cut is shallow, the revolution and feed rate can be increased.
2. The irregular helix flute end mill has a larger effect on controlling vibration when compared to standard end mills. However, if the rigidity of the machine or the workpiece installation is poor, vibration or abnormal sound can occur. In this case, please reduce the revolution and feed rate proportionately, or set a lower depth of cut.
3. α is the inclination angle of the machined surface.



iMX-B4WH-S



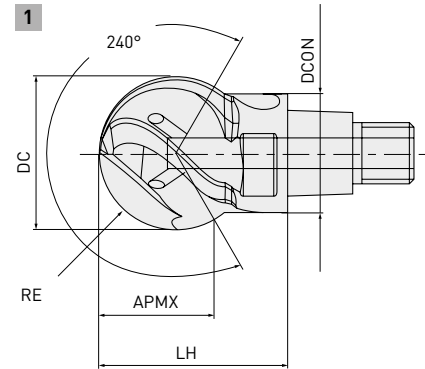
LOLLIPOP HEAD WITH COOLANT HOLE, 4 FLUTE

P M S N



RE \geq 6

\pm 0.015



Order number	EP7020	APMX	DC	DCON	RE	LH	ZEFP	Type
IMX10B4WH12008S	●	9	12	9.7	6	16.5	4	
IMX12B4WH16008S	●	12	16	11.7	8	20.9	4	1
IMX16B4WH20008S	●	15	20	15.5	10	24.7	4	

1/1

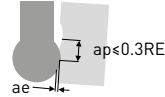


iMX-B4WH-S

RECOMMENDED CUTTING CONDITIONS

INTERNAL PROFILE MILLING, UNDERCUT MACHINING (L/D=3)

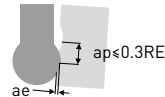
Material	DC	RE	Vc	n	ft	f	ae
P Carbon steel, Alloy steel, Mild steel	12	6	100	2700	0.090	970	0.45
	16	8	100	2000	0.100	800	0.60
N Pre-hardened steel, Copper alloy	20	10	100	1600	0.100	640	0.75
M Austenitic and Ferritic stainless steel	12	6	80	2100	0.075	630	0.45
	16	8	80	1600	0.080	510	0.60
S Cobalt chrome alloy, Titanium alloy	20	10	80	1300	0.090	470	0.75
	12	6	30	800	0.040	130	0.36
S Heat resistant alloy	16	8	30	600	0.045	110	0.48
	20	10	30	480	0.050	96	0.60



1/1

INTERNAL PROFILE MILLING, UNDERCUT MACHINING (L/D=5)

Material	DC	RE	Vc	n	ft	f	ae
P Carbon steel, Alloy steel, Mild steel	12	6	70	1900	0.070	530	0.30
	16	8	70	1400	0.080	450	0.40
N Pre-hardened steel, Copper alloy	20	10	70	1100	0.080	350	0.50
M Austenitic and Ferritic stainless steel	12	6	50	1300	0.050	260	0.30
	16	8	50	990	0.060	240	0.40
S Cobalt chrome alloy, Titanium alloy	20	10	50	800	0.070	220	0.50
	12	6	20	530	0.030	64	0.24
S Heat resistant alloy	16	8	20	400	0.040	64	0.32
	20	10	20	320	0.040	51	0.40

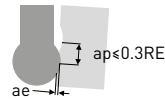


1/1

iMX-B4WH-S

INTERNAL PROFILE MILLING, UNDERCUT MACHINING (L/D=7)

Material	DC	RE	Vc	n	ft	f	ae	
P N	Carbon steel, Alloy steel, Mild steel	12	6	50	1300	0.030	160	0.15
		16	8	50	990	0.035	140	0.20
	Pre-hardened steel, Copper alloy	20	10	50	800	0.040	130	0.25
M	Austenitic and Ferritic stainless steel	12	6	30	800	0.025	80	0.15
		16	8	30	600	0.030	72	0.20
S	Cobalt chrome alloy, Titanium alloy	20	10	30	480	0.035	67	0.25



1/1

- Vibration may occur if the rigidity of machine or workpiece material is low.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
- If the depth of cut is smaller, the revolution and the feed rate can be increased.
- In case of $L/D > 5$, it is recommended to use a taper neck type holder.
- For stainless steels, titanium and heat resistant alloys, the use of water-soluble coolant is effective.

iMX-CH3L



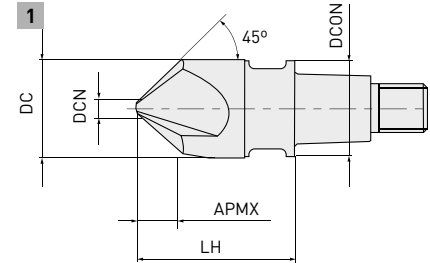
CHAMFER HEAD, 3 FLUTE

P M S H



DCN = 1.5

±0.020



Order number	EP7020	DC	APMX	DCN	LH	DCON	ZEFP	Type
IMX10CH3L100A45	●	10	4.2	1.5	16.0	9.7	3	1
IMX12CH3L120A45	●	12	5.2	1.5	19.0	11.7	3	
IMX16CH3L160A45	●	16	7.2	1.5	24.0	15.5	3	
IMX20CH3L200A45	●	20	9.2	1.5	30.0	19.5	3	

1/1

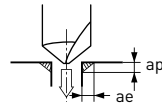


iMX-CH3L

RECOMMENDED CUTTING CONDITIONS

HOLE CHAMFERING

Material	DC	ZEFP	Vc	n	fz	Vf	ap	ae
P Carbon steel, Alloy steel, Gray Cast Iron	10	3	40	1300	0.04	160	1.8	1.8
	12	3	40	1100	0.04	130	2.2	2.2
	16	3	40	800	0.04	96	2.4	2.4
	20	3	40	640	0.04	77	2.6	2.6
	10	3	40	1300	0.03	120	1.8	1.8
	12	3	40	1100	0.03	99	2.2	2.2
	16	3	40	800	0.03	72	2.4	2.4
	20	3	40	640	0.03	58	2.6	2.6
M Austenitic stainless steel, Alloy steel	10	3	30	950	0.03	86	1.8	1.8
	12	3	30	800	0.03	72	2.2	2.2
	16	3	30	600	0.03	54	2.4	2.4
	20	3	30	480	0.03	43	2.6	2.6
S Heat resistant alloy	10	3	30	950	0.04	110	1.8	1.8
	12	3	30	800	0.04	96	2.2	2.2
	16	3	30	600	0.04	72	2.4	2.4
	20	3	30	480	0.04	58	2.6	2.6
H Hardened steel (45 – 55HRC)	10	3	30	950	0.02	57	1.8	1.8
	12	3	30	800	0.02	48	2.2	2.2
	16	3	30	600	0.02	36	2.4	2.4
	20	3	30	480	0.02	29	2.6	2.6



1/1

1. The use of water soluble coolant is recommended.
2. Vibration may occur if the rigidity of the machine or workpiece is low.
In this case, please reduce the revolution and feed rate proportionately.

iMX-CH6V



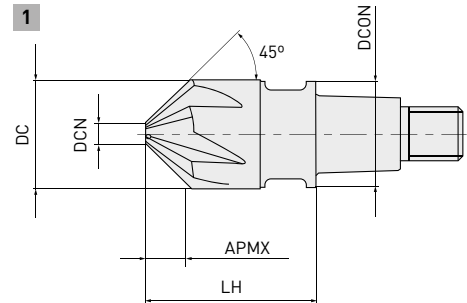
CHAMFER HEAD, 6 FLUTE

P M S H



DCN = 3.0

±0.020



Order number	EP7020	DC	APMX	DCN	LH	DCON	ZEFP	Type
IMX12CH6V120A45	●	12	4.5	3.0	19.0	11.7	6	1
IMX16CH6V160A45	●	16	6.5	3.0	24.0	15.5	6	
IMX20CH6V200A45	●	20	8.5	3.0	30.0	19.5	6	

1/1

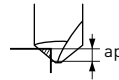


iMX-CH6V

RECOMMENDED CUTTING CONDITIONS

EDGE CHAMFERING

Material	DC	ZEFP	Vc	n	fz	Vf	ap	ae
P Carbon steel, Alloy steel, Gray Cast Iron	12	6	100	2700	0.05	810	2.4	2.4
	16	6	100	2000	0.05	600	2.7	2.7
	20	6	100	1600	0.05	480	3.2	3.2
	12	6	70	1900	0.05	510	2.4	2.4
	16	6	70	1400	0.05	380	2.7	2.7
	20	6	70	1100	0.05	300	3.2	3.2
M Austenitic stainless steel, Alloy steel	12	6	60	1600	0.04	380	2.4	2.4
	16	6	60	1200	0.04	290	2.7	2.7
	20	6	60	950	0.04	230	3.2	3.2
S Heat resistant alloy	12	6	50	1300	0.03	230	2.4	2.4
	16	6	50	990	0.03	180	2.7	2.7
	20	6	50	800	0.03	140	3.2	3.2
H Hardened steel (45 – 55HRC)	12	6	30	800	0.04	190	2.4	2.4
	16	6	30	600	0.04	140	2.7	2.7
	20	6	30	480	0.04	120	3.2	3.2



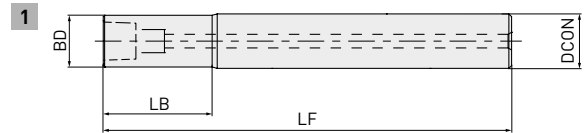
1/1

1. The use of water-soluble coolant is recommended.
2. Vibration may occur if the rigidity of the machine or workpiece is low.
In this case, please reduce the revolution and feed rate proportionately.

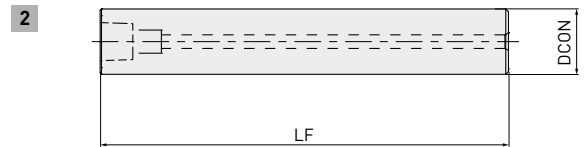
iMX

CARBIDE HOLDER

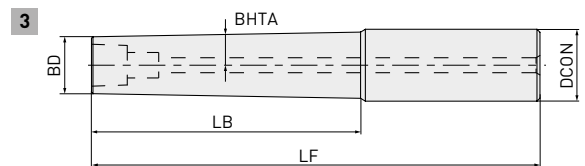
UNDERCUT



STRAIGHT



TAPER NECK TYPE



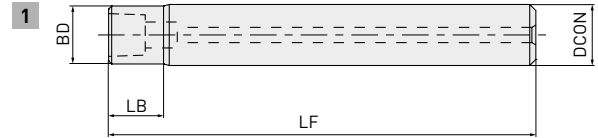
DCON=10	12<DCON<16	20<DCON<25
0	0	0
- 0.009	- 0.011	- 0.013

Order number	Stock	BHTA	LB	BD	LF	DCON	Type
IMX10-U10N014L070C	●	—	14	9.7	70	10	1
IMX10-S10L090C	●	—	—	—	90	10	2
IMX10-U10N034L090C	●	—	34	9.7	90	10	1
IMX10-S10L110C	●	—	—	—	110	10	2
IMX10-U10N054L110C	●	—	54	9.7	110	10	1
IMX10-A12N054L110C	●	1	54	9.7	110	12	3
IMX12-U12N017L080C	●	—	17	11.7	80	12	1
IMX12-S12L100C	●	—	—	—	100	12	2
IMX12-U12N041L100C	●	—	41	11.7	100	12	1
IMX12-S12L130C	●	—	—	—	130	12	2
IMX12-U12N065L130C	●	—	65	11.7	130	12	1
IMX12-A16N065L130C	●	1	65	11.7	130	16	3
IMX16-U16N024L080C	●	—	24	15.5	80	16	1
IMX16-S16L110C	●	—	—	—	110	16	2
IMX16-U16N056L110C	●	—	56	15.5	110	16	1
IMX16-S16L150C	●	—	—	—	150	16	2
IMX16-U16N088L150C	●	—	88	15.5	150	16	1
IMX16-A20N088L150C	●	1	88	15.5	150	20	3
IMX20-U20N030L090C	●	—	30	19.5	90	20	1
IMX20-S20L130C	●	—	—	—	130	20	2
IMX20-U20N070L130C	●	—	70	19.5	130	20	1
IMX20-S20L180C	●	—	—	—	180	20	2
IMX20-U20N110L180C	●	—	110	19.5	180	20	1
IMX20-A25N110L180C	●	1	110	19.5	180	25	3
IMX25-U25N037L110C	●	—	37.5	24.5	110	25	1
IMX25-S25L160C	●	—	—	—	160	25	2
IMX25-U25N087L160C	●	—	87.5	24.5	160	25	1
IMX25-S25L210C	●	—	—	—	210	25	2

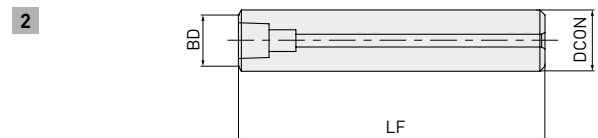
iMX

STEEL HOLDER

UNDERCUT



STRAIGHT



DCON=10	12<DCON<16	20<DCON<25	DCON=32
0	0	0	0
- 0.009	- 0.011	- 0.013	- 0.160

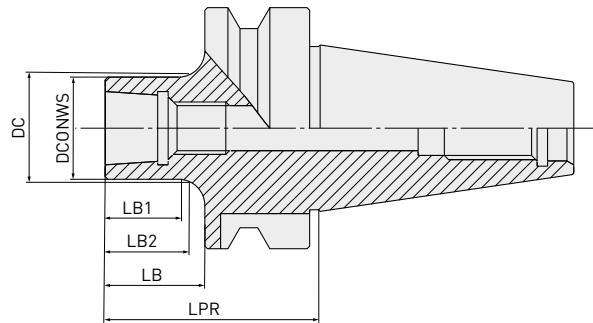
Order number	Stock	LB	BD	LF	DCON	Type
IMX10-U10N009L070S	●	9	9.7	70	10	1
IMX10-G12L060S	●	—	—	60	12	2
IMX12-U12N011L080S	●	11	11.7	80	12	1
IMX12-G16L070S	●	—	—	70	16	2
IMX16-U16N016L080S	●	16	15.5	80	16	1
IMX16-G20L070S	●	—	—	70	20	2
IMX20-U20N020L090S	●	20	19.5	90	20	1
IMX20-G25L080S	●	—	—	80	25	2
IMX25-U25N025L110S	●	25	24.5	110	25	1
IMX25-G32L100S	●	—	—	100	32	2

1/1

iMX

BT30 MONO-BLOCK TYPE STEEL HOLDER

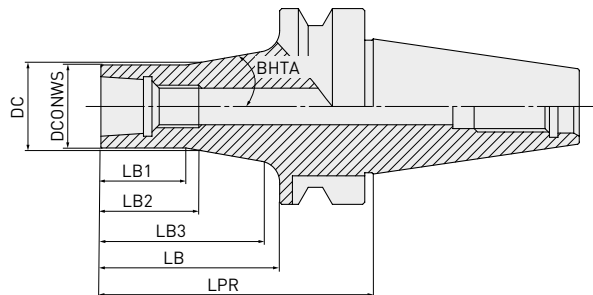
STRAIGHT TYPE



Order number	Stock	DC	DCONWS	LPR	LB	LB1	LB2	WT	Suitable head
IMX16-S16GL38-BT30	●	16	15.5	38	16	11	12.5	0.39	IMX16
IMX16-S28GL50-BT30	●	16	15.5	50	28	23	24.5	0.41	IMX16
IMX20-S19GL41-BT30	●	20	19.5	41	19	14	15.5	0.41	IMX20
IMX20-S33GL55-BT30	●	20	19.5	55	33	28	29.5	0.42	IMX20
IMX25-S25GL47-BT30	●	25	24.5	47	25	20	21.5	0.45	IMX25
IMX25-S43GL65-BT30	●	25	24.5	65	43	38	39.5	0.50	IMX25

1/1

TAPER NECK TYPE



Order number	Stock	DC	DCONWS	LPR	LB	LB1	LB2	LB3	BHTA	WT	Suitable head
IMX16-A33GL55-BT30	●	16	15.5	55	33	16	16.7	29.2	15°	0.43	IMX16
IMX20-A42GL64-BT30	●	20	19.5	64	42	20	21.4	37.8	10°	0.48	IMX20
IMX25-A53GL75-BT30	●	25	24.5	75	53	25	26.7	48.7	8°	0.57	IMX25

1/1

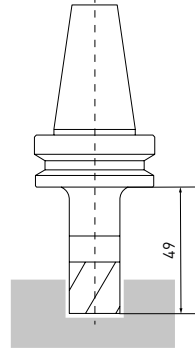
1. The fastening size of the holder and the head should be the same.
2. Please use a special wrench that matches the fastening size. This part is sold separately.
3. Recommended for use with machining centres equipped with high-output spindle motors.
4. The depth of cut should be 50 – 60% of the recommended conditions for each head.
5. The connection part with the machine tool is not a two-sided shank.

iMX

VERTICAL MACHINING CENTRE: BROTHER INDUSTRIES, LTD. S700XD1

Achieved high efficiency machining with a metal removal rate of 600 mm³/min.

Material	Aluminium Alloy
Tool	iMX20S3A20016 ET2020 Square, 3 flute
Holder	iMX20-S19GL41-BT30
n (min ⁻¹)	5971
Vc (m/min)	375
Vf (mm/min)	2389
ap (mm)	13
Metal removal rate (mm ³ /min)	621
Cutting mode	External coolant (Emulsion)



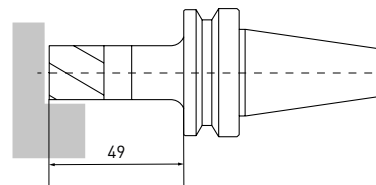
Spindle speed max. 10000 min⁻¹, Spindle motor 26.2 kw, Torque 92 Nm

HORIZONTAL MACHINING CENTRE: ENSHU, LTD. SH350

The volume of metal removed was six times higher than the standard recommended conditions.

Material	S50C
Tool	iMX20R4F20021 EP7020 Roughing, 4 flute
Holder	iMX20-S19GL41-BT30
n (min ⁻¹)	3997 (2400)
Vc (m/min)	251 (150)
Vf (mm/min)	1599 (480)
ap (mm)	12
ae (mm)	20
Metal removal rate (mm ³ /min)	384
Cutting mode	Down Cut. Air blow



() Recommended cutting conditions




Spindle speed max. 12000 min⁻¹, Spindle motor 31 kw, Torque 31.04 Nm

iMX

CARBIDE HOLDER – SPARE PARTS



Tool holder number	Suitable head		
		Wrench	Anti-seize lubricant
IMX10-U10N014L070C	IMX10	IMX10-WR	
IMX10-S10L090C			
IMX10-U10N034L090C			
IMX10-S10L110C			
IMX10-U10N054L110C			
IMX10-A12N054L110C			
IMX12-U12N017L080C	IMX12	IMX12-WR	
IMX12-S12L100C			
IMX12-U12N041L100C			
IMX12-S12L130C			
IMX12-U12N065L130C			
IMX12-A16N065L130C			
IMX16-U16N024L080C	IMX16	IMX16-WR	MK1KS
IMX16-S16L110C			
IMX16-U16N056L110C			
IMX16-S16L150C			
IMX16-U16N088L150C			
IMX16-A20N088L150C			
IMX20-U20N030L090C	IMX20	IMX20-WR	
IMX20-S20L130C			
IMX20-U20N070L130C			
IMX20-S20L180C			
IMX20-U20N110L180C			
IMX20-A25N110L180C			
IMX25-U25N037L110C	IMX25	IMX25-WR	
IMX25-S25L160C			
IMX25-U25N087L160C			
IMX25-S25L210C			

PARTS SOLD SEPARATELY

Tool holder number	
	Wrench
IMX16	IMX16-WR
IMX20	IMX20-WR
IMX25	IMX25-WR

iMX

STEEL HOLDER – SPARE PARTS

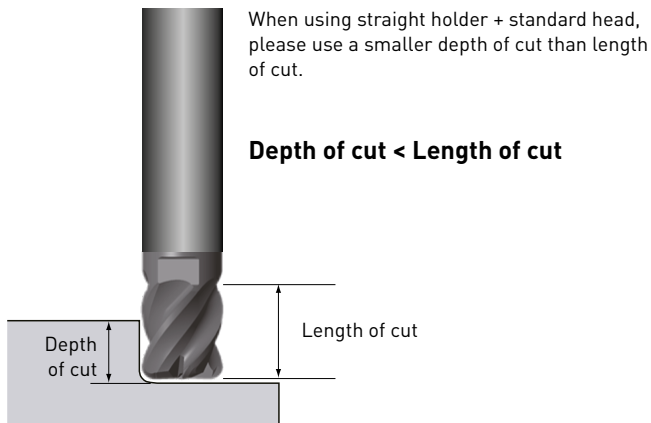
Tool holder number	Suitable head		
		Wrench	Anti-seize lubricant
IMX10-U10N009L070S	IMX10: []	IMX10-WR	MK1KS
IMX10-G12L060S			
IMX12-U12N011L080S	IMX12: []	IMX12-WR	
IMX12-G16L070S			
IMX12-G16L070S	IMX16: []	IMX16-WR	
IMX16-U16N016L080S			
IMX20-U20N020L090S	IMX20: []	IMX20-WR	
IMX20-G25L080S			
IMX25-U25N025L110S	IMX25: []	IMX25-WR	
IMX25-G32L100S			

HOW TO SELECT IMX HOLDERS

When using a straight holder + standard head, interference will occur in cases where the depth of cut is larger than the length of cut of the head.

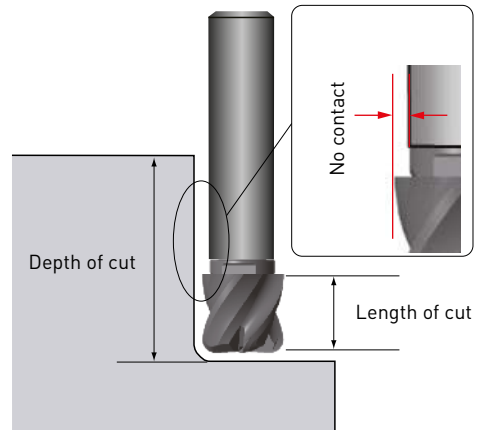
When using a straight holder + offset head, larger depths of cut are possible because the diameter of the head is larger than the holder.

STRAIGHT + STANDARD HEAD



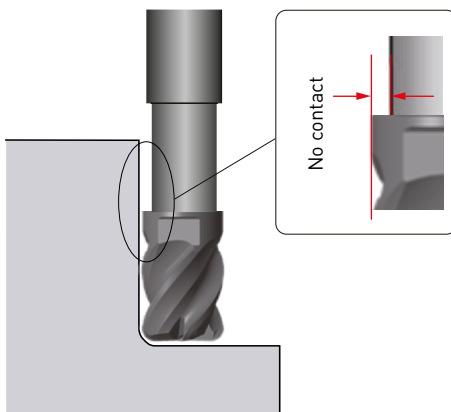
Less than 3D overhang is recommended when depth of cut < length of cut.

STRAIGHT + OFFSET HEAD

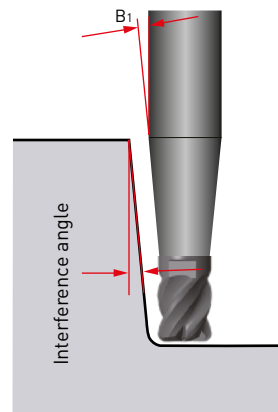


Undercut type with relieved neck is suitable for vertical wall machining.
The large diameter of the taper neck holder provides stability in long overhang applications.
Undercut and taper neck types are now also available.
(Please refer to diameter D5 of each type for minimum diameter.)

UNDERCUT + STANDARD HEAD

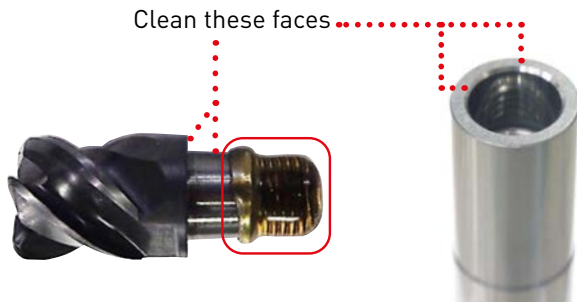


TAPER NECK + STANDARD HEAD

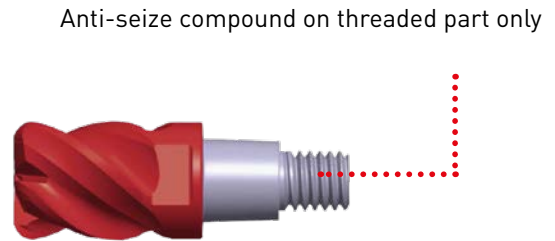


HOW TO INSTALL THE HEAD

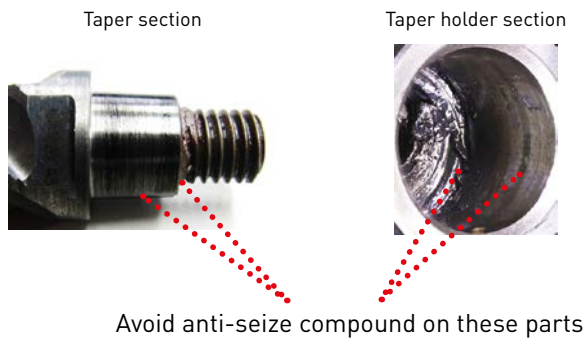
- 1** Using a clean cloth, wipe away oil and dust from the taper and end surfaces of the head and holder.



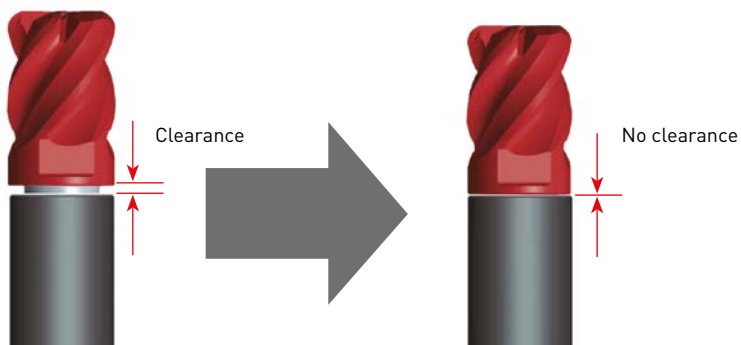
- 2** Apply a small amount of anti-seize compound to the threaded part only.



- 3** Do not over apply anti-seize compound, it may affect clamping.

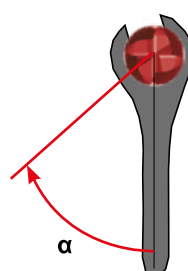


- 4** Securely fasten the head and holder using the enclosed wrench.



- 5** Refer to the table for tightening angles and recommended torque.

Fastening size	Reference tightening angle α	Recommended clamping torque (Nm)
\emptyset 10	50°	10
\emptyset 12	50°	15
\emptyset 16	50°	30
\emptyset 20	40°	50
\emptyset 25	35°	75

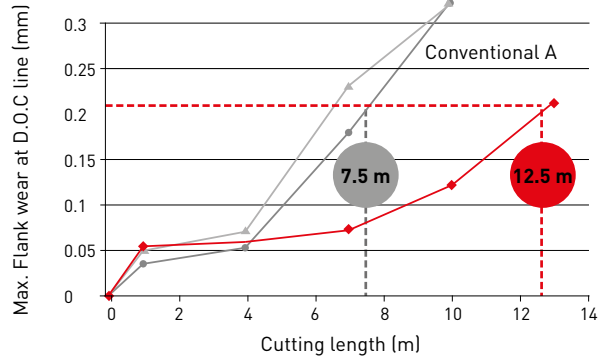


1. Use safety gloves and other necessary safety equipment to avoid the possibility of injury.
2. Use the enclosed wrench only. (Standard wrenches may be too thick)

TOOL LIFE COMPARISON WHEN MACHINING FLAT SURFACES IN INCONEL 718

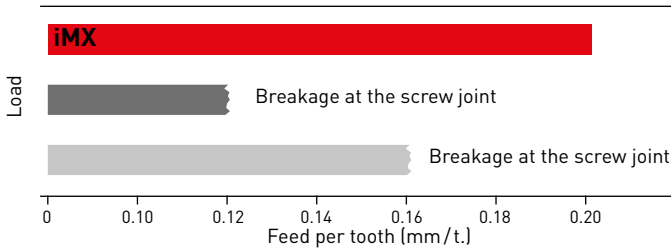
EP7020 is a new grade that enables extended tool life when machining difficult-to-cut materials.

Material	Inconel 718 (43HRC)
Tool	MX12-U12N041L100C
Holder	IMX12B4HV12012
n (min ⁻¹)	1.700
Vc (m/min)	28
Vf (mm/min)	350
fz (mm/t.)	0.05
ap (mm)	0.6
ae (mm)	1.2
Overhang (mm)	65
Cutting mode	Down cutting
Coolant	Wet cutting External coolant (Emulsion)
Machine	Vertical MC (BT40)



STRENGTH COMPARISON WHEN SLOT MILLING TITANIUM

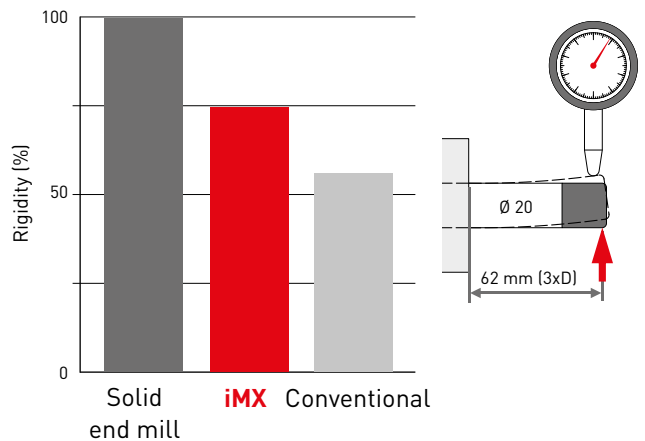
The reliability of the screw fastening is significantly improved when compared to competitors that employ only steel fastenings. It is also able to cope with high cutting loads.



Material	Ti-6Al-4V (32HRC)
Tool	IMX20-U20N030L090C
Holder	IMX20C4HV200R10021
n (min ⁻¹)	1.100
Vc (m/min)	69
Vf (mm/min)	880
fz (mm/t.)	0.20
ap (mm)	10
ae (mm)	20
Overhang (mm)	72
Cutting mode	Down cutting
Coolant	Wet cutting External coolant (Emulsion)
Machine	Vertical MC (BT50)

RIGIDITY

The double face contact of the carbide head and carbide holder gives an increase in rigidity of + 30 %.



■ Mitsubishi Materials ■ A ■ B : Conventional

iMX

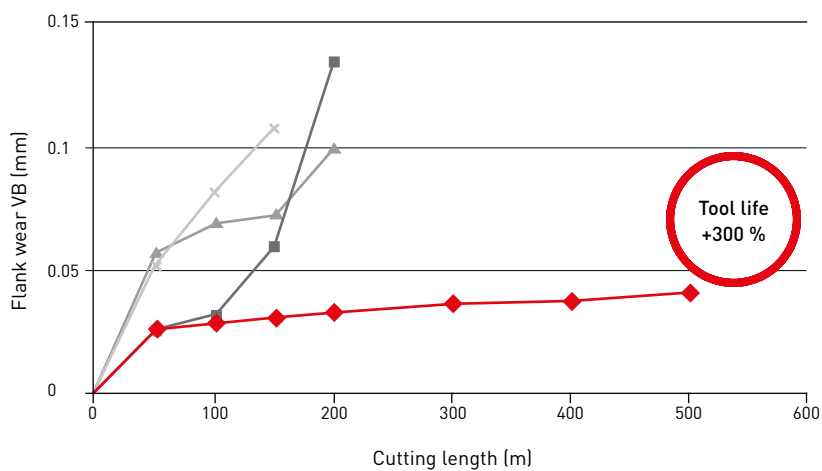
STEEL HOLDER

Cost efficient steel holders for low cut depth of cut machining when the overhang is short.



CUTTING PERFORMANCE

Tool life is at least 3 x longer when compared with conventional steel shanks.

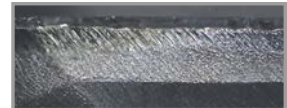


EDGE CONDITION

iMX S4HV
(Cutting length
150 m)



Conventional A
(Cutting length
100 m)



Conventional B
(Cutting length
100 m)



Conventional C
(Cutting length
100 m)



Material	S55C
Tool	iMX10-U10N014L070S
Holder	IMX10C4HV100R10010
n (min ⁻¹)	5.100
Vc (m/min)	160
Vf (mm/min)	1.530
fz (mm/t.)	0.075
ap (mm)	5
ae (mm)	0.5
Overhang (mm)	30
Cutting mode	Down cutting
Coolant	Emulsion External
Machine	BT50 M/C

■ Mitsubishi Materials ■ A ■ B ■ C : Conventional

iMX-C4FD-C

FEATURES

Duplex
corner radius



Conventional radius



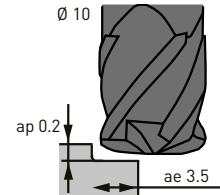
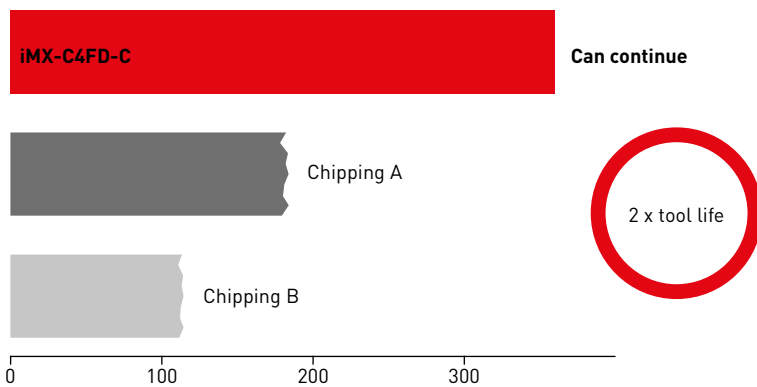
Thin chips and a long cutting edge combine to provide both high performance and long tool life.

CUTTING PERFORMANCE

Recommended cutting conditions may vary according to the stability of the set up.

Tool life comparison in cobalt-chromium alloy (Ø10)

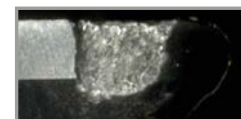
Tool life (Co-Cr Alloy)



Material	Co-Cr alloy
Tool	Ø 10
n (min ⁻¹)	3.185
Vc (m/min)	100
Vf (mm/min)	1.911
fz (mm/t.)	0.15
ap (mm)	0.2
ae (mm)	3.5
Overhang (mm)	45
Coolant	Soluble
Cutting Method	Down Cutting
Machine	Vertical (BT40)



iMX-C4FD-C
(Cutting Length 320 m)



Conventional A
(Cutting Length 160 m)

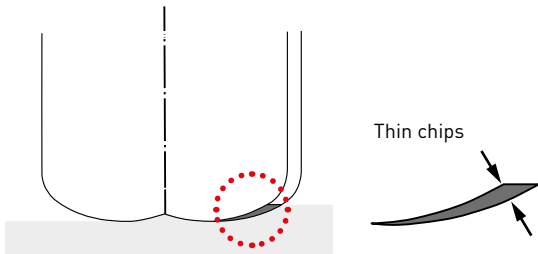


Conventional B
(Cutting Length 96 m)

■ Mitsubishi Materials ■ A ■ B : Conventional

iMX-C4FD-C

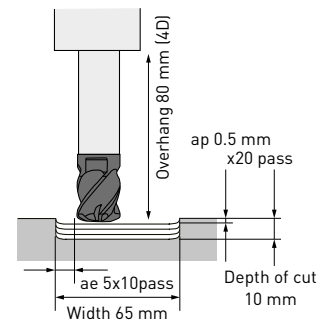
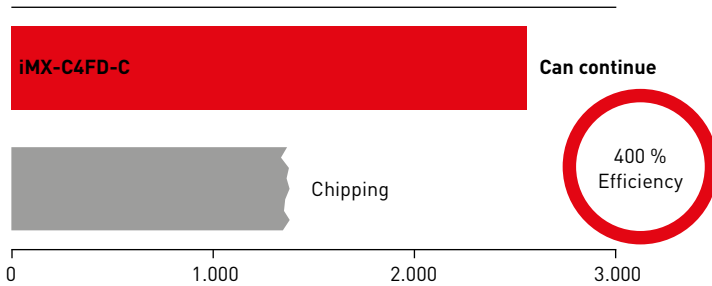
FEATURES



Reduced cutting resistance in the radial direction suppresses tool vibration and reduces deflection.

EFFICIENCY COMPARISON WHEN MACHINING SKD61(Ø20)

Machining efficiency comparison in SKD61



Material	SKD61 (52HRC)
Tool	Ø 20
n (min ⁻¹)	1.600
Vc (m/min)	100
Vf (mm/min)	640 – 2.560
fz (mm/t.)	0.10 – 0-40
ap (mm)	0.3
ae (mm)	5
Overhang (mm)	80
Coolant	Air blow
Cutting method	Slotting & down cutting
Machine	Vertical (BT50)



No chipping

iMX-C4FD-C

(Feed rate 2.560 mm/min)



Micro chipping

Conventional

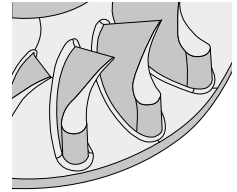
(Feed rate 1.280 mm/min)

■ Mitsubishi Materials ■ A : Conventional

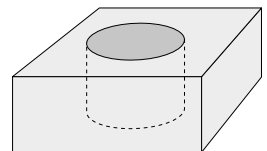
APPLICATION EXAMPLES

The examples shown are actual applications and can differ from the recommended cutting conditions.

Head	iMX12-U12N041L100C
Holder	iMX12B6HV12012
Workpiece	DIN Cf53
Component	Impeller for torque converter
Intended process	Finishing of blade faces
Vc (m/min)	200
fz (mm/tooth)	0.08
ae (mm)	Approx. 1.4
ap (mm)	Approx. 1.0
Overhang length (mm)	70
Cutting method	Trochoidal milling
Machine	5-axis M/C (HSK A63)
Results	The tool reduced machining time by 30 % and also produced a good surface finish.

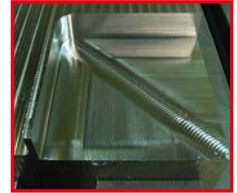


Head	iMX20-U20N070L130C
Holder	iMX20C4HV200R10021
Workpiece	DIN S235
Component	Die steel
Intended process	Hole finishing
Vc (m/min)	100
fz (mm/tooth)	0.05
ae (mm)	1
ap (mm)	3
Overhang length (mm)	105
Cutting method	Helical cutting
Machine	Machining centre
Results	Irregular helix flutes combined with the solid carbide holder gave better performance than competitors tools.



APPLICATION EXAMPLES

Head	iMX16-U16N024L080C
Holder	iMX16C10HV160R10016
Workpiece	Titanium alloy (Ti-6Al4V)
Component	Test work
Intended process	Side milling (down cut)
Vc (m/min)	151
fz (mm/tooth)	0.08
ae (mm)	0.5
ap (mm)	16
Overhang length (mm)	52
Coolant	Wet cutting External coolant (Emulsion)
Machine	Machining centre
Results	Machining without vibration was achieved even when the workpiece radius and tool radius were the same.



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