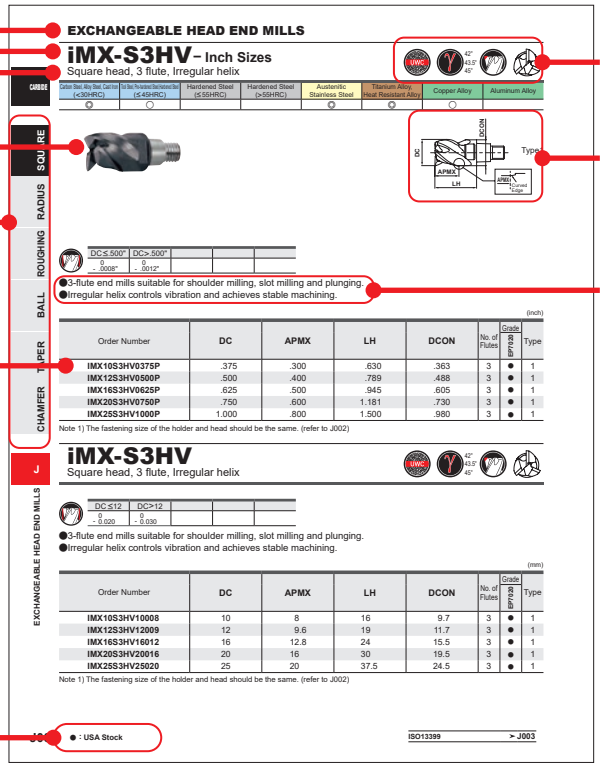
HOW TO READ THE STANDARD OF EXCHANGEABLE HEAD END MILLS

●How this section page is organized

①Organized according to cutting mode for milling. (Refer to END MILL LIST.)

CUTTING EDGE GEOMETRY
PHOTO OF PRODUCT
PRODUCT TITLE
ITEM NUMBER
PRODUCT BLOCK



PRODUCT INFORMATION ICONS
GEOMETRY
PRODUCT FEATURES

LEGEND FOR STOCK STATUS MARK
is shown on the left hand page of each double-page spread.

PRODUCT STANDARDS
indicates order numbers, dimensions, and stock status.

●To Order: Please specify order number.

MILLING TOOLS

EXCHANGEABLE HEAD END MILLS

*Arranged by Alphabetical order

IDENTIFICATION

iMX End Mill Series

■HEAD

② Basic Configurations	
S	Square
C	Corner Radius
B	Ball Nose
R	Roughing
CH	Chamfer

④ Specifications	
H	High Helix
V	Vibration Control
F	For High Efficiency Machining
S	For Finish Machining
A	For Aluminum Alloy
D	Duplex Corner Radius
F	Fine Pitch (Roughing)
T	Taper
L	Inclined
W	Lollipop

⑥ Corner R.
ex.
R050 → 0.5 mm
R100 → 1 mm

⑥ Corner R.
ex.
R030 → .030 inch

⑧ Coolant Thru	
S	Peripheral(Side)
E	End Cutting Edge
C	End Face, Center
None	Without Hole

IMX12 ① C ② 4 ③ HV ④ 120 ⑤ R100 ⑥ 12 ⑦ S ⑧

① Series Description Head & Holder Combination

Head Series Description	Holder Series Description
iMX 10 [ ]	iMX 10 -
iMX 12 [ ]	iMX 12 -
iMX 16 [ ]	iMX 16 -
iMX 20 [ ]	iMX 20 -
iMX 25 [ ]	iMX 25 -

Head & holder combination should be the same.

③ No. of Flutes
ex.
4 → 4 flute

⑤ Dia.
ex.
120 → 12 mm

⑤ Dia.
ex.
0500 → .5 inch

⑦ Flute Length
ex.
12 → 12.∗mm
(Truncate Decimal Places)
A45 → Chamfer Angle 45°

⑦ Flute Length (inch)
ex.
M → Medium = DC×1
P → DC×.8
(DC=External Diameter)

■HOLDER

② Hyphen
Hyphen indicates these are holders.

③ Figure	
U	Undercut
S	Straight
G	Straight Oversize
A	1° Taper Neck

⑥ Overall Length
ex.
L080 → 80 mm

⑥ Overall Length
ex.
L31 → 3.1∗ inch
(Two Digits Decimal Place Truncate)

IMX12 ① - ② U ③ 12 ④ N017 ⑤ L080 ⑥ C ⑦

① Series Description Holder & Head Combination

Holder Series Description	Head Series Description
iMX 10 -	iMX 10 [ ]
iMX 12 -	iMX 12 [ ]
iMX 16 -	iMX 16 [ ]
iMX 20 -	iMX 20 [ ]
iMX 25 -	iMX 25 [ ]

Holder & head combination should be the same.
For holder details, refer to J078-J081.

④ Shank Diameter
ex.
12 → 12 mm

④ Shank Diameter
ex.
0500 → .5 inch

⑤ Neck Length
ex.
N017 → 17.∗ mm
(Truncate Decimal Places)

⑤ Neck Length
ex.
N071 → .71∗ inch
(Three Digits Decimal Place Truncate)

⑦ Tool Material	
C	Carbide
S	Steel

■RUN-OUT ACCURACY AND HEAD EXCHANGE ACCURACY

Run-out Accuracy for the Peripheral Cutting Edge
.0006" (ø10—20 mm)
.0008" (ø25 mm)

∗ Use the carbide holder. (Except iMX-RC4F-C,iMX-R4F roughing head)

SYMBOL DESCRIPTIONS

Tool Material

Ultra Micro Grain Carbide
Ultra micro grain carbide is used as the substrate material.

Angle, Coolant thru, Sharp corner edge and Gash land

Helix Angle
Indicates the helix angle of the end mill.

End Cutting Edge with Coolant Thru

Peripheral Cutting Edge with Coolant Thru

Gash Land
Indicates the end mill cutting edge has a gash land.

Tolerances

Outside Diameter Tolerance
Indicates diameter tolerance of end mill.

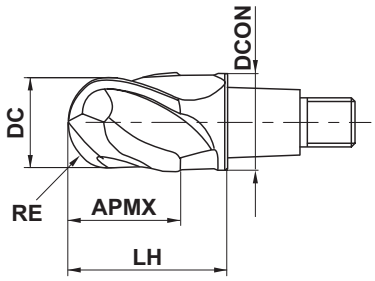
R Tolerance
Indicates the radial tolerance of a ball nose end mill.

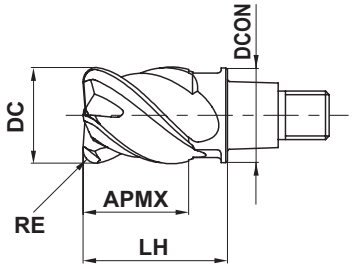
R Tolerance
Indicates the radial tolerance of an end mill with a corner radius.

Tolerance of Point Angle
Indicates the tolerance of the point angle.

Shank Diameter Tolerance
Indicates the shank diameter tolerance of end mill.

GUIDE FOR ISO13399 SYMBOLS





Symbol	Content
APMX	Depth of cut maximum
DC	Dia. (Cutting diameter)
DCON	Connection diameter
LH	Head length
RE	Corner radius

*There are exceptions other than those listed above. For more details, please refer to the technical data (page N002).

CLASSIFICATION

HEAD

Type	Applications	No. of Flutes	Product Code	Features	Shape	Coolant	Dia. DC	Head length APMX: Max. DC	Head length APMX: APMX / DC	Workpiece Material: P: Carbon Steel	P: Tool Steel	H: -55HRC	H: 55HRC-	M: Stainless Steel	S: Titanium Alloy; Heat Resistant Alloy	N: Copper Alloy	N: Aluminum Alloy	Page
SQUARE																		
	For Difficult-to-cut Material	3	iMX-S3HV	Vibration Control		External	.375"—1.000"	.800	0.8DC	◎	○			◎	◎	○		J008
							10—25 mm	20	0.8DC									
		4	iMX-S4HV	Vibration Control			.375"—1.000"	1.000	1DC	◎	○			◎	◎	○		J012 J013
							10—32 mm	33	1DC									
				Irregular helix, Long cutting edge			16, 20 mm	40	2DC									J013
		4	iMX-S4HV-S	Vibration Control		Internal	.375"—1.000"	1.000	1DC	◎	○			◎	◎	○		J014
							10—25 mm	25	1DC									
	For Aluminum Alloy	3	iMX-S3A	Uncoated		External	.375"—1.000"	.800	0.8DC								◎	J020 J021
							10—28 mm	23.4	0.8DC									
RADIUS																		
	For Difficult-to-cut Material	4	iMX-C4HV	Vibration Control		External	.375"—1.000"	1.000	1DC	◎	○			◎	◎	○		J024 J025
							10—28 mm	29	1DC									
				Irregular helix, Long cutting edge			16, 20 mm	40	2DC									J027
		4	iMX-C4HV-S	Vibration Control		Internal	.375"—1.000"	1.000	1DC	◎	○			◎	◎	○		J028 J029
							10—25 mm	25	1DC									
		6	iMX-C6HV	Irregular helix, Multi-flute		External	.375"—.500"	.520	1DC	◎	○			◎	◎			J038 J039
							10, 12 mm	12	1DC									
		6	NEW iMX-C6HV-C	Irregular helix, Multi-flute		Internal	10—25 mm	25	1DC	◎	○			◎	◎			J036
		10	iMX-C10HV	Irregular helix, Multi-flute		External	.625"	.645	1DC	◎	○			◎	◎			J038 J039
							16 mm	16	1DC									
		12	iMX-C12HV	Irregular helix, Multi-flute			.750"—1.000"	1.050	1DC	◎	○			◎	◎			
							20, 25 mm	25	1DC									
	For High Feed Machining	4	iMX-C4FD-C	Duplex Corner Radius		Internal	.375"—1.000"	.067	0.07DC	◎	◎	◎		◎	◎	○		J041 J042
							10—25 mm	1.6	0.07DC									
	For High Efficiency Machining	4	iMX-C4FV	Vibration Control		External	.375"—1.000"	1.050	1DC	◎	◎	◎						J044
							10—25 mm	26	1DC									
	For Aluminum Alloy	3	iMX-C3A	Uncoated			.375"—1.000"	.800	0.8DC								◎	J046 J047
							10—28 mm	23.4	0.8DC									

Type	Applications	No. of Flutes	Product Code	Features	Shape	Coolant	Dia. DC	Head length APMX: Max. DC	Head length APMX: APMX / DC	Workpiece Material: P: Carbon Steel	P: Tool Steel	H: -55HRC	H: 55HRC-	M: Stainless Steel	S: Titanium Alloy, Heat Resistant Alloy	N: Copper Alloy	N: Aluminum Alloy	Page
	For Blade	8	iMX-C8T-C	Taper head, Long cutting edge		Internal	8 mm	7.12	0.8DC					◎	◎			J050
		10	iMX-C10T-C	Taper head, Long cutting edge			10 mm	7.12	0.7DC					◎	◎			
		12	iMX-C12T-C	Taper head, Long cutting edge			15, 19 mm	3.56	0.2DC					◎	◎			
		15	iMX-C15T-C	Taper head, Long cutting edge			15, 19 mm	3.56	0.2DC					◎	◎			
ROUGHING																		
	For Difficult-to-cut Material	4	iMX-R4F	Square		External	.375"—1.000"	1.050	1DC	◎	○			◎	◎	○		J052 J053
							10—25 mm	26	1DC									
	For Titanium Alloys	4	NEW iMX-RC4F-C	Corner radius		Internal	10—20 mm	21	1DC	◎				◎	◎			J056
BALL																		
	For Hardened Steel	2	iMX-B2S	Finish		External	16—20 mm	20	1DC				◎					J058
		4	iMX-B4S	Finish			16—20 mm	20	1DC				◎					J059
	For High Efficiency Machining	3	iMX-B3FV	Vibration Control			10—20 mm	16	0.8DC		◎	◎						J060
	For Difficult-to-cut Material	4	iMX-B4HV	Vibration Control			.375"—1.000"	1.050	1DC	◎	○			◎	◎	○		J062 J063
							10—25 mm	26	1DC									
		4	iMX-B4HV-E	Vibration Control		Internal	.375"—1.000"	1.050	1DC	◎	○			◎	◎	○		J064 J065
							10—25 mm	26	1DC									
		6	iMX-B6HV	Vibration Control		External	.375"—1.000"	1.050	1DC	◎	○			◎	◎			J068
							10—25 mm	26	1DC									
LOLLIPOP																		
	For Difficult-to-cut Material	6	NEW iMX-B4WH-S	5-axis machining		Internal	.500"—.750"	.563	0.8DC	◎	○			◎	◎	○		J070
							12—20 mm	15	0.8DC									
CHAMFER																		
	For Chamfering	3	iMX-CH3L	Hole and Shape		External	.375"—.750"	.345	0.5DC	◎	○	○		◎	◎			J072 J073
							10—20 mm	9.2	0.5DC									
		6	iMX-CH6V	Shape, Multi-flute			.500"—.750"	.315	0.4DC	◎	○	○		◎	◎			J076
							12—20 mm	8.5	0.4DC									

CLASSIFICATION

HOLDERS

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

Figure			Length	Taper angle one side	Tool material	Page
Undercut			Medium Semi-long Long	—	Carbide	J078, 079
					Steel	J080, 081
Straight	Straight		Semi-long Long	—	Carbide	J079
	Straight Oversize		Medium	—	Steel	J080, 081
Taper neck			Long	1°	Carbide	J078, 079

CORRECTION FACTOR BY OVERHANG LENGTH (SHOULDER MILLING)

Reduce the cutting parameters by the coefficient values shown according to the length of overhang.
For long edge and oversize type heads refer to their specific recommended conditions.

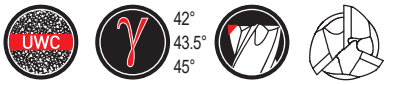
(inch)

Workpiece Material	Carbon Steel, Alloy Steel, Mild Steel, Copper, Copper Alloy			Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel			Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy		
L/D	Revolution **n** (min^{-1})	Feed per Tooth **fz** (IPT)	Width of Cut **ae**	Revolution **n** (min^{-1})	Feed per Tooth **fz** (IPT)	Width of Cut **ae**	Revolution **n** (min^{-1})	Feed per Tooth **fz** (IPT)	Width of Cut **ae**
2	100%	100%	100%	100%	100%	100%	100%	100%	100%
3	100%	100%	100%	100%	100%	100%	100%	100%	100%
4	80%	90%	70%	80%	90%	70%	80%	90%	70%
5	60%	80%	40%	60%	80%	40%	60%	80%	40%
6	50%	70%	30%	50%	70%	30%	50%	70%	30%
7	40%	70%	20%	40%	70%	20%	30%	60%	20%
8	40%	60%	10%	40%	60%	10%	30%	50%	10%
9	30%	60%	10%	30%	60%	10%	20%	50%	10%

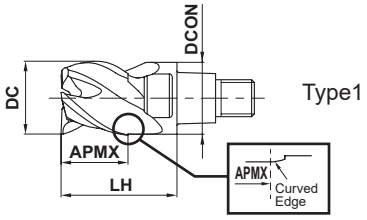
Workpiece Material	Precipitation Hardening Stainless Steel, Cobalt Chromium Alloy			Heat Resistant Alloy Inconel718		
L/D	Revolution **n** (min^{-1})	Feed per Tooth **fz** (IPT)	Width of Cut **ae**	Revolution **n** (min^{-1})	Feed per Tooth **fz** (IPT)	Width of Cut **ae**
2	100%	100%	100%	100%	100%	100%
3	100%	100%	100%	100%	100%	100%
4	80%	90%	70%	80%	90%	70%
5	60%	80%	40%	60%	80%	40%
6	50%	70%	30%	50%	70%	30%
7	30%	60%	20%	30%	60%	20%
8	30%	50%	10%	30%	50%	10%
9	20%	50%	10%	20%	50%	10%

iMX-S3HV– Inch Sizes

Square head, 3 flute, Irregular helix



Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎	○	



Type1

DC≤.500"	DC>.500"			
0 - .0008"	0 - .0012"			

●3-flute end mills suitable for shoulder milling, slot milling and plunging.
●Irregular helix controls vibration and achieves stable machining.

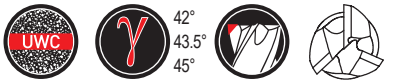
(inch)

Order Number	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10S3HV0375P	.375	.300	.630	.363	3	●	1
IMX12S3HV0500P	.500	.400	.789	.488	3	●	1
IMX16S3HV0625P	.625	.500	.945	.605	3	●	1
IMX20S3HV0750P	.750	.600	1.181	.730	3	●	1
IMX25S3HV1000P	1.000	.800	1.500	.980	3	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-S3HV

Square head, 3 flute, Irregular helix



DC≤12	DC>12			
0 - 0.020	0 - 0.030			

●3-flute end mills suitable for shoulder milling, slot milling and plunging.
●Irregular helix controls vibration and achieves stable machining.

(mm)

Order Number	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10S3HV10008	10	8	16	9.7	3	●	1
IMX12S3HV12009	12	9.6	19	11.7	3	●	1
IMX16S3HV16012	16	12.8	24	15.5	3	●	1
IMX20S3HV20016	20	16	30	19.5	3	●	1
IMX25S3HV25020	25	20	37.5	24.5	3	●	1

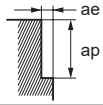
Note 1) The fastening size of the holder and head should be the same. (refer to J002)

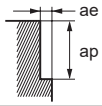
RECOMMENDED CUTTING CONDITIONS

■ Shoulder Milling (L/D=3)

Other than the L/D = 3, use following recommended cutting conditions by multiplying the J007 page correction factor by overhang length.

(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel, Copper, Copper Alloy				Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel				Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy			
DC		Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
(mm)	(inch)												
	.3750	5000	52.5	.300	.075	4000	28.8	.300	.075	3400	30.6	.300	.075
10	**.3937**	4800	50.4	.315	.079	3800	27.4	.315	.079	3200	28.8	.315	.079
12	**.4724**	4000	42.0	.378	.094	3200	25.0	.378	.094	2700	25.1	.378	.094
	.5000	3700	38.9	.400	.100	3000	23.4	.400	.100	2500	23.3	.400	.100
	.6250	3000	35.1	.500	.125	2400	21.6	.500	.125	2000	21.0	.500	.125
16	**.6299**	3000	35.1	.504	.126	2400	21.6	.504	.126	2000	21.0	.504	.126
	.7500	2500	29.3	.600	.150	2000	18.0	.600	.150	1700	17.9	.600	.150
20	**.7874**	2400	28.1	.630	.157	1900	17.1	.630	.157	1600	16.8	.630	.157
25	**.9843**	1900	26.8	.787	.197	1500	13.5	.787	.197	1300	13.7	.787	.197
	1.0000	1900	26.8	.800	.200	1500	13.5	.800	.200	1300	13.7	.800	.200
Depth of Cut													

Workpiece Material		Precipitation Hardening Stainless Steel, Cobalt Chromium Alloy				Heat Resistant Alloy Inconel718			
DC		Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
(mm)	(inch)								
	.3750	2500	18.0	.300	.075	1300	6.2	.300	.038
10	**.3937**	2400	17.3	.315	.079	1300	6.2	.315	.039
12	**.4724**	2000	15.6	.378	.094	1100	5.9	.378	.047
	.5000	1900	14.8	.400	.100	990	5.3	.400	.050
	.6250	1500	13.5	.500	.125	790	4.7	.500	.063
16	**.6299**	1500	13.5	.504	.126	790	4.7	.504	.063
	.7500	1200	10.8	.600	.150	660	4.0	.600	.075
20	**.7874**	1200	10.8	.630	.157	630	3.8	.630	.079
25	**.9843**	950	8.6	.787	.197	500	3.0	.787	.098
	1.0000	940	8.5	.800	.200	500	3.0	.800	.100
Depth of Cut									

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

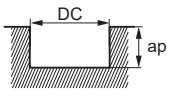
iMX-S3HV

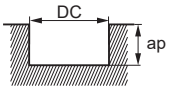
Square head, 3 flute, Irregular helix

RECOMMENDED CUTTING CONDITIONS

Slot Milling

(inch)

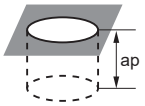
Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel, Copper, Copper Alloy			Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel			Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy		
DC (mm)	DC (inch)	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap
	.3750	3400	16.1	.188	2600	9.4	.188	2500	9.0	.188
10	.3937	3200	15.4	.197	2500	9.0	.197	2400	8.6	.197
12	.4724	2700	16.2	.236	2100	10.1	.236	2000	9.6	.236
	.5000	2500	15.0	.250	2000	9.6	.250	1900	9.1	.250
	.6250	2000	16.8	.313	1600	9.6	.313	1500	10.8	.313
16	.6299	2000	16.8	.315	1600	9.6	.315	1500	10.8	.315
	.7500	1700	14.3	.375	1300	7.8	.375	1200	8.6	.375
20	.7874	1600	13.4	.394	1300	7.8	.394	1200	8.6	.394
25	.9843	1300	12.1	.472	1000	6.0	.472	950	6.8	.472
	1.0000	1300	12.1	.480	990	5.9	.480	940	6.8	.480
Depth of Cut		 DC=Dia.								

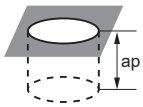
Workpiece Material		Precipitation Hardening Stainless Steel, Cobalt Chromium Alloy			Heat Resistant Alloy Inconel718		
DC (mm)	DC (inch)	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap
	.3750	2000	6.0	.188	1000	2.4	.075
10	.3937	1900	5.7	.197	970	2.3	.079
12	.4724	1600	6.7	.236	810	2.9	.094
	.5000	1500	6.3	.250	760	2.7	.100
	.6250	1200	7.2	.313	610	3.7	.125
16	.6299	1200	7.2	.315	610	3.7	.126
	.7500	990	5.9	.375	510	3.1	.150
20	.7874	950	5.7	.394	490	2.9	.157
25	.9843	760	4.6	.472	390	2.3	.197
	1.0000	740	4.4	.480	380	2.3	.200
Depth of Cut		 DC=Dia.					

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

Plunging

(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel, Copper, Copper Alloy				Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel				Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy			
DC (mm)	DC (inch)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Step Feed **ap2**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Step Feed **ap2**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Step Feed **ap2**
	.3750	3400	18.7	.188	.100	2300	8.1	.188	.080	2000	2.4	.188	.023
10	**.3937**	3200	17.6	.197	.100	2200	7.7	.197	.080	1900	2.3	.197	.023
12	**.4724**	2700	14.9	.236	.100	1900	6.7	.236	.080	1600	1.9	.236	.023
	.5000	2500	13.8	.250	.100	1800	6.3	.250	.080	1500	1.8	.250	.023
	.6250	2000	11.0	.313	.100	1400	4.9	.313	.080	1200	1.4	.313	.023
16	**.6299**	2000	11.0	.315	.100	1400	4.9	.315	.080	1200	1.4	.315	.023
	.7500	1700	9.4	.375	.100	1200	4.2	.375	.080	990	1.2	.375	.023
20	**.7874**	1600	8.8	.394	.100	1100	3.9	.394	.080	950	1.1	.394	.023
25	**.9843**	1300	7.2	.492	.100	880	3.1	.492	.080	760	.9	.492	.023
	1.0000	1300	7.2	.500	.100	880	3.1	.500	.080	740	.9	.500	.023
Depth of Cut													

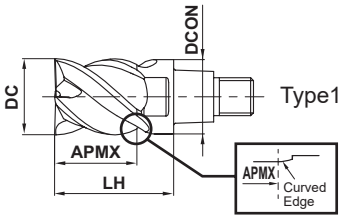
Workpiece Material		Precipitation Hardening Stainless Steel, Cobalt Chromium Alloy			
DC (mm)	DC (inch)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Step Feed **ap2**
	.3750	1300	1.6	.188	.023
10	**.3937**	1300	1.6	.197	.023
12	**.4724**	1100	1.3	.236	.023
	.5000	990	1.2	.250	.023
	.6250	790	.9	.313	.023
16	**.6299**	790	.9	.315	.023
	.7500	660	.8	.375	.023
20	**.7874**	630	.8	.394	.023
25	**.9843**	500	.6	.492	.023
	1.0000	500	.6	.500	.023
Depth of Cut					

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

iMX-S4HV– Inch Sizes

Square head, 4 flute, Irregular helix

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎	○	



DC≤.500"	DC>.500"			
0 - .0008"	0 - .0012"			

●Irregular helix controls vibration and achieves stable machining.

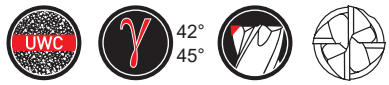
(inch)

Order Number	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10S4HV0375M	.375	.375	.630	.363	4	●	1
IMX12S4HV0500M	.500	.500	.789	.488	4	●	1
IMX16S4HV0625M	.625	.625	.945	.605	4	●	1
IMX20S4HV0750M	.750	.750	1.181	.730	4	●	1
IMX25S4HV1000M	1.000	1.000	1.500	.980	4	●	1

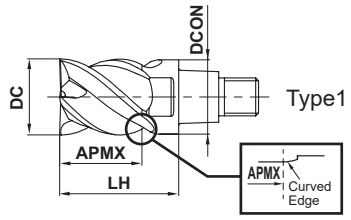
Note 1) The fastening size of the holder and head should be the same. (refer to J002)

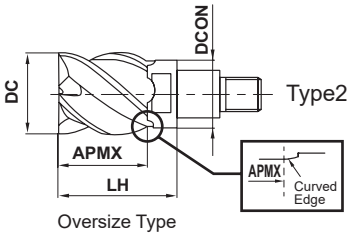
iMX-S4HV

Square head, 4 flute, Irregular helix



Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎	○	





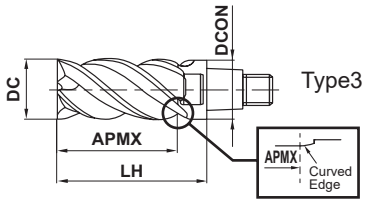
Oversize Type

DC ≤12	DC>12			
0 - 0.020	0 - 0.030			

● Irregular helix controls vibration and achieves stable machining.

(mm)

Order Number	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10S4HV10010	10	10	16	9.7	4	●	1
IMX10S4HV12012	12	12.5	19	9.7	4	●	2
IMX12S4HV12012	12	12	19	11.7	4	●	1
IMX12S4HV14014	14	14.5	22.5	11.7	4	●	2
IMX16S4HV16016	16	16	24	15.5	4	●	1
IMX16S4HV18018	18	18.5	27	15.5	4	●	2
IMX20S4HV20020	20	20	30	19.5	4	●	1
IMX20S4HV22023	22	23	33	19.5	4	●	2
IMX25S4HV25025	25	25	37.5	24.5	4	●	1
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



■ Long Cutting Edge Type

(mm)

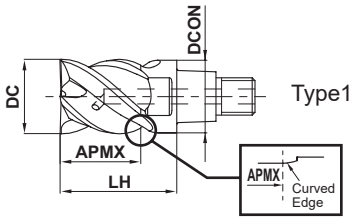
Order Number	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX16S4HV16032	16	32	40	15.5	4	●	3
IMX20S4HV20040	20	40	50	19.5	4	●	3

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-S4HV-S– Inch Sizes

Square head, 4 flute, Irregular helix, With coolant thru

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎	○	



DC≤.500"	DC>.500"			
0 - .0008"	0 - .0012"			

- Irregular helix controls vibration and achieves stable machining.
- Coolant thru for each cutting edge enables a stable coolant supply.

(inch)

Order Number	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10S4HV0375MS	.375	.375	.630	.363	4	●	1
IMX12S4HV0500MS	.500	.500	.789	.488	4	●	1
IMX16S4HV0625MS	.625	.625	.945	.605	4	●	1
IMX20S4HV0750MS	.750	.750	1.181	.730	4	●	1
IMX25S4HV1000MS	1.000	1.000	1.500	.980	4	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-S4HV-S

Square head, 4 flute, Irregular helix, With coolant thru

DC≤12	DC>12			
0 - 0.020	0 - 0.030			

- Irregular helix controls vibration and achieves stable machining.
- Coolant thru for each cutting edge enables a stable coolant supply.

(mm)

Order Number	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10S4HV10010S	10	10	16	9.7	4	●	1
IMX12S4HV12012S	12	12	19	11.7	4	●	1
IMX16S4HV16016S	16	16	24	15.5	4	●	1
IMX20S4HV20020S	20	20	30	19.5	4	●	1
IMX25S4HV25025S	25	25	37.5	24.5	4	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-S4HV/iMX-S4HV-S

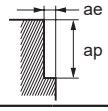
Square head, 4 flute, Irregular helix (With/Without coolant thru)

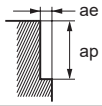
RECOMMENDED CUTTING CONDITIONS

■ Shoulder Milling (L/D=3)

Other than the L/D = 3, use following recommended cutting conditions by multiplying the J007 page correction factor by overhang length.

(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel, Copper, Copper Alloy				Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel				Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy			
DC (mm)	DC (inch)	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Width of Cut ae	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Width of Cut ae	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Width of Cut ae
	.3750	5000	70.0	.375	.075	4000	38.4	.375	.075	3400	40.8	.375	.075
10	.3937	4800	67.2	.394	.079	3800	36.5	.394	.079	3200	38.4	.394	.079
12	.4724	4000	56.0	.472	.094	3200	33.3	.472	.094	2700	33.5	.472	.094
	.5000	3700	51.8	.500	.100	3000	31.2	.500	.100	2500	31.0	.500	.100
	.6250	3000	46.8	.625	.125	2400	28.8	.625	.125	2000	28.0	.625	.125
16	.6299	3000	46.8	.630	.126	2400	28.8	.630	.126	2000	28.0	.630	.126
	.7500	2500	39.0	.750	.150	2000	24.0	.750	.150	1700	23.8	.750	.150
20	.7874	2400	37.4	.787	.157	1900	22.8	.787	.157	1600	22.4	.787	.157
25	.9843	1900	35.7	.984	.197	1500	18.0	.984	.197	1300	18.2	.984	.197
	1.0000	1900	35.7	1.000	.200	1500	18.0	1.000	.200	1300	18.2	1.000	.200
Depth of Cut													

Workpiece Material		Precipitation Hardening Stainless Steel, Cobalt Chromium Alloy				Heat Resistant Alloy Inconel718			
DC (mm)	DC (inch)	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Width of Cut ae	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Width of Cut ae
	.3750	2500	24.0	.375	.075	1300	8.3	.375	.038
10	.3937	2400	23.0	.394	.079	1300	8.3	.394	.039
12	.4724	2000	20.8	.472	.094	1100	7.9	.472	.047
	.5000	1900	19.8	.500	.100	990	7.1	.500	.050
	.6250	1500	18.0	.625	.125	790	6.3	.625	.063
16	.6299	1500	18.0	.630	.126	790	6.3	.630	.063
	.7500	1200	14.4	.750	.150	660	5.3	.750	.075
20	.7874	1200	14.4	.787	.157	630	5.0	.787	.079
25	.9843	950	11.4	.984	.197	500	4.1	.984	.098
	1.0000	940	11.3	1.000	.200	500	4.0	1.000	.100
Depth of Cut									

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

iMX-S4HV/iMX-S4HV-S

Square head, 4 flute, Irregular helix (With/Without coolant thru)

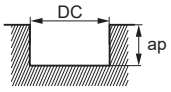
RECOMMENDED CUTTING CONDITIONS

■ Slot Milling

(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel, Copper, Copper Alloy			Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel			Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy		
DC (mm)	DC (inch)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**
	.3750	3400	21.4	.188	2600	12.5	.188	2500	12.0	.188
10	.3937	3200	20.5	.197	2500	12.0	.197	2400	11.5	.197
12	.4724	2700	21.6	.236	2100	13.4	.236	2000	12.8	.236
	.5000	2500	20.0	.250	2000	12.8	.250	1900	12.2	.250
	.6250	2000	22.4	.313	1600	12.8	.313	1500	14.4	.313
16	.6299	2000	22.4	.315	1600	12.8	.315	1500	14.4	.315
	.7500	1700	19.0	.375	1300	10.4	.375	1200	11.5	.375
20	.7874	1600	17.9	.394	1300	10.4	.394	1200	11.5	.394
25	.9843	1300	16.1	.472	1000	8.0	.472	950	9.1	.472
	1.0000	1300	16.1	.480	990	7.9	.480	940	9.0	.480

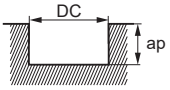
Depth of Cut



DC=Dia.

Workpiece Material		Precipitation Hardening Stainless Steel, Cobalt Chromium Alloy			Heat Resistant Alloy Inconel718		
DC (mm)	DC (inch)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**
	.3750	2000	8.0	.188	1000	3.2	.075
10	.3937	1900	7.6	.197	970	3.1	.079
12	.4724	1600	9.0	.236	810	3.9	.094
	.5000	1500	8.4	.250	760	3.6	.100
	.6250	1200	9.6	.313	610	4.9	.125
16	.6299	1200	9.6	.315	610	4.9	.126
	.7500	1000	7.9	.375	510	4.1	.150
20	.7874	950	7.6	.394	490	3.9	.157
25	.9843	760	6.1	.472	390	3.1	.197
	1.0000	740	5.9	.480	380	3.0	.200

Depth of Cut



DC=Dia.

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

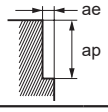
iMX-S4HV

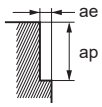
Square head, 4 flute, Irregular helix, Long cutting edge type

RECOMMENDED CUTTING CONDITIONS

■ Shoulder Milling

(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel, Copper, Copper Alloy				Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel				Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy			
L/D	DC (mm)	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
4	**16**	2000	28.0	1.260	.031	1600	17.9	1.260	.031	1200	14.9	1.260	.031
	20	1600	22.4	1.575	.039	1300	14.6	1.575	.039	950	11.8	1.575	.039
6	**16**	1200	13.4	1.260	.031	990	8.0	1.260	.031	790	7.6	1.260	.031
	20	950	10.6	1.575	.039	800	6.4	1.575	.039	630	6.0	1.575	.039
Depth of Cut													

Workpiece Material		Precipitation Hardening Stainless Steel, Cobalt Chromium Alloy				Heat Resistant Alloy Inconel718			
L/D	DC (mm)	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
4	**16**	1000	11.2	1.260	.031	610	4.9	1.260	.016
	20	800	9.0	1.575	.039	490	3.9	1.575	.020
6	**16**	610	4.9	1.260	.031	390	2.5	1.260	.016
	20	490	3.9	1.575	.039	320	2.0	1.575	.020
Depth of Cut									

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) L/D will be +1 when using a long cutting edge type head.
Note 4) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

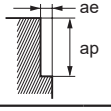
iMX-S4HV

Square head, 4 flute, Irregular helix, Oversize type head

RECOMMENDED CUTTING CONDITIONS

Shoulder Milling

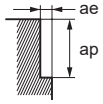
(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel, Copper, Copper Alloy				Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel				Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy			
L/D	DC (mm)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
3	**12**	4000	56.0	.472	.047	3200	30.7	.472	.047	2700	32.4	.472	.047
	14	3400	47.6	.551	.055	2700	28.1	.551	.055	2300	28.5	.551	.055
	18	2600	40.6	.709	.071	2100	25.2	.709	.071	1800	25.2	.709	.071
	22	2200	34.3	.866	.087	1700	20.4	.866	.087	1500	21.0	.866	.087
	28	1700	32.0	1.102	.110	1400	16.8	1.102	.110	1100	15.4	1.102	.110
	30	1600	30.1	1.181	.118	1300	15.6	1.181	.118	1100	15.4	1.181	.118
	32	1500	28.2	1.260	.126	1200	14.4	1.260	.126	1000	14.0	1.260	.126
5	**12**	2400	26.9	.472	.020	1900	15.2	.472	.020	1600	15.4	.472	.020
	14	2000	22.4	.551	.024	1600	12.8	.551	.024	1400	13.4	.551	.024
	18	1600	19.8	.709	.028	1200	11.5	.709	.028	1100	12.3	.709	.028
	22	1300	16.1	.866	.035	1000	9.6	.866	.035	860	9.6	.866	.035
	28	1000	15.6	1.102	.043	800	7.7	1.102	.043	680	7.6	1.102	.043
	30	950	14.8	1.181	.047	740	7.1	1.181	.047	630	7.1	1.181	.047
	32	890	13.9	1.260	.051	700	6.7	1.260	.051	590	6.6	1.260	.051
7	**12**	1600	15.4	.472	.008	1300	8.3	.472	.008	850	6.8	.472	.008
	14	1400	13.4	.551	.012	1100	8.8	.551	.012	730	7.0	.551	.012
	18	1100	12.3	.709	.016	890	7.1	.709	.016	570	5.5	.709	.016
	22	860	9.6	.866	.016	730	5.8	.866	.016	460	4.4	.866	.016
	28	680	8.4	1.102	.024	570	4.6	1.102	.024	360	3.5	1.102	.024
	30	630	7.8	1.181	.024	530	4.2	1.181	.024	340	3.3	1.181	.024
	32	590	7.3	1.260	.024	500	4.0	1.260	.024	320	3.1	1.260	.024
Depth of Cut													

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

■ Shoulder Milling

(inch)

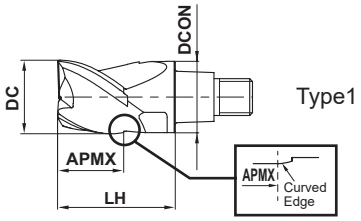
Workpiece Material		Precipitation Hardening Stainless Steel, Cobalt Chromium Alloy				Heat Resistant Alloy Inconel718			
L/D	**DC** (mm)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
3	**12**	2000	19.2	.472	.047	810	5.2	.472	.035
	14	1700	17.7	.551	.055	690	5.0	.551	.043
	18	1300	15.6	.709	.071	700	5.6	.709	.055
	22	1100	13.2	.866	.087	570	4.6	.866	.067
	28	850	10.2	1.102	.110	450	3.6	1.102	.083
	30	790	9.5	1.181	.118	420	3.4	1.181	.091
	32	740	8.9	1.260	.126	390	3.1	1.260	.094
5	**12**	1300	10.4	.472	.020	280	1.3	.472	.016
	14	1100	8.8	.551	.024	240	1.5	.551	.016
	18	890	8.5	.709	.028	320	2.0	.709	.024
	22	730	7.0	.866	.035	260	1.7	.866	.028
	28	570	5.5	1.102	.043	210	1.3	1.102	.031
	30	530	5.1	1.181	.047	190	1.2	1.181	.035
	32	500	4.8	1.260	.051	180	1.2	1.260	.039
7	**12**	650	4.2	.472	.008	–	–	–	–
	14	550	4.4	.551	.012	–	–	–	–
	18	430	3.4	.709	.016	–	–	–	–
	22	350	2.8	.866	.016	–	–	–	–
	28	280	2.2	1.102	.024	–	–	–	–
	30	260	2.1	1.181	.024	–	–	–	–
	32	240	1.9	1.260	.024	–	–	–	–
Depth of Cut									

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

iMX-S3A– Inch Sizes

Square head, 3 flute, For aluminum alloy

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
							◎



DC≤.500"	DC>.500"			
0 - .0008"	0 - .0012"			

● High efficiency machining is possible due to the polished rake face and sharp cutting edge.

(inch)

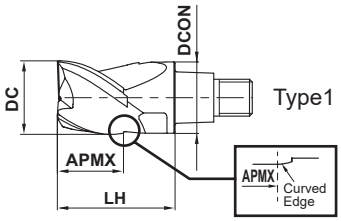
Order Number	DC	APMX	LH	DCON	No. of Flutes	Grade ET2020	Type
IMX10S3A0375P	.375	.300	.630	.363	3	●	1
IMX12S3A0500P	.500	.400	.789	.488	3	●	1
IMX16S3A0625P	.625	.500	.945	.605	3	●	1
IMX20S3A0750P	.750	.600	1.181	.730	3	●	1
IMX25S3A1000P	1.000	.800	1.500	.980	3	●	1

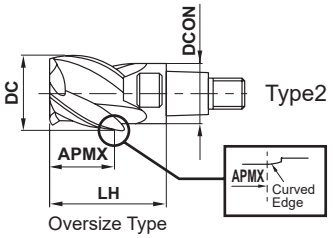
Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-S3A

Square head, 3 flute, For aluminum alloy

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
							◎





Oversize Type

DC ≤12	DC>12			
0 - 0.020	0 - 0.030			

● High efficiency machining is possible due to the polished rake face and sharp cutting edge.

(mm)

Order Number	DC	APMX	LH	DCON	No. of Flutes	Grade ET2020	Type
IMX10S3A10008	10	8	16	9.7	3	●	1
IMX10S3A12010	12	10.1	19	9.7	3	●	2
IMX12S3A12009	12	9.6	19	11.7	3	●	1
IMX12S3A14011	14	11.7	22.5	11.7	3	●	2
IMX16S3A16012	16	12.8	24	15.5	3	●	1
IMX16S3A18014	18	14.9	27	15.5	3	●	2
IMX20S3A20016	20	16	30	19.5	3	●	1
IMX20S3A22018	22	18.6	33	19.5	3	●	2
IMX25S3A25020	25	20	37.5	24.5	3	●	1
IMX25S3A28023	28	23.4	41.5	24.5	3	●	2

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-S3A

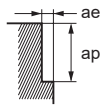
Square head, 3 flute, For aluminum alloy

RECOMMENDED CUTTING CONDITIONS

Other than the L/D = 3, use following recommended cutting conditions by multiplying the J007 page correction factor by overhang length.

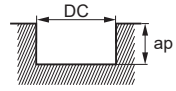
Shoulder Milling (L/D=3)

(inch)

Workpiece Material		Aluminum Alloy			
DC (mm)	DC (inch)	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Width of Cut ae
	.3750	17000	234.6	.300	.113
10	.3937	16000	220.8	.315	.118
12	.4724	13000	179.4	.378	.142
	.5000	13000	179.4	.400	.150
	.6250	10000	180.0	.500	.188
16	.6299	9900	178.2	.504	.189
	.7500	8400	173.9	.600	.225
20	.7874	8000	165.6	.630	.236
25	.9843	6400	159.4	.787	.295
	1.0000	6300	156.9	.800	.300
Depth of Cut					

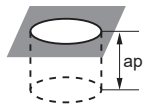
Slot Milling (L/D=3)

(inch)

Workpiece Material		Aluminum Alloy		
DC (mm)	DC (inch)	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap
	.3750	17000	137.7	.188
10	.3937	16000	129.6	.197
12	.4724	13000	109.2	.236
	.5000	13000	109.2	.250
	.6250	10000	111.0	.313
16	.6299	9900	109.9	.315
	.7500	8400	108.4	.375
20	.7874	8000	103.2	.394
25	.9843	6400	96.0	.492
	1.0000	6300	94.5	.500
Depth of Cut		 DC=Dia.		

Plunging (L/D=3)

(inch)

Workpiece Material		Aluminum Alloy			
DC (mm)	DC (inch)	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Step Feed ap2
	.3750	10000	39.0	.188	.10
10	.3937	9600	37.4	.197	.10
12	.4724	8000	31.2	.236	.10
	.5000	7500	29.3	.250	.10
	.6250	6000	23.4	.313	.10
16	.6299	6000	23.4	.315	.10
	.7500	5000	19.5	.375	.10
20	.7874	4800	18.7	.394	.10
25	.9843	3800	14.8	.492	.10
	1.0000	3800	14.8	.500	.10
Depth of Cut					

Note 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.
Note 2) The use of water-soluble coolant is effective.

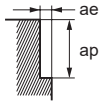
iMX-S3A

Square head, 3 flute, For aluminum alloy, Oversize type head

RECOMMENDED CUTTING CONDITIONS

Shoulder Milling

(inch)

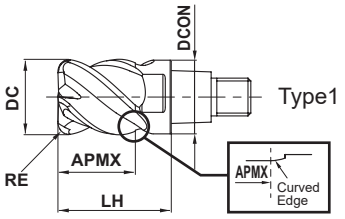
Workpiece Material			Aluminum Alloy			
L/D	DC (mm)	DC (inch)	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
3	**12**	**.4720**	13000	181.1	.378	.094
	14	**.5510**	11000	153.5	.441	.110
	18	**.7090**	8800	157.5	.567	.142
	22	**.8660**	7200	149.6	.693	.173
	28	**1.1020**	5700	141.7	.882	.220
5	**12**	**.4720**	8000	86.6	.378	.039
	14	**.5510**	6800	70.9	.441	.043
	18	**.7090**	5300	74.8	.567	.055
	22	**.8660**	4300	70.9	.693	.071
	28	**1.1020**	3400	66.9	.882	.087
7	**12**	**.4720**	5300	51.2	.378	.020
	14	**.5510**	4500	43.3	.441	.024
	18	**.7090**	3500	47.2	.567	.028
	22	**.8660**	2900	39.4	.693	.035
	28	**1.1020**	2300	39.4	.882	.043
Depth of Cut						

Note 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.
Note 2) The use of water-soluble coolant is effective.

iMX-C4HV – Inch Sizes

Corner radius head, 4 flute, Irregular helix

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎	○	



±.0008"				
DC≤.500"	DC>.500"			
0 - .0008"	0 - .0012"			

● Irregular helix controls vibration and achieves stable machining.

(inch)

Order Number	DC	RE	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10C4HV0375R015M	.375	.015	.375	.630	.363	4	●	1
IMX10C4HV0375R030M	.375	.030	.375	.630	.363	4	●	1
IMX10C4HV0375R060M	.375	.060	.375	.630	.363	4	●	1
IMX12C4HV0500R015M	.500	.015	.500	.789	.488	4	●	1
IMX12C4HV0500R030M	.500	.030	.500	.789	.488	4	●	1
IMX12C4HV0500R060M	.500	.060	.500	.789	.488	4	●	1
IMX16C4HV0625R015M	.625	.015	.625	.945	.605	4	●	1
IMX16C4HV0625R030M	.625	.030	.625	.945	.605	4	●	1
IMX16C4HV0625R060M	.625	.060	.625	.945	.605	4	●	1
IMX20C4HV0750R030M	.750	.030	.750	1.181	.730	4	●	1
IMX20C4HV0750R060M	.750	.060	.750	1.181	.730	4	●	1
IMX20C4HV0750R125M	.750	.125	.750	1.181	.730	4	●	1
IMX20C4HV0750R190M	.750	.190	.750	1.181	.730	4	●	1
IMX20C4HV0750R250M	.750	.250	.750	1.181	.730	4	●	1
IMX25C4HV1000R030M	1.000	.030	1.000	1.500	.980	4	●	1
IMX25C4HV1000R060M	1.000	.060	1.000	1.500	.980	4	●	1
IMX25C4HV1000R125M	1.000	.125	1.000	1.500	.980	4	●	1
IMX25C4HV1000R190M	1.000	.190	1.000	1.500	.980	4	●	1
IMX25C4HV1000R250M	1.000	.250	1.000	1.500	.980	4	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

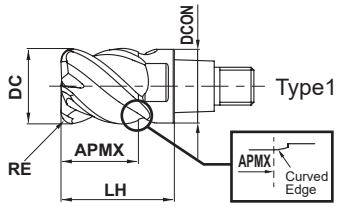
iMX-C4HV

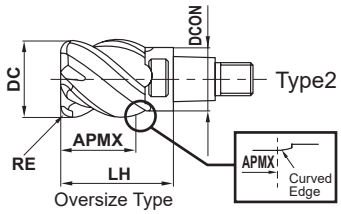
Corner radius head, 4 flute, Irregular helix

UWC

42°
45°

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel,Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎	○	





Oversize Type

±0.020				
DC ≤12	DC>12			
0 - 0.020	0 - 0.030			

● Irregular helix controls vibration and achieves stable machining.

(mm)

Order Number	DC	RE	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10C4HV100R03010	10	0.3	10	16	9.7	4	●	1
IMX10C4HV100R05010	10	0.5	10	16	9.7	4	●	1
IMX10C4HV100R10010	10	1	10	16	9.7	4	●	1
IMX10C4HV100R15010	10	1.5	10	16	9.7	4	●	1
IMX10C4HV100R20010	10	2	10	16	9.7	4	●	1
IMX10C4HV100R25010	10	2.5	10	16	9.7	4	●	1
IMX10C4HV100R30010	10	3	10	16	9.7	4	●	1
IMX10C4HV110R05011	11	0.5	11.5	18	9.7	4	●	2
IMX10C4HV110R10011	11	1	11.5	18	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	●	1
IMX12C4HV120R05012	12	0.5	12	19	11.7	4	●	1
IMX12C4HV120R10012	12	1	12	19	11.7	4	●	1
IMX12C4HV120R15012	12	1.5	12	19	11.7	4	●	1
IMX12C4HV120R20012	12	2	12	19	11.7	4	●	1
IMX12C4HV120R25012	12	2.5	12	19	11.7	4	●	1
IMX12C4HV120R30012	12	3	12	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
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

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

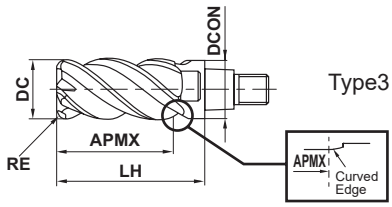
iMX-C4HV

Corner radius head, 4 flute, Irregular helix

(mm)

Order Number	DC	RE	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX16C4HV160R03016	16	0.3	16	24	15.5	4	●	1
IMX16C4HV160R05016	16	0.5	16	24	15.5	4	●	1
IMX16C4HV160R10016	16	1	16	24	15.5	4	●	1
IMX16C4HV160R15016	16	1.5	16	24	15.5	4	●	1
IMX16C4HV160R20016	16	2	16	24	15.5	4	●	1
IMX16C4HV160R25016	16	2.5	16	24	15.5	4	●	1
IMX16C4HV160R30016	16	3	16	24	15.5	4	●	1
IMX16C4HV160R40016	16	4	16	24	15.5	4	●	1
IMX16C4HV160R50016	16	5	16	24	15.5	4	●	1
IMX16C4HV170R05017	17	0.5	17	26	15.5	4	●	2
IMX16C4HV170R10017	17	1	17	26	15.5	4	●	2
IMX16C4HV180R03018	18	0.3	18	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	●	1
IMX20C4HV200R05020	20	0.5	20	30	19.5	4	●	1
IMX20C4HV200R10020	20	1	20	30	19.5	4	●	1
IMX20C4HV200R15020	20	1.5	20	30	19.5	4	●	1
IMX20C4HV200R20020	20	2	20	30	19.5	4	●	1
IMX20C4HV200R25020	20	2.5	20	30	19.5	4	●	1
IMX20C4HV200R30020	20	3	20	30	19.5	4	●	1
IMX20C4HV200R40020	20	4	20	30	19.5	4	●	1
IMX20C4HV200R50020	20	5	20	30	19.5	4	●	1
IMX20C4HV200R60020	20	6	20	30	19.5	4	●	1
IMX20C4HV200R63520	20	6.35	20	30	19.5	4	●	1
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	●	1
IMX25C4HV250R20025	25	2	25	37.5	24.5	4	●	1
IMX25C4HV250R30025	25	3	25	37.5	24.5	4	●	1
IMX25C4HV250R40025	25	4	25	37.5	24.5	4	●	1
IMX25C4HV250R50025	25	5	25	37.5	24.5	4	●	1
IMX25C4HV250R60025	25	6	25	37.5	24.5	4	●	1
IMX25C4HV250R63525	25	6.35	25	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

Note 1) The fastening size of the holder and head should be the same. (refer to J002)



Type3

■ Long Cutting Edge Type

(mm)

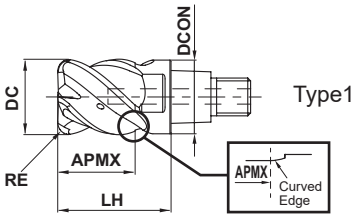
Order Number	DC	RE	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX16C4HV160R10032	16	1	32	40	15.5	4	●	3
IMX16C4HV160R30032	16	3	32	40	15.5	4	●	3
IMX20C4HV200R10040	20	1	40	50	19.5	4	●	3
IMX20C4HV200R30040	20	3	40	50	19.5	4	●	3

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-C4HV-S – Inch Sizes

Corner radius head, 4 flute, Irregular helix, With coolant thru

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎	○	



±.0008"				
DC≤.500"	DC>.500"			
0 - .0008"	0 - .0012"			

- Irregular helix controls vibration and achieves stable machining.
- Coolant thru for each cutting edge enables a stable coolant supply.

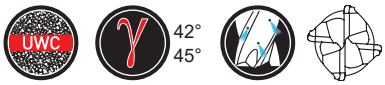
(inch)

Order Number	DC	RE	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10C4HV0375R030MS	.375	.030	.375	.630	.363	4	●	1
IMX12C4HV0500R030MS	.500	.030	.500	.789	.488	4	●	1
IMX16C4HV0625R030MS	.625	.030	.625	.945	.605	4	●	1
IMX20C4HV0750R030MS	.750	.030	.750	1.181	.730	4	●	1
IMX25C4HV1000R030MS	1.000	.030	1.000	1.500	.980	4	●	1

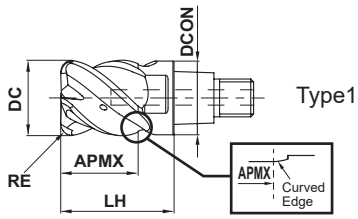
Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-C4HV-S

Corner radius head, 4 flute, Irregular helix, With coolant thru



Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎	○	



±0.020				
DC≤12	DC>12			
0 - 0.020	0 - 0.030			

- Coolant thru for each cutting edge enables a stable coolant supply.
- Irregular helix controls vibration and achieves stable machining.

(mm)

Order Number	DC	RE	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10C4HV100R03010S	10	0.3	10	16	9.7	4	●	1
IMX10C4HV100R05010S	10	0.5	10	16	9.7	4	●	1
IMX10C4HV100R10010S	10	1	10	16	9.7	4	●	1
IMX10C4HV100R15010S	10	1.5	10	16	9.7	4	●	1
IMX10C4HV100R20010S	10	2	10	16	9.7	4	●	1
IMX10C4HV100R30010S	10	3	10	16	9.7	4	●	1
IMX12C4HV120R03012S	12	0.3	12	19	11.7	4	●	1
IMX12C4HV120R05012S	12	0.5	12	19	11.7	4	●	1
IMX12C4HV120R10012S	12	1	12	19	11.7	4	●	1
IMX12C4HV120R15012S	12	1.5	12	19	11.7	4	●	1
IMX12C4HV120R20012S	12	2	12	19	11.7	4	●	1
IMX12C4HV120R30012S	12	3	12	19	11.7	4	●	1
IMX12C4HV120R40012S	12	4	12	19	11.7	4	●	1
IMX16C4HV160R05016S	16	0.5	16	24	15.5	4	●	1
IMX16C4HV160R10016S	16	1	16	24	15.5	4	●	1
IMX16C4HV160R15016S	16	1.5	16	24	15.5	4	●	1
IMX16C4HV160R20016S	16	2	16	24	15.5	4	●	1
IMX16C4HV160R30016S	16	3	16	24	15.5	4	●	1
IMX16C4HV160R40016S	16	4	16	24	15.5	4	●	1
IMX20C4HV200R05020S	20	0.5	20	30	19.5	4	●	1
IMX20C4HV200R10020S	20	1	20	30	19.5	4	●	1
IMX20C4HV200R15020S	20	1.5	20	30	19.5	4	●	1
IMX20C4HV200R20020S	20	2	20	30	19.5	4	●	1
IMX20C4HV200R30020S	20	3	20	30	19.5	4	●	1
IMX20C4HV200R40020S	20	4	20	30	19.5	4	●	1
IMX20C4HV200R60020S	20	6	20	30	19.5	4	●	1
IMX20C4HV200R63520S	20	6.35	20	30	19.5	4	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-C4HV-S

Corner radius head, 4 flute, Irregular helix, With coolant thru

(mm)

Order Number	DC	RE	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX25C4HV250R10025S	25	1	25	37.5	24.5	4	●	1
IMX25C4HV250R15025S	25	1.5	25	37.5	24.5	4	●	1
IMX25C4HV250R20025S	25	2	25	37.5	24.5	4	●	1
IMX25C4HV250R30025S	25	3	25	37.5	24.5	4	●	1
IMX25C4HV250R40025S	25	4	25	37.5	24.5	4	●	1
IMX25C4HV250R60025S	25	6	25	37.5	24.5	4	●	1
IMX25C4HV250R63525S	25	6.35	25	37.5	24.5	4	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-C4HV/iMX-C4HV-S

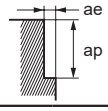
Corner radius head, 4 flute, Irregular helix (With/Without coolant thru)

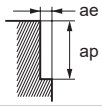
RECOMMENDED CUTTING CONDITIONS

■ Shoulder Milling (L/D=3)

Other than the L/D = 3, use following recommended cutting conditions by multiplying the J007 page correction factor by overhang length.

(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel, Copper, Copper Alloy				Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel				Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy			
DC		Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Width of Cut ae	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Width of Cut ae	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Width of Cut ae
(mm)	(inch)												
	.3750	5000	70.0	.375	.075	4000	38.4	.375	.075	3400	40.8	.375	.075
10	.3937	4800	67.2	.394	.079	3800	36.5	.394	.079	3200	38.4	.394	.079
12	.4724	4000	56.0	.472	.094	3200	33.3	.472	.094	2700	33.5	.472	.094
	.5000	3700	51.8	.500	.100	3000	31.2	.500	.100	2500	31.0	.500	.100
	.6250	3000	46.8	.625	.125	2400	28.8	.625	.125	2000	28.0	.625	.125
16	.6299	3000	46.8	.630	.126	2400	28.8	.630	.126	2000	28.0	.630	.126
	.7500	2500	39.0	.750	.150	2000	24.0	.750	.150	1700	23.8	.750	.150
20	.7874	2400	37.4	.787	.157	1900	22.8	.787	.157	1600	22.4	.787	.157
25	.9843	1900	35.7	.984	.197	1500	18.0	.984	.197	1300	18.2	.984	.197
	1.0000	1900	35.7	1.000	.200	1500	18.0	1.000	.200	1300	18.2	1.000	.200
Depth of Cut													

Workpiece Material		Precipitation Hardening Stainless Steel, Cobalt Chromium Alloy				Heat Resistant Alloy Inconel718			
DC		Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Width of Cut ae	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Width of Cut ae
(mm)	(inch)								
	.3750	2500	24.0	.375	.075	1300	8.3	.375	.038
10	.3937	2400	23.0	.394	.079	1300	8.3	.394	.039
12	.4724	2000	20.8	.472	.094	1100	7.9	.472	.047
	.5000	1900	19.8	.500	.100	990	7.1	.500	.050
	.6250	1500	18.0	.625	.125	790	6.3	.625	.063
16	.6299	1500	18.0	.630	.126	790	6.3	.630	.063
	.7500	1200	14.4	.750	.150	660	5.3	.750	.075
20	.7874	1200	14.4	.787	.157	630	5.0	.787	.079
25	.9843	950	11.4	.984	.197	500	4.1	.984	.098
	1.0000	940	11.3	1.000	.200	500	4.0	1.000	.100
Depth of Cut									

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

iMX-C4HV/iMX-C4HV-S

Corner radius head, 4 flute, Irregular helix (With/Without coolant thru)

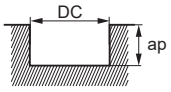
RECOMMENDED CUTTING CONDITIONS

Slot Milling

(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel, Copper, Copper Alloy			Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel			Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy		
DC (mm)	DC (inch)	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap
	.3750	3400	21.4	.188	2600	12.5	.188	2500	12.0	.188
10	.3937	3200	20.5	.197	2500	12.0	.197	2400	11.5	.197
12	.4724	2700	21.6	.236	2100	13.4	.236	2000	12.8	.236
	.5000	2500	20.0	.250	2000	12.8	.250	1900	12.2	.250
	.6250	2000	22.4	.313	1600	12.8	.313	1500	14.4	.313
16	.6299	2000	22.4	.315	1600	12.8	.315	1500	14.4	.315
	.7500	1700	19.0	.375	1300	10.4	.375	1200	11.5	.375
20	.7874	1600	17.9	.394	1300	10.4	.394	1200	11.5	.394
25	.9843	1300	16.1	.472	1000	8.0	.472	950	9.1	.472
	1.0000	1300	16.1	.480	990	7.9	.480	940	9.0	.480

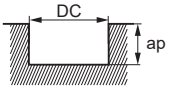
Depth of Cut



DC=Dia.

Workpiece Material		Precipitation Hardening Stainless Steel, Cobalt Chromium Alloy			Heat Resistant Alloy Inconel718		
DC (mm)	DC (inch)	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap
	.3750	2000	8.0	.188	1000	3.2	.075
10	.3937	1900	7.6	.197	970	3.1	.079
12	.4724	1600	9.0	.236	810	3.9	.094
	.5000	1500	8.4	.250	760	3.6	.100
	.6250	1200	9.6	.313	610	4.9	.125
16	.6299	1200	9.6	.315	610	4.9	.126
	.7500	1000	7.9	.375	510	4.1	.150
20	.7874	950	7.6	.394	490	3.9	.157
25	.9843	760	6.1	.472	390	3.1	.197
	1.0000	740	5.9	.480	380	3.0	.200

Depth of Cut



DC=Dia.

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

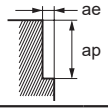
iMX-C4HV

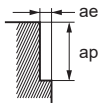
Corner radius head, 4 flute, Irregular helix, Long cutting edge type

RECOMMENDED CUTTING CONDITIONS

■ Shoulder Milling

(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel, Copper, Copper Alloy				Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel				Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy			
L/D	DC (mm)	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
4	16	2000	28.0	1.260	.031	1600	17.9	1.260	.031	1200	14.9	1.260	.031
	20	1600	22.4	1.575	.039	1300	14.6	1.575	.039	950	11.8	1.575	.039
6	16	1200	13.4	1.260	.031	990	8.0	1.260	.031	790	7.6	1.260	.031
	20	950	10.6	1.575	.039	800	6.4	1.575	.039	630	6.0	1.575	.039
Depth of Cut													

Workpiece Material		Precipitation Hardening Stainless Steel, Cobalt Chromium Alloy				Heat Resistant Alloy Inconel718			
L/D	DC (mm)	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
4	16	1000	11.2	1.260	.031	610	4.9	1.260	.016
	20	800	9.0	1.575	.039	490	3.9	1.575	.020
6	16	610	4.9	1.260	.031	390	2.5	1.260	.016
	20	490	3.9	1.575	.039	320	2.0	1.575	.020
Depth of Cut									

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) L/D will be +1 when using a long cutting edge type head.
Note 4) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

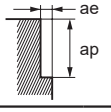
iMX-C4HV

Corner radius head, 4 flute, Irregular helix, Oversize type head

RECOMMENDED CUTTING CONDITIONS

Shoulder Milling

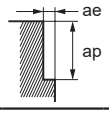
(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel, Copper, Copper Alloy				Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel				Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy			
L/D	DC (mm)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
3	**11**	4300	60.2	.433	.043	3500	33.6	.433	.043	2900	34.8	.433	.043
	12	4000	56.0	.472	.047	3200	30.7	.472	.047	2700	32.4	.472	.047
	13	3700	51.8	.512	.051	2900	30.2	.512	.051	2500	31.0	.512	.051
	14	3400	47.6	.551	.055	2700	28.1	.551	.055	2300	28.5	.551	.055
	17	2800	43.7	.669	.067	2300	27.6	.669	.067	1900	23.6	.669	.067
	18	2600	40.6	.709	.071	2100	25.2	.709	.071	1800	25.2	.709	.071
	22	2200	34.3	.866	.087	1700	20.4	.866	.087	1500	21.0	.866	.087
	28	1700	32.0	1.102	.110	1400	16.8	1.102	.110	1100	15.4	1.102	.110
5	**11**	2600	29.1	.433	.016	2000	16.0	.433	.016	1700	16.3	.433	.016
	12	2400	26.9	.472	.020	1900	15.2	.472	.020	1600	15.4	.472	.020
	13	2200	24.6	.512	.020	1700	13.6	.512	.020	1500	14.4	.512	.020
	14	2000	22.4	.551	.024	1600	12.8	.551	.024	1400	13.4	.551	.024
	17	1700	21.1	.669	.028	1300	12.5	.669	.028	1100	12.3	.669	.028
	18	1600	19.8	.709	.028	1200	11.5	.709	.028	1100	12.3	.709	.028
	22	1300	16.1	.866	.035	1000	9.6	.866	.035	860	9.6	.866	.035
	28	1000	15.6	1.102	.043	800	7.7	1.102	.043	680	7.6	1.102	.043
7	**11**	1700	16.3	.433	.008	1500	9.6	.433	.008	930	7.4	.433	.008
	12	1600	15.4	.472	.008	1300	8.3	.472	.008	850	6.8	.472	.008
	13	1500	14.4	.512	.012	1200	9.6	.512	.012	780	7.5	.512	.012
	14	1400	13.4	.551	.012	1100	8.8	.551	.012	730	7.0	.551	.012
	17	1100	12.3	.669	.012	940	7.5	.669	.012	600	5.8	.669	.012
	18	1100	12.3	.709	.016	890	7.1	.709	.016	570	5.5	.709	.016
	22	860	9.6	.866	.016	730	5.8	.866	.016	460	4.4	.866	.016
	28	680	8.4	1.102	.024	570	4.6	1.102	.024	360	3.5	1.102	.024
Depth of Cut													

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

Shoulder Milling

(inch)

Workpiece Material		Precipitation Hardening Stainless Steel, Cobalt Chromium Alloy				Heat Resistant Alloy Inconel718			
L/D	DC (mm)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
3	**11**	2200	21.1	.433	.043	880	5.6	.433	.032
	12	2000	19.2	.472	.047	810	5.2	.472	.035
	13	1800	18.7	.512	.051	750	5.4	.512	.039
	14	1700	17.7	.551	.055	690	5.0	.551	.043
	17	1400	14.6	.669	.067	740	5.3	.669	.051
	18	1300	15.6	.709	.071	700	5.6	.709	.055
	22	1100	13.2	.866	.087	570	4.6	.866	.067
	28	850	10.2	1.102	.110	450	3.6	1.102	.083
5	**11**	1500	12.0	.433	.016	310	1.5	.433	.012
	12	1300	10.4	.472	.020	280	1.3	.472	.016
	13	1200	9.6	.512	.020	260	1.7	.512	.016
	14	1100	8.8	.551	.024	240	1.5	.551	.016
	17	940	9.0	.669	.028	340	2.2	.669	.020
	18	890	8.5	.709	.028	320	2.0	.709	.024
	22	730	7.0	.866	.035	260	1.7	.866	.028
	28	570	5.5	1.102	.043	210	1.3	1.102	.031
7	**11**	710	4.5	.433	.008	–	–	–	–
	12	650	4.2	.472	.008	–	–	–	–
	13	600	4.8	.512	.012	–	–	–	–
	14	550	4.4	.551	.012	–	–	–	–
	17	460	3.7	.669	.012	–	–	–	–
	18	430	3.4	.709	.016	–	–	–	–
	22	350	2.8	.866	.016	–	–	–	–
	28	280	2.2	1.102	.024	–	–	–	–
Depth of Cut									

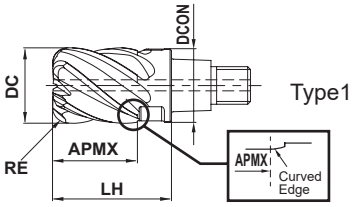
Note 1) The irregular helix flute end mill has a larger effect on controlling vibration when compared to standard end mills. However, if the rigidity of the machine or the workpiece material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the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

iMX-C6HV-C NEW

Corner radius head, 6 flute, Irregular helix, with coolant thru

36°
40°

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-Hardened Steel,Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎		



Type1

RE≤3				
±0.020				
DC=10	12≤DC<16	20≤DC≤25		
0 - 0.030	0 - 0.040	0 - 0.050		

- Chatter and vibration are suppressed and stable machining is enabled by using irregular helix flutes.
- Equipped with center through coolant thru to improve chip evacuation.

(mm)

Order Number	DC	RE	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10C6HV100R05010C	10	0.5	10	16	9.7	6	●	1
IMX10C6HV100R10010C	10	1	10	16	9.7	6	●	1
IMX12C6HV120R05012C	12	0.5	12	19	11.7	6	●	1
IMX12C6HV120R10012C	12	1	12	19	11.7	6	●	1
IMX16C6HV160R10016C	16	1	16	24	15.5	6	●	1
IMX16C6HV160R30016C	16	3	16	24	15.5	6	★	1
IMX20C6HV200R10020C	20	1	20	30	19.5	6	★	1
IMX20C6HV200R30020C	20	3	20	30	19.5	6	●	1
IMX25C6HV250R10025C	25	1	25	37.5	24.5	6	●	1
IMX25C6HV250R30025C	25	3	25	37.5	24.5	6	★	1

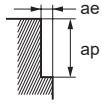
Note 1) The fastening size of the holder and head should be the same. (refer to J002)

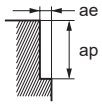
RECOMMENDED CUTTING CONDITIONS

■ Shoulder milling (L/D=3)

Other than the L/D = 3, use following recommended cutting conditions by multiplying the J007 page correction factor by overhang length.

(inch)

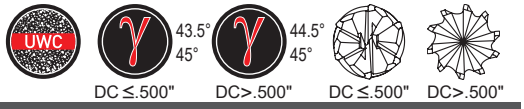
Workpiece Material		Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel				Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel				Precipitation Hardening Stainless Steel, Cobalt Chromium Alloys, Titanium Alloys			
DC		Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
(mm)	(inch)												
10	**.394**	6400	106.3	.394	.039	4800	78.7	.394	.039	3200	51.2	.394	.039
12	**.472**	5300	106.3	.472	.047	4000	78.7	.472	.047	2700	55.1	.472	.047
16	**.630**	4000	82.7	.630	.063	3000	63.0	.630	.063	2000	43.3	.630	.063
20	**.787**	3200	74.8	.787	.079	2400	55.1	.787	.079	1600	39.4	.787	.079
25	**.984**	2500	59.1	.984	.098	1900	43.3	.984	.098	1300	31.5	.984	.098
Depth of Cut													

Workpiece Material		Heat Resistant Alloys Inconel718			
DC		Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
(mm)	(inch)				
10	**.394**	1300	10.2	.394	.020
12	**.472**	1100	9.1	.472	.024
16	**.630**	800	7.1	.630	.031
20	**.787**	640	5.9	.787	.039
25	**.984**	510	4.7	.984	.051
Depth of Cut					

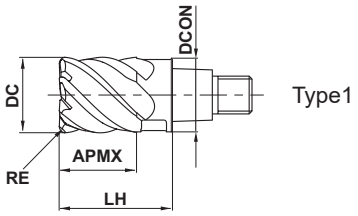
Note 1) The irregular helix flute end mill has a larger effect on controlling vibration when compared to standard end mills. However, if the rigidity of the machine or the workpiece material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the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

iMX-C6HV/C10HV/C12HV – Inch Sizes

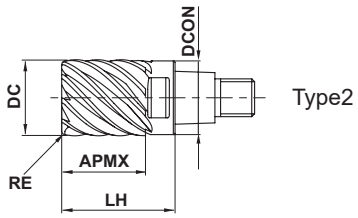
Corner radius head, Multi-flute, Irregular helix



Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel,Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎		



Type1



Type2

±.0008"				
DC≤.500"	DC>.500"			
0 - .0008"	0 - .0012"			

- Irregular helix controls vibration and achieves stable machining.
- High machining efficiency due to multi-flute design.

(inch)

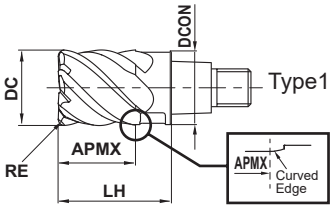
Order Number	DC	RE	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10C6HV0375R030M	.375	.030	.395	.630	.363	6	●	1
IMX12C6HV0500R030M	.500	.030	.520	.789	.488	6	●	1
IMX16C10HV0625R030M	.625	.030	.645	.945	.605	10	●	2
IMX20C12HV0750R030M	.750	.030	.800	1.181	.730	12	●	2
IMX25C12HV1000R030M	1.000	.030	1.050	1.500	.980	12	●	2

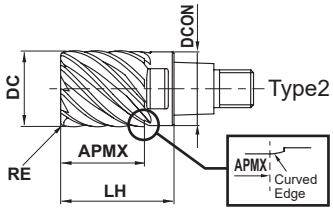
Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-C6HV/C10HV/C12HV

Corner radius head, Multi-flute, Irregular helix

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎		





±0.020				
DC ≤12	DC>12			
0 - 0.020	0 - 0.030			

- Irregular helix controls vibration and achieves stable machining.
- High machining efficiency due to multi-flute design.

(mm)

Order Number	DC	RE	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10C6HV100R05010	10	0.5	10	16	9.7	6	●	1
IMX10C6HV100R10010	10	1	10	16	9.7	6	●	1
IMX12C6HV120R10012	12	1	12	19	11.7	6	●	1
IMX16C10HV160R10016	16	1	16	24	15.5	10	●	2
IMX20C12HV200R10020	20	1	20	30	19.5	12	●	2
IMX25C12HV250R10025	25	1	25	37.5	24.5	12	●	2

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-C6HV/C10HV/C12HV

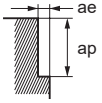
Corner radius head, Multi-flute, Irregular helix

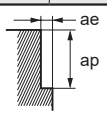
RECOMMENDED CUTTING CONDITIONS

■ Shoulder Milling (L/D=3)

Other than the L/D = 3, use following recommended cutting conditions by multiplying the J007 page correction factor by overhang length.

(inch)

Workpiece Material		Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel				Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy				Precipitation Hardening Stainless Steel, Cobalt Chromium Alloy			
DC (mm)	DC (inch)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
	.3750	6700	112.6	.375	.038	5000	84.0	.375	.038	3400	57.1	.375	.038
10	**.3937**	6400	107.5	.394	.039	4800	80.6	.394	.039	3200	53.8	.394	.039
12	**.4724**	5300	104.9	.472	.047	4000	79.2	.472	.047	2700	53.5	.472	.047
	.5000	5000	99.0	.500	.050	3700	73.3	.500	.050	2500	49.5	.500	.050
	.6250	4000	140.0	.625	.025	3000	105.0	.625	.025	2000	70.0	.625	.025
16	**.6299**	4000	140.0	.630	.025	3000	105.0	.630	.025	2000	70.0	.630	.025
	.7500	3300	154.4	.750	.030	2500	117.0	.750	.030	1700	79.6	.750	.030
20	**.7874**	3200	149.8	.787	.031	2400	112.3	.787	.031	1600	74.9	.787	.031
25	**.9843**	2500	117.0	.984	.039	1900	88.9	.984	.039	1300	60.8	.984	.039
	1.0000	2500	117.0	1.000	.040	1900	88.9	1.000	.040	1300	60.8	1.000	.040
Depth of Cut													

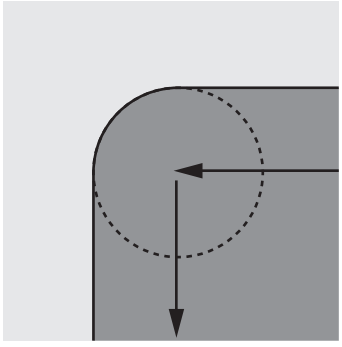
Workpiece Material		Heat Resistant Alloy Inconel718			
DC (mm)	DC (inch)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
	.3750	1300	10.1	.375	.019
10	**.3937**	1300	10.1	.394	.020
12	**.4724**	1100	9.2	.472	.024
	.5000	990	8.3	.500	.025
	.6250	790	11.9	.625	.025
16	**.6299**	790	11.9	.630	.025
	.7500	660	12.7	.750	.030
20	**.7874**	630	12.1	.787	.031
25	**.9843**	500	9.6	.984	.039
	1.0000	500	9.6	1.000	.040
Depth of Cut					

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.

Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.

Note 3) If the machining radius at the corner is the same as the tool radius when using a head with more than 10 flutes, please set the depth of cut and feed rate to half of the above.

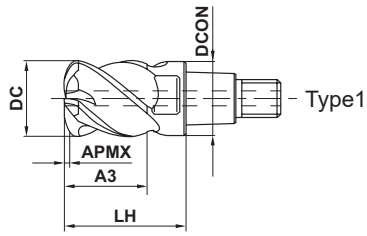
Note 4) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.



iMX-C4FD-C – Inch Sizes

Duplex corner radius head, 4 flute, For high feed, With coolant thru

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	◎	◎		◎	◎	○	



DC≤.500"	DC>.500"			
0 - .0008"	0 - .0012"			

- The duplex corner radius and 4 flute geometry enables efficient machining at higher feed rates.
- End face center coolant thru provides a stable supply of coolant.

(inch)

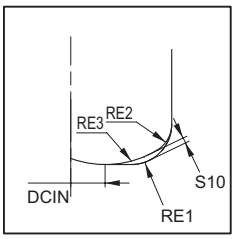
Order Number	DC	RE1	APMX	A3	LH	DCON	No. of Flutes	RMPX	Grade EP7020	Type
IMX10C4FD0375MC	.375	.076	.024	.395	.630	.363	4	2.3°	●	1
IMX12C4FD0500MC	.500	.086	.033	.520	.789	.488	4	3.6°	●	1
IMX16C4FD0625MC	.625	.110	.039	.645	.945	.605	4	2.8°	●	1
IMX20C4FD0750MC	.750	.117	.047	.800	1.181	.730	4	3.6°	●	1
IMX25C4FD1000MC	1.000	.171	.067	1.050	1.500	.980	4	4.5°	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)
Note 2) Duplex corner radius end mill is not suitable for corner radius machining due to the possibility of leaving unmachined areas.

RE1 = Approximate Radius
RMPX = Max. Ramping Angle

(inch)

Order Number	RE1	Duplex Corner Radius			
		S10	DCIN	RE2	RE3
IMX10C4FD0375MC	.076	.009	.134	.060	.181
IMX12C4FD0500MC	.086	.014	.196	.060	.236
IMX16C4FD0625MC	.110	.017	.236	.080	.315
IMX20C4FD0750MC	.117	.020	.314	.080	.354
IMX25C4FD1000MC	.171	.028	.394	.120	.472

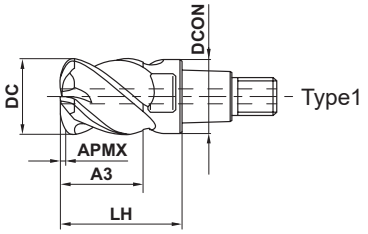


When using this iMX-C4FD-C, please program as an radius cutter.
The approximate remaining stocks for program are as the left table.

iMX-C4FD-C

Duplex corner radius head, 4 flute, For high feed, With coolant thru

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	◎	◎		◎	◎	○	



DC≤12	DC>12			
0 - 0.020	0 - 0.030			

- The duplex corner radius and 4 flute geometry enables efficient machining at higher feed rates.
- End face center coolant thru provides a stable supply of coolant.

(mm)

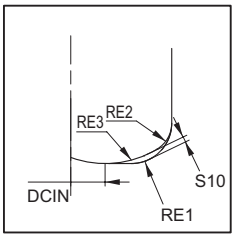
Order Number	DC	RE1	APMX	A3	LH	DCON	No. of Flutes	RMPX	Grade EP7020	Type
IMX10C4FD10010C	10	1.99	0.7	10.5	16	9.7	4	2.1°	●	1
IMX12C4FD12012C	12	2.1	0.8	12.5	19	11.7	4	2.8°	●	1
IMX16C4FD16016C	16	2.75	1	16.5	24	15.5	4	3°	●	1
IMX20C4FD20021C	20	3.07	1.3	21	30	19.5	4	3.3°	●	1
IMX25C4FD25026C	25	4.21	1.6	26	37.5	24.5	4	4.5°	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)
Note 2) Duplex corner radius end mill is not suitable for corner radius machining due to the possibility of leaving unmachined areas.

RE1 = Approximate Radius
RMPX = Max. Ramping Angle

(mm)

Order Number	RE1	Duplex Corner Radius			
		S10	DCIN	RE2	RE3
IMX10C4FD10010C	1.99	0.27	3.4	1.5	5
IMX12C4FD12012C	2.1	0.33	4.5	1.5	6
IMX16C4FD16016C	2.75	0.42	6.2	2	8
IMX20C4FD20021C	3.07	0.59	8	2	10
IMX25C4FD25026C	4.21	0.67	10	3	12



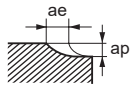
When using this iMX-C4FD-C, please program as a radius cutter.
The approximate remaining stocks for program are as the left table.

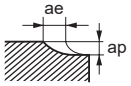
RECOMMENDED CUTTING CONDITIONS

L/D=3

Other than the L/D = 3, use following recommended cutting conditions by multiplying the J007 page correction factor by overhang length.

(inch)

Workpiece Material		Carbon steel, Alloy Steel, Mild Steel, Copper, Copper Alloy				Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel				Hardened Steel, Precipitation Hardening Stainless Steel, Ferritic and Martensitic Stainless Steel			
DC		Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
(mm)	(inch)												
	.3750	5000	314.0	.019	.225	4500	282.6	.019	.225	4000	188.8	.019	.225
10	**.3937**	4800	301.4	.020	.236	4300	270.0	.020	.236	3800	179.4	.020	.236
12	**.4724**	4000	283.2	.024	.283	3600	254.9	.024	.283	3200	151.0	.024	.283
	.5000	3700	262.0	.025	.300	3400	240.7	.025	.300	3000	141.6	.025	.300
	.6250	3000	236.4	.031	.375	2700	212.8	.031	.375	2400	150.7	.031	.375
16	**.6299**	3000	236.4	.031	.378	2700	212.8	.031	.378	2400	150.7	.031	.378
	.7500	2500	197.0	.038	.450	2300	181.2	.038	.450	2000	125.6	.038	.450
20	**.7874**	2400	189.1	.039	.472	2200	173.4	.039	.472	1900	119.3	.039	.472
25	**.9843**	1900	149.7	.049	.591	1700	134.0	.049	.591	1500	94.2	.049	.591
	1.0000	1900	149.7	.050	.600	1700	134.0	.050	.600	1500	94.2	.050	.600
Depth of Cut													

Workpiece Material		Austenitic Stainless Steel, Titanium Alloy, Cobalt Chromium Alloy				Heat Resistant Alloy Inconel718			
DC		Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
(mm)	(inch)								
	.3750	1300	41.1	.019	.225	810	12.6	.019	.225
10	**.3937**	1300	41.1	.020	.236	780	12.2	.020	.236
12	**.4724**	1100	34.8	.024	.283	650	10.1	.024	.283
	.5000	990	31.3	.025	.300	610	9.5	.025	.300
	.6250	790	37.3	.031	.375	490	11.6	.031	.375
16	**.6299**	790	37.3	.031	.378	490	11.6	.031	.378
	.7500	660	31.2	.038	.450	410	9.7	.038	.450
20	**.7874**	630	29.7	.039	.472	390	9.2	.039	.472
25	**.9843**	500	23.6	.049	.591	310	7.3	.049	.591
	1.0000	500	23.6	.050	.600	310	7.3	.050	.600
Depth of Cut									

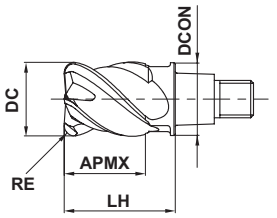
Note 1) Vibration may occur if the rigidity of machine or workpiece material is low.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) Please reduce the feed rate by half when ramping.
Note 4) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

iMX-C4FV – Inch Sizes

Corner radius head, 4 flute, Irregular helix, For high efficiency machining

UWC γ 43° 45°

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	◎	◎					



Type1

DC≤.750"	DC=1.000"			
±.0004"	±.0008"			
DC≤.500"	DC>.500"			
0 - .0008"	0 - .0012"			

- Corner radius end mill for high efficiency machining.
- Irregular helix controls vibration and achieves stable machining.

(inch)

Order Number	DC	RE	APMX	LH	DCON	No. of Flutes	Grade EP6120	Type
IMX10C4FV0375R090M	.375	.090	.395	.630	.363	4	●	1
IMX12C4FV0500R090M	.500	.090	.520	.789	.488	4	●	1
IMX16C4FV0625R125M	.625	.125	.645	.945	.605	4	●	1
IMX20C4FV0750R125M	.750	.125	.800	1.181	.730	4	●	1
IMX25C4FV1000R190M	1.000	.190	1.050	1.500	.980	4	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-C4FV

Corner radius head, 4 flute, Irregular helix, For high efficiency machining

UWC γ 43° 45°

DC≤20	DC=25			
±0.010	±0.020			
DC≤12	DC>12			
0 - 0.020	0 - 0.030			

- Corner radius end mill for high efficiency machining.
- Irregular helix controls vibration and achieves stable machining.

(mm)

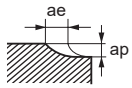
Order Number	DC	RE	APMX	LH	DCON	No. of Flutes	Grade EP6120	Type
IMX10C4FV100R20010	10	2	10.5	16	9.7	4	●	1
IMX12C4FV120R20012	12	2	12.5	19	11.7	4	●	1
IMX16C4FV160R30016	16	3	16.5	24	15.5	4	●	1
IMX20C4FV200R30021	20	3	21	30	19.5	4	●	1
IMX25C4FV250R40026	25	4	26	37.5	24.5	4	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

RECOMMENDED CUTTING CONDITIONS

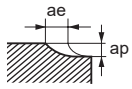
■ Large Depth of Cut Milling

(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Gray Cast Iron				Pre-hardened Steel, Alloy Tool Steel				Hardened Steel (45—55HRC)			
DC (mm)	DC (inch)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
	.3750	3000	117.6	.045	.169	2500	91.0	.038	.169	2000	69.6	.026	.169
10	**.3937**	2900	113.7	.047	.177	2400	87.4	.039	.177	1900	66.1	.028	.177
12	**.4724**	2400	94.1	.071	.236	2000	72.8	.055	.236	1600	55.7	.035	.236
	.5000	2300	90.2	.075	.250	1900	69.2	.058	.250	1500	52.2	.038	.250
	.6250	1800	70.6	.070	.293	1500	54.6	.055	.293	1200	41.8	.035	.293
16	**.6299**	1800	70.6	.071	.295	1500	54.6	.055	.295	1200	41.8	.035	.295
	.7500	1500	58.8	.068	.338	1300	43.7	.053	.338	990	34.5	.034	.338
20	**.7874**	1400	54.9	.071	.354	1200	43.7	.055	.354	950	33.1	.035	.354
25	**.9843**	1100	43.1	.094	.453	950	34.6	.071	.453	760	26.4	.047	.453
	1.0000	1100	43.1	.096	.460	940	34.2	.072	.460	740	25.8	.048	.460
Depth of Cut													

■ High Speed Milling

(inch)

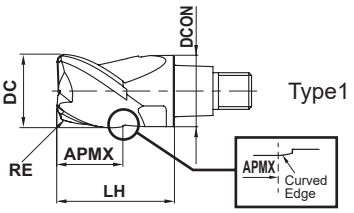
Workpiece Material		Carbon Steel, Alloy Steel, Gray Cast Iron				Pre-hardened Steel, Alloy Tool Steel				Hardened Steel (40—55HRC)			
DC (mm)	DC (inch)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
	.3750	5000	314.0	.023	.169	4200	231.8	.017	.169	3400	160.5	.014	.169
10	**.3937**	4800	301.4	.024	.177	4000	220.8	.018	.177	3200	151.0	.014	.177
12	**.4724**	4000	283.2	.035	.236	3300	207.2	.028	.236	2700	127.4	.018	.236
	.5000	3700	262.0	.038	.250	3100	194.7	.029	.250	2500	118.0	.019	.250
	.6250	3000	236.4	.035	.293	2500	177.0	.027	.293	2000	94.4	.018	.293
16	**.6299**	3000	236.4	.035	.295	2500	177.0	.028	.295	2000	94.4	.018	.295
	.7500	2500	197.0	.034	.338	2100	148.7	.026	.338	1700	93.8	.017	.338
20	**.7874**	2400	189.1	.035	.354	2000	141.6	.028	.354	1600	88.3	.018	.354
25	**.9843**	1900	149.7	.047	.453	1600	113.3	.035	.453	1300	71.8	.024	.453
	1.0000	1900	149.7	.048	.460	1600	113.3	.036	.460	1300	71.8	.024	.460
Depth of Cut													

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For profile machining such as molds, machining conditions may differ considerably depending on the workpiece material geometry, machining methods and depth of cut. Reduce the feed rate especially when machining the corner sections of a workpiece material.
Note 4) Air blow or oil mist is recommended for good chip evacuation.

iMX-C3A – Inch Sizes

Corner radius head, 3 flute, For aluminum alloy

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
							◎



±.0008"				
DC≤.500"	DC>.500"			
0 - .0008"	0 - .0012"			

● High efficiency machining is possible due to the polished rake face and sharp cutting edge.

(inch)

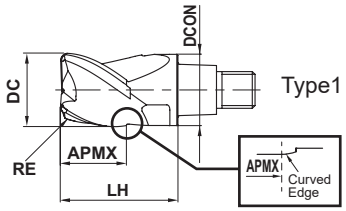
Order Number	DC	RE	APMX	LH	DCON	No. of Flutes	Grade ET2020	Type
IMX10C3A0375R015P	.375	.015	.300	.630	.363	3	●	1
IMX10C3A0375R030P	.375	.030	.300	.630	.363	3	●	1
IMX12C3A0500R015P	.500	.015	.400	.789	.488	3	●	1
IMX12C3A0500R030P	.500	.030	.400	.789	.488	3	●	1
IMX16C3A0625R030P	.625	.030	.500	.945	.605	3	●	1
IMX16C3A0625R060P	.625	.060	.500	.945	.605	3	●	1
IMX20C3A0750R030P	.750	.030	.600	1.181	.730	3	●	1
IMX20C3A0750R060P	.750	.060	.600	1.181	.730	3	●	1
IMX25C3A1000R060P	1.000	.060	.800	1.500	.980	3	●	1
IMX25C3A1000R125P	1.000	.125	.800	1.500	.980	3	●	1

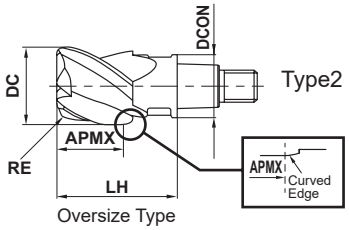
Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-C3A

Corner radius head, 3 flute, For aluminum alloy

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel,Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
							◎





Oversize Type

±0.020					
DC ≤12	DC>12				
0 - 0.020	0 - 0.030				

● High efficiency machining is possible due to the polished rake face and sharp cutting edge.

(mm)

Order Number	DC	RE	APMX	LH	DCON	No. of Flutes	Grade ET2020	Type
IMX10C3A100R10008	10	1	8	16	9.7	3	●	1
IMX10C3A100R25008	10	2.5	8	16	9.7	3	●	1
IMX10C3A120R10010	12	1	10.1	19	9.7	3	●	2
IMX12C3A120R10009	12	1	9.6	19	11.7	3	●	1
IMX12C3A120R32009	12	3.2	9.6	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	●	1
IMX16C3A160R32012	16	3.2	12.8	24	15.5	3	●	1
IMX16C3A180R32014	18	3.2	14.9	27	15.5	3	●	2
IMX20C3A200R10016	20	1	16	30	19.5	3	●	1
IMX20C3A200R32016	20	3.2	16	30	19.5	3	●	1
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	●	1
IMX25C3A250R50020	25	5	20	37.5	24.5	3	●	1
IMX25C3A280R32023	28	3.2	23.4	41.5	24.5	3	●	2

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-C3A

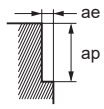
Corner radius head, 3 flute, For aluminum alloy

RECOMMENDED CUTTING CONDITIONS

Other than the L/D = 3, use following recommended cutting conditions by multiplying the J007 page correction factor by overhang length.

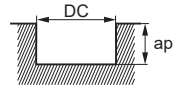
Shoulder Milling (L/D=3)

(inch)

Workpiece Material		Aluminum Alloy			
DC (mm)	DC (inch)	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Width of Cut ae
	.3750	17000	234.6	.300	.113
10	.3937	16000	220.8	.315	.118
12	.4724	13000	179.4	.378	.142
	.5000	13000	179.4	.400	.150
	.6250	10000	180.0	.500	.188
16	.6299	9900	178.2	.504	.189
	.7500	8400	173.9	.600	.225
20	.7874	8000	165.6	.630	.236
25	.9843	6400	159.4	.787	.295
	1.0000	6300	156.9	.800	.300
Depth of Cut					

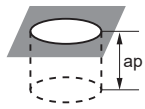
Slot Milling (L/D=3)

(inch)

Workpiece Material		Aluminum Alloy		
DC (mm)	DC (inch)	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap
	.3750	17000	137.7	.188
10	.3937	16000	129.6	.197
12	.4724	13000	109.2	.236
	.5000	13000	109.2	.250
	.6250	10000	111.0	.313
16	.6299	9900	109.9	.315
	.7500	8400	108.4	.375
20	.7874	8000	103.2	.394
25	.9843	6400	96.0	.492
	1.0000	6300	94.5	.500
Depth of Cut		 DC=Dia.		

Plunging (L/D=3)

(inch)

Workpiece Material		Aluminum Alloy			
DC (mm)	DC (inch)	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Step Feed ap2
	.3750	10000	39.0	.188	.10
10	.3937	9600	37.4	.197	.10
12	.4724	8000	31.2	.236	.10
	.5000	7500	29.3	.250	.10
	.6250	6000	23.4	.313	.10
16	.6299	6000	23.4	.315	.10
	.7500	5000	19.5	.375	.10
20	.7874	4800	18.7	.394	.10
25	.9843	3800	14.8	.492	.10
	1.0000	3800	14.8	.500	.10
Depth of Cut					

Note 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.
Note 2) The use of water-soluble coolant is effective.

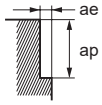
iMX-C3A

Corner radius head, 3 flute, For aluminum alloy, Oversize type head

RECOMMENDED CUTTING CONDITIONS

Shoulder Milling

(inch)

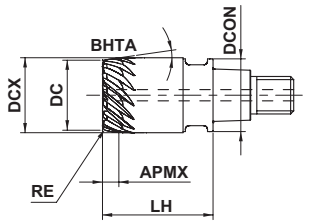
Workpiece Material			Aluminum Alloy			
L/D	DC (mm)	DC (inch)	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
3	**12**	**.4720**	13000	181.1	.378	.094
	14	**.5510**	11000	153.5	.441	.110
	18	**.7090**	8800	157.5	.567	.142
	22	**.8660**	7200	149.6	.693	.173
	28	**1.1020**	5700	141.7	.882	.220
5	**12**	**.4720**	8000	86.6	.378	.039
	14	**.5510**	6800	70.9	.441	.043
	18	**.7090**	5300	74.8	.567	.055
	22	**.8660**	4300	70.9	.693	.071
	28	**1.1020**	3400	66.9	.882	.087
7	**12**	**.4720**	5300	51.2	.378	.020
	14	**.5510**	4500	43.3	.441	.024
	18	**.7090**	3500	47.2	.567	.028
	22	**.8660**	2900	39.4	.693	.035
	28	**1.1020**	2300	39.4	.882	.043
Depth of Cut						

Note 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.
Note 2) The use of water-soluble coolant is effective.

iMX-C8T/C10T/C12T/C15T-C

Corner radius, Taper head, Multi-flute, With coolant thru

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel,Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
				◎	◎		



Type1

±0.015				
DC ≤12	DC>12			
0 - 0.020	0 - 0.030			

- Suitable for 3-dimensional free-form surface cutting such as blades.
- High feed cutting is possible due to multiple cutting edges.

(mm)

Order Number	DC	RE	APMX	DCX	LH	DCON	BHTA	No. of Flutes	Grade EP7020	Type
IMX10C8T080R05T080C	8	0.5	7.12	10	16	9.7	8°	8	●	1
IMX10C8T080R10T080C	8	1	7.12	10	16	9.7	8°	8	●	1
IMX12C10T100R05T080C	10	0.5	7.12	12	19	11.7	8°	10	●	1
IMX12C10T100R10T080C	10	1	7.12	12	19	11.7	8°	10	●	1
IMX16C15T150R05T080C	15	0.5	3.56	16	24	15.5	8°	15	●	1
IMX16C15T150R10T080C	15	1	3.56	16	24	15.5	8°	15	●	1
IMX16C12T150R20T080C	15	2	3.56	16	24	15.5	8°	12	●	1
IMX20C15T190R05T080C	19	0.5	3.56	20	30	19.5	8°	15	●	1
IMX20C15T190R10T080C	19	1	3.56	20	30	19.5	8°	15	●	1
IMX20C12T190R20T080C	19	2	3.56	20	30	19.5	8°	12	●	1

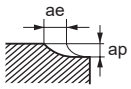
Note 1) The fastening size of the holder and head should be the same. (refer to J002)

RECOMMENDED CUTTING CONDITIONS

■ Shoulder Milling (L/D=3)

Other than the L/D = 3, use following recommended cutting conditions by multiplying the J007 page correction factor by overhang length.

(inch)

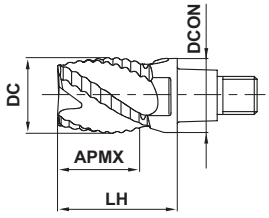
Workpiece Material		Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel				Precipitation Hardening Stainless Steel, Titanium Alloy				Heat Resistant Alloy			
DC (mm)	No. of Flutes	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min^{-1})	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
8	**8**	12000	378.0	.012	.047	8000	252.0	.012	.047	2400	59.1	.012	.031
10	**10**	9500	374.0	.012	.059	6400	252.0	.012	.059	1900	59.1	.012	.039
15	**12**	6400	362.2	.012	.087	4200	236.2	.012	.087	1300	63.0	.012	.059
15	**15**	6400	378.0	.012	.087	4200	248.0	.012	.087	1300	63.0	.012	.059
19	**12**	5000	283.5	.012	.110	3400	192.9	.012	.110	1000	47.2	.012	.075
19	**15**	5000	295.3	.012	.110	3400	200.8	.012	.110	1000	47.2	.012	.075
Depth of Cut													

Note 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.
Note 2) The use of water-soluble coolant is effective.

iMX-R4F – Inch Sizes

Roughing head, 4 flute

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎	○	



Type1

● The roughing edge geometry reduces cutting resistance.
Effective when rigidity of the machine or workpiece material is low.

(inch)

Order Number	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10R4F0375M	.375	.395	.630	.363	4	●	1
IMX12R4F0500M	.500	.520	.789	.488	4	●	1
IMX16R4F0625M	.625	.645	.945	.605	4	●	1
IMX20R4F0750M	.750	.800	1.181	.730	4	●	1
IMX25R4F1000M	1.000	1.050	1.500	.980	4	●	1

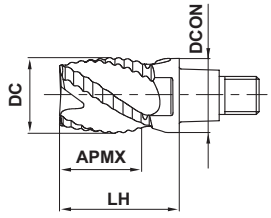
Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-R4F

Roughing head, 4 flute

35°

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel,Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎	○	



Type1

● The roughing edge geometry reduces cutting resistance.
Effective when rigidity of the machine or workpiece material is low.

(mm)

Order Number	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10R4F10010	10	10.5	16	9.7	4	●	1
IMX12R4F12012	12	12.5	19	11.7	4	●	1
IMX16R4F16016	16	16.5	24	15.5	4	●	1
IMX20R4F20021	20	21	30	19.5	4	●	1
IMX25R4F25026	25	26	37.5	24.5	4	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-R4F

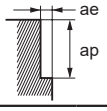
Roughing head, 4 flute

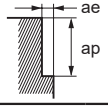
RECOMMENDED CUTTING CONDITIONS

■ Shoulder Milling (L/D=3)

Other than the L/D = 3, use following recommended cutting conditions by multiplying the J007 page correction factor by overhang length.

(inch)

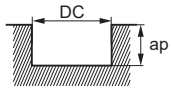
Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel, Copper, Copper Alloy				Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel				Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy			
DC (mm)	DC (inch)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
	.3750	5000	36.0	.300	.015	4000	19.2	.300	.150	3400	20.4	.300	.150
10	**.3937**	4800	34.6	.320	.160	3800	18.2	.320	.160	3200	19.2	.320	.160
12	**.4724**	4000	28.8	.380	.190	3200	16.6	.380	.190	2700	17.3	.380	.190
	.5000	3700	26.6	.400	.200	3000	15.6	.400	.200	2500	16.0	.400	.200
	.6250	3000	24.0	.500	.250	2400	14.4	.500	.250	2000	14.4	.500	.250
16	**.6299**	3000	24.0	.500	.250	2400	14.4	.500	.250	2000	14.4	.500	.250
	.7500	2500	20.0	.600	.300	2000	12.0	.600	.300	1700	12.2	.600	.300
20	**.7874**	2400	19.2	.630	.320	1900	11.4	.630	.320	1600	11.5	.630	.320
25	**.9843**	1900	18.2	.790	.390	1500	9.0	.790	.390	1300	9.4	.790	.390
	1.0000	1900	18.2	.800	.400	1500	9.0	.800	.400	1300	9.4	.800	.400
Depth of Cut													

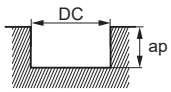
Workpiece Material		Precipitation Hardening Stainless Steel, Cobalt Chromium Alloy				Heat Resistant Alloy Inconel718			
DC (mm)	DC (inch)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
	.3750	2500	12.0	.300	.150	1300	8.3	.300	.038
10	**.3937**	2400	11.5	.320	.160	1300	8.3	.320	.039
12	**.4724**	2000	10.4	.380	.190	1100	7.9	.380	.047
	.5000	1900	9.9	.400	.200	990	7.1	.400	.050
	.6250	1500	9.0	.500	.250	790	6.3	.500	.063
16	**.6299**	1500	9.0	.500	.250	790	6.3	.500	.063
	.7500	1200	7.2	.600	.300	660	5.3	.600	.075
20	**.7874**	1200	7.2	.630	.320	630	5.0	.630	.079
25	**.9843**	950	5.7	.790	.390	500	4.0	.790	.098
	1.0000	940	5.6	.800	.400	500	4.0	.800	.100
Depth of Cut									

Note 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.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

■ Slot Milling

(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel, Copper, Copper Alloy			Pre-hardened Steel, Carbon Steel, Alloy Steel, Alloy Tool Steel			Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy		
DC (mm)	DC (inch)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**
	.3750	3400	21.4	.190	2600	12.5	.190	2000	6.4	.150
10	**.3937**	3200	20.5	.200	2500	12.0	.200	1900	6.1	.160
12	**.4724**	2700	19.4	.240	2100	10.9	.240	1600	6.4	.190
	.5000	2500	18.0	.250	2000	10.4	.250	1500	6.0	.200
	.6250	2000	16.0	.310	1600	9.6	.310	1200	5.8	.250
16	**.6299**	2000	16.0	.320	1600	9.6	.320	1200	5.8	.250
	.7500	1700	13.6	.380	1300	7.8	.380	990	5.1	.300
20	**.7874**	1600	12.8	.390	1300	7.8	.390	950	4.9	.320
25	**.9843**	1300	12.5	.470	1000	6.0	.470	760	4.0	.390
	1.0000	1300	12.5	.480	990	5.9	.480	740	3.8	.400
Depth of Cut		 DC=Dia.								

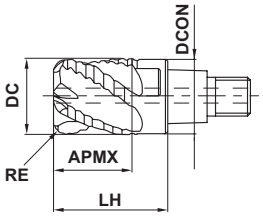
Workpiece Material		Precipitation Hardening Stainless Steel, Cobalt Chromium Alloy		
DC (mm)	DC (inch)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**
	.3750	1300	3.1	.150
10	**.3937**	1300	3.1	.160
12	**.4724**	1100	3.5	.190
	.5000	990	3.2	.200
	.6250	790	2.8	.250
16	**.6299**	790	2.8	.250
	.7500	660	2.9	.300
20	**.7874**	630	2.8	.320
25	**.9843**	500	2.2	.390
	1.0000	500	2.2	.400
Depth of Cut		 DC=Dia.		

Note 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.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

iMX-RC4F-C NEW

Roughing head, 4 flute, with coolant thru

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-Hardened Steel,Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎				◎	◎		



Type1

● The roughing edge geometry reduces cutting resistance. Effective when the rigidity of the machine or workpiece material is low.
● Center through coolant thru provides excellent chip evacuation.

(mm)

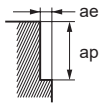
Order Number	DC	RE	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10RC4F100R05010C	10	0.5	10.5	16	9.7	4	●	1
IMX10RC4F100R10010C	10	1	10.5	16	9.7	4	●	1
IMX12RC4F120R05012C	12	0.5	12.5	19	11.7	4	●	1
IMX12RC4F120R10012C	12	1	12.5	19	11.7	4	●	1
IMX12RC4F120R15012C	12	1.5	12.5	19	11.7	4	●	1
IMX12RC4F120R20012C	12	2	12.5	19	11.7	4	●	1
IMX16RC4F160R05016C	16	0.5	16.5	24	15.5	4	●	1
IMX16RC4F160R10016C	16	1	16.5	24	15.5	4	●	1
IMX16RC4F160R15016C	16	1.5	16.5	24	15.5	4	●	1
IMX16RC4F160R20016C	16	2	16.5	24	15.5	4	●	1
IMX16RC4F160R30016C	16	3	16.5	24	15.5	4	●	1
IMX20RC4F200R05021C	20	0.5	21	30	19.5	4	●	1
IMX20RC4F200R10021C	20	1	21	30	19.5	4	●	1
IMX20RC4F200R20021C	20	2	21	30	19.5	4	●	1
IMX20RC4F200R30021C	20	3	21	30	19.5	4	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

RECOMMENDED CUTTING CONDITIONS

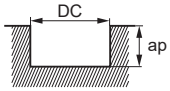
Shoulder Milling

(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel				Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy				Precipitation Hardening Stainless Steel			
DC (mm)	DC (inch)	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Width of Cut ae	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Width of Cut ae	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Width of Cut ae
10	**.394**	4800	33.9	.315	.157	2000	12.6	.315	.157	1900	9.1	.315	.157
12	**.472**	4000	31.5	.378	.189	1900	13.4	.378	.189	1600	9.1	.378	.189
16	**.630**	3000	23.6	.504	.252	1400	11.0	.504	.252	1200	7.9	.504	.252
20	**.787**	2400	20.9	.630	.315	1100	8.7	.630	.315	950	7.1	.630	.315
Depth of Cut													

Slot Milling

(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel			Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Titanium Alloy			Precipitation Hardening Stainless Steel		
DC (mm)	DC (inch)	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of Cut ap
10	**.394**	3200	20.1	.197	1900	9.1	.197	1300	3.9	.197
12	**.472**	2700	19.3	.236	1600	10.2	.236	1100	4.3	.236
16	**.630**	2000	15.7	.315	1200	8.7	.315	800	3.8	.315
20	**.787**	1600	13.8	.394	950	6.7	.394	640	3.5	.394
Depth of Cut										

DC = Dia.

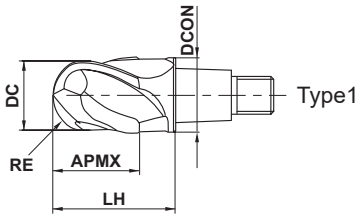
Note 1) Vibration may occur if the rigidity of machine or workpiece material is low.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For stainless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

iMX-B2S

Ball nose head, 2 flute, For hardened steel

UWC γ 30°

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (55–65HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
			◎				



RE≥8				
±0.020				

●Ideal for machining with long overhangs.

(mm)

Order Number	RE	DC	APMX	LH	DCON	No. of Flutes	Grade EP8110	Type
IMX16B2S16016	8	16	16	24	15.5	2	●	1
IMX20B2S20020	10	20	20	30	19.5	2	●	1

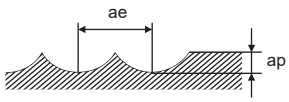
Note 1) The fastening size of the holder and head should be the same. (refer to J002)

RECOMMENDED CUTTING CONDITIONS

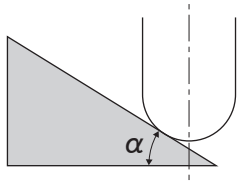
■Shoulder Milling (L/D=3)

Other than the L/D = 3, use following recommended cutting conditions by multiplying the J007 page correction factor by overhang length.

(inch)

Workpiece Material			Hardened Steel (55–65HRC)					
Inclination Angle			α≤15°		α>15°		Depth of Cut **ap**	Width of Cut **ae**
DC		**RE**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)		
(mm)	(inch)	(mm) (inch)						
16	**.630**	**8** **.315**	6000	66.9	3000	18.9	.012	.063
20	**.787**	**10** **.394**	4800	51.2	2400	15.0	.012	.079
Depth of Cut								

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

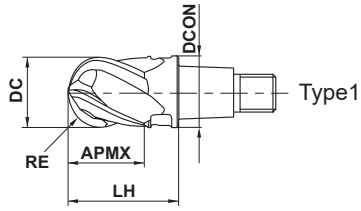


iMX-B4S

Ball nose head, 4 flute, For hardened steel

UWC γ 30°

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel,Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (55–65HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
			◎				



RE ≥8				
±0.020				

●High efficiency machining is realized even with machining using the tip.

(mm)

Order Number	RE	DC	APMX	LH	DCON	No. of Flutes	Grade EP8110	Type
IMX16B4S16016	8	16	16	24	15.5	4	●	1
IMX20B4S20020	10	20	20	30	19.5	4	●	1

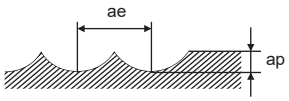
Note 1) The fastening size of the holder and head should be the same. (refer to J002)

RECOMMENDED CUTTING CONDITIONS

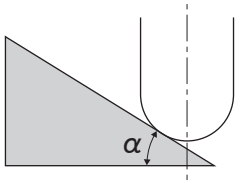
■Shoulder Milling (L/D=3)

Other than the L/D = 3, use following recommended cutting conditions by multiplying the J007 page correction factor by overhang length.

(inch)

Workpiece Material				Hardened Steel (55–65HRC)					
Inclination Angle				α ≤15°		α>15°		Depth of Cut **ap**	Width of Cut **ae**
DC		RE		Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)		
(mm)	(inch)	(mm)	(inch)						
16	**.630**	**8**	**.315**	6000	66.9	3000	28.3	.012	.063
20	**.787**	**10**	**.394**	4800	51.2	2400	22.8	.012	.079
Depth of Cut									

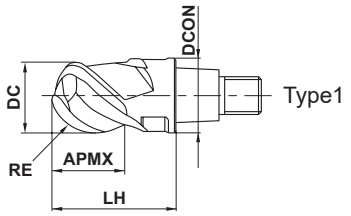
Note 1) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 2) α is the inclination angle of the machined surface.



iMX-B3FV

Ball nose head, 3 flute, Irregular pitch flutes, For high efficiency machining

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel,Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
	◎	◎					



RE≤6	RE>6			
±0.010	±0.020			

●High efficiency machining is possible in deep engraving processing(DCx5).

(mm)

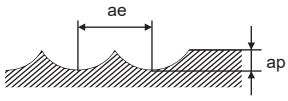
Order Number	RE	DC	APMX	LH	DCON	No. of Flutes	Grade EP8120	Type
IMX10B3FV10008	5	10	8	16	9.7	3	●	1
IMX12B3FV12009	6	12	9.6	19	11.7	3	●	1
IMX16B3FV16012	8	16	12.8	24	15.5	3	●	1
IMX20B3FV20016	10	20	16	30	19.5	3	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

RECOMMENDED CUTTING CONDITIONS

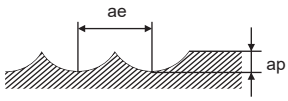
■Shoulder Milling (L/D=5)

(inch)

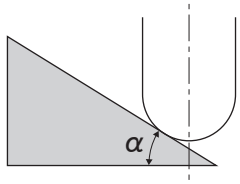
Workpiece Material				Pre-hardened Steel, Alloy Tool Steel						Hardened Steel (40–55HRC)					
Inclination Angle				α≤15°		α>15°		Depth of Cut **ap**	Width of Cut **ae**	α≤15°		α>15°		Depth of Cut **ap**	Width of Cut **ae**
DC		RE		Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)			Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)		
(mm)	(inch)	(mm)	(inch)												
10	**.394**	**5**	**.197**	5600	145.7	3700	66.9	.028	.102	4800	102.4	3200	47.2	.020	.079
12	**.472**	**6**	**.236**	4600	118.1	3100	55.1	.039	.126	4000	86.6	2700	38.2	.028	.098
16	**.630**	**8**	**.315**	3500	90.6	2300	39.4	.043	.150	3000	63.0	2000	28.3	.035	.138
20	**.787**	**10**	**.394**	2800	70.9	1800	31.9	.047	.189	2400	51.2	1600	22.8	.043	.165
Depth of Cut															

■Shoulder Milling (L/D=7)

(inch)

Workpiece Material				Pre-hardened Steel, Alloy Tool Steel						Hardened Steel (40–55HRC)					
Inclination Angle				α≤15°		α>15°		Depth of Cut **ap**	Width of Cut **ae**	α≤15°		α>15°		Depth of Cut **ap**	Width of Cut **ae**
DC		RE		Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)			Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)		
(mm)	(inch)	(mm)	(inch)												
10	**.394**	**5**	**.197**	3800	90.6	2500	38.6	.020	.051	3200	47.2	2100	21.3	.016	.039
12	**.472**	**6**	**.236**	3200	74.8	2100	32.3	.028	.063	2700	43.3	1700	16.9	.024	.051
16	**.630**	**8**	**.315**	2400	55.1	1600	24.4	.031	.075	2000	30.7	1300	13.0	.028	.071
20	**.787**	**10**	**.394**	1900	43.3	1300	20.1	.035	.094	1600	24.4	1000	10.2	.031	.083
Depth of Cut															

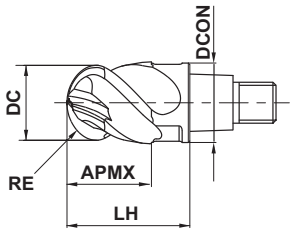
Note 1) The irregular helix flute end mill has a larger effect on controlling vibration when compared to standard end mills. However, if the rigidity of the machine or the workpiece material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the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



iMX-B4HV – Inch Sizes

Ball nose head, 4 flute, Irregular pitch flutes

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎	○	



Type1

RE≤.250"	RE>.250"			
±.0004"	±.0008"			

● Irregular pitch flutes cutting edge controls vibration and achieves stable machining.

(inch)

Order Number	RE	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10B4HV0375M	.1875	.375	.395	.630	.363	4	●	1
IMX12B4HV0500M	.2500	.500	.520	.789	.488	4	●	1
IMX16B4HV0625M	.3125	.625	.645	.945	.605	4	●	1
IMX20B4HV0750M	.3750	.750	.800	1.181	.730	4	●	1
IMX25B4HV1000M	.5000	1.000	1.050	1.500	.980	4	●	1

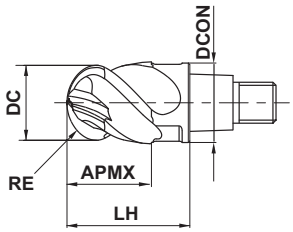
Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-B4HV

Ball nose head, 4 flute, Irregular pitch flutes

UWC γ 45°

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel,Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎	○	



Type1

RE≤6	RE>6			
±0.010	±0.020			

●Irregular pitch flutes cutting edge controls vibration and achieves stable machining.

(mm)

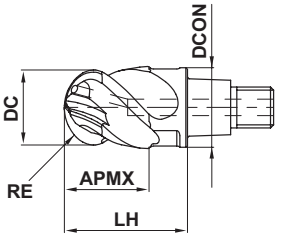
Order Number	RE	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10B4HV10010	5	10	10.5	16	9.7	4	●	1
IMX12B4HV12012	6	12	12.5	19	11.7	4	●	1
IMX16B4HV16016	8	16	16.5	24	15.5	4	●	1
IMX20B4HV20021	10	20	21	30	19.5	4	●	1
IMX25B4HV25026	12.5	25	26	37.5	24.5	4	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-B4HV-E – Inch Sizes

Ball nose head, 4 flute, Irregular pitch flutes, With coolant thru

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎	○	



Type1

RE≤.250"	RE>.250"			
±.0004"	±.0008"			

- Coolant thru for each cutting edge enables a stable coolant supply.
- Irregular pitch flutes cutting edge controls vibration and achieves stable machining.

(inch)

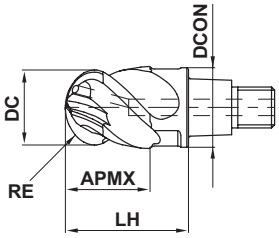
Order Number	RE	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10B4HV0375ME	.1875	.375	.395	.630	.363	4	●	1
IMX12B4HV0500ME	.2500	.500	.520	.789	.488	4	●	1
IMX16B4HV0625ME	.3125	.625	.645	.945	.605	4	●	1
IMX20B4HV0750ME	.3750	.750	.800	1.181	.730	4	●	1
IMX25B4HV1000ME	.5000	1.000	1.050	1.500	.980	4	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-B4HV-E

Ball nose head, 4 flute, Irregular pitch flutes, With coolant thru

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel,Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎	○	



Type1

RE≤6	RE>6			
±0.010	±0.020			

- Coolant thru for each cutting edge enables a stable coolant supply.
- Irregular pitch flutes cutting edge controls vibration and achieves stable machining.

(mm)

Order Number	RE	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10B4HV10010E	5	10	10.5	16	9.7	4	●	1
IMX12B4HV12012E	6	12	12.5	19	11.7	4	●	1
IMX16B4HV16016E	8	16	16.5	24	15.5	4	●	1
IMX20B4HV20021E	10	20	21	30	19.5	4	●	1
IMX25B4HV25026E	12.5	25	26	37.5	24.5	4	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-B4HV/iMX-B4HV-E

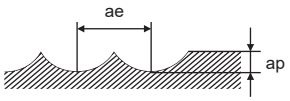
Ball nose head, 4 flute, Irregular pitch flutes (With/Without coolant thru)

RECOMMENDED CUTTING CONDITIONS

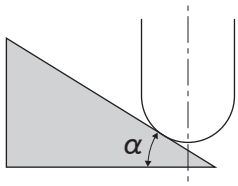
■ Shoulder Milling (L/D=3)

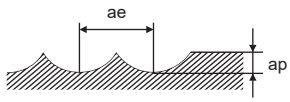
Other than the L/D = 3, use following recommended cutting conditions by multiplying the J007 page correction factor by overhang length.

(inch)

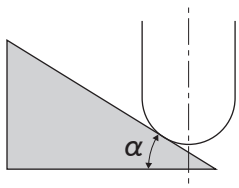
Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel, Pre-hardened Steel						Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Cobalt Chromium Alloy, Titanium Alloy					
Inclination Angle		α≤15°		α>15°		Depth of Cut **ap**	Width of Cut **ae**	α≤15°		α>15°		Depth of Cut **ap**	Width of Cut **ae**
RE		Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)			Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)		
(mm)	(inch)												
	.1875	10000	168.0	6700	75.0	.038	.100	7500	123.0	5000	52.0	.038	.100
5	**.1969**	9500	157.5	6400	71.7	.039	.100	7200	118.1	4800	49.9	.039	.100
6	**.2362**	8000	156.8	5300	70.0	.047	.120	6000	117.6	4000	49.6	.047	.120
	.2500	7500	147.0	5000	66.0	.050	.120	5700	111.7	3700	45.9	.050	.120
	.3125	6000	127.2	4000	56.0	.063	.160	4500	99.0	3000	42.0	.063	.160
8	**.3150**	6000	127.2	4000	56.0	.063	.160	4500	99.0	3000	42.0	.063	.160
	.3750	5000	122.0	3300	51.5	.075	.190	3800	95.8	2500	41.0	.075	.190
10	**.3937**	4800	117.1	3200	49.9	.079	.200	3600	90.7	2400	39.4	.079	.200
12.5	**.4921**	3800	95.8	2500	39.0	.098	.240	2900	73.1	1900	31.2	.098	.240
	.5000	3800	95.8	2500	39.0	.100	.240	2800	70.6	1900	31.2	.100	.240
Depth of Cut													

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.
Note 4) α is the inclination angle of the machined surface.



Workpiece Material		Heat Resistant Alloy Inconel718					
Inclination Angle		$\alpha \leq 15°$		$\alpha > 15°$		Depth of Cut **ap**	Width of Cut **ae**
RE		Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)		
(mm)	(inch)						
	.1875	2000	17.6	1300	7.3	.019	.038
5	**.1969**	1900	16.7	1300	7.3	.020	.039
6	**.2362**	1600	14.1	1100	6.2	.024	.047
	.2500	1500	13.2	990	5.5	.025	.050
	.3125	1200	11.5	790	5.1	.031	.063
8	**.3150**	1200	11.5	790	5.1	.031	.063
	.3750	990	9.5	660	4.2	.038	.075
10	**.3937**	950	9.1	630	4.0	.039	.079
12.5	**.4921**	760	7.3	500	3.2	.047	.100
	.5000	740	7.1	500	3.2	.048	.100
Depth of Cut							

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.
Note 4) α is the inclination angle of the machined surface.

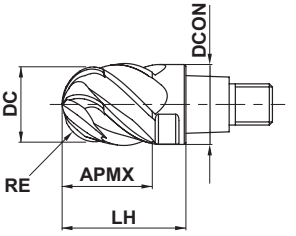


iMX-B6HV – Inch Sizes

Ball nose head, 6 flute, Irregular pitch flutes

UWC γ 45°

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎		



Type1

RE≤.250"	RE>.250"			
±.0004"	±.0008"			

- Irregular pitch flutes cutting edge controls vibration and achieves stable machining.
- 6 flutes enables high machining efficiency.

(inch)

Order Number	RE	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10B6HV0375M	.1875	.375	.395	.630	.363	6	●	1
IMX12B6HV0500M	.2500	.500	.520	.789	.488	6	●	1
IMX16B6HV0625M	.3125	.625	.645	.945	.605	6	●	1
IMX20B6HV0750M	.3750	.750	.800	1.181	.730	6	●	1
IMX25B6HV1000M	.5000	1.000	1.050	1.500	.980	6	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-B6HV

Ball nose head, 6 flute, Irregular pitch flutes

UWC γ 45°

RE≤6	RE>6			
±0.010	±0.020			

- Irregular pitch flutes cutting edge controls vibration and achieves stable machining.
- 6 flutes enables high machining efficiency.

(mm)

Order Number	RE	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10B6HV10010	5	10	10.5	16	9.7	6	●	1
IMX12B6HV12012	6	12	12.5	19	11.7	6	●	1
IMX16B6HV16016	8	16	16.5	24	15.5	6	●	1
IMX20B6HV20021	10	20	21	30	19.5	6	●	1
IMX25B6HV25026	12.5	25	26	37.5	24.5	6	●	1

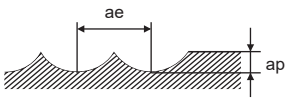
Note 1) The fastening size of the holder and head should be the same. (refer to J002)

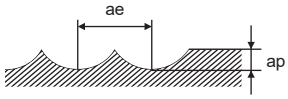
RECOMMENDED CUTTING CONDITIONS

■ Shoulder Milling (L/D=3)

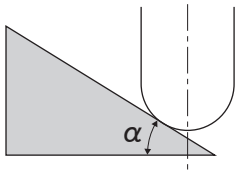
Other than the L/D = 3, use following recommended cutting conditions by multiplying the J007 page correction factor by overhang length.

(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Mild Steel, Pre-hardened Steel						Austenitic Stainless Steel, Ferritic and Martensitic Stainless Steel, Cobalt Chromium Alloy, Titanium Alloy					
Inclination Angle		α≤15°		α>15°		Depth of Cut **ap**	Width of Cut **ae**	α≤15°		α>15°		Depth of Cut **ap**	Width of Cut **ae**
RE		Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)			Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)		
(mm)	(inch)												
	.1875	10000	252.0	6700	112.6	.019	.075	7500	184.5	5000	78.0	.019	.075
5	**.1969**	9500	236.2	6400	107.5	.020	.079	7200	177.1	4800	74.9	.020	.079
6	**.2362**	8000	235.2	5300	104.9	.024	.094	6000	176.4	4000	74.4	.024	.094
	.2500	7500	220.5	5000	99.0	.025	.100	5700	167.6	3700	68.8	.025	.100
	.3125	6000	190.8	4000	84.0	.031	.125	4500	148.5	3000	63.0	.031	.125
8	**.3150**	6000	190.8	4000	84.0	.031	.126	4500	148.5	3000	63.0	.031	.126
	.3750	5000	183.0	3300	77.2	.038	.150	3800	143.6	2500	61.5	.038	.150
10	**.3937**	4800	175.7	3200	74.9	.039	.157	3600	136.1	2400	59.0	.039	.157
12.5	**.4921**	3800	143.6	2500	58.5	.047	.197	2900	109.6	1900	46.7	.047	.197
	.5000	3800	143.6	2500	58.5	.048	.200	2800	105.8	1900	46.7	.048	.200
Depth of Cut													

Workpiece Material		Heat Resistant Alloy Inconel718					
Inclination Angle		α≤15°		α>15°		Depth of Cut **ap**	Width of Cut **ae**
RE		Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)		
(mm)	(inch)						
	.1875	2000	26.4	1300	10.9	.019	.038
5	**.1969**	1900	25.1	1300	10.9	.020	.039
6	**.2362**	1600	21.1	1100	9.2	.024	.047
	.2500	1500	19.8	990	8.3	.025	.050
	.3125	1200	17.3	790	7.6	.031	.063
8	**.3150**	1200	17.3	790	7.6	.031	.063
	.3750	990	14.3	660	6.3	.038	.075
10	**.3937**	950	13.7	630	6.0	.039	.079
12.5	**.4921**	760	10.9	500	4.8	.047	.098
	.5000	740	10.7	500	4.8	.048	.100
Depth of Cut							

Note 1) 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 material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.
Note 4) α is the inclination angle of the machined surface.

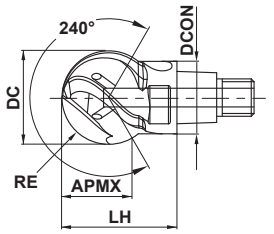


iMX-B4WH-S – Inch Sizes

NEW

Lollipop head, 4 flute, with coolant thru

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-Hardened Steel,Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○			◎	◎	○	



Type1

RE≥.250"				
±.0006"				

- Optimal choice for machining undercut and complex shapes when using a 5-axis machine.
- A stable supply of coolant is maintained even when machining complex component geometries.

(inch)

Order Number	RE	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10B4WH0500MS	.2500	.500	.375	.693	.382	4	●	1
IMX12B4WH0625MS	.3125	.625	.469	.799	.488	4	●	1
IMX16B4WH0750MS	.3750	.750	.563	.925	.606	4	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

iMX-B4WH-S

NEW

Lollipop head, 4 flute, with coolant thru

RE≥6				
±0.015				

- Optimal choice for machining undercut and complex shapes when using a 5-axis machine.
- A stable supply of coolant is maintained even when machining complex component geometries.

(inch)

Order Number	RE	DC	APMX	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10B4WH12008S	6	12	9	16.5	9.7	4	●	1
IMX12B4WH16008S	8	16	12	20.9	11.7	4	●	1
IMX16B4WH20008S	10	20	15	24.7	15.5	4	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)

RECOMMENDED CUTTING CONDITIONS

■Internal Profile Milling, Undercut Machining (L/D=3)

(inch)

Workpiece Material				Mild Steel, Carbon Steel, Alloy Steel, Pre-hardened Steel, Copper Alloys			Austenitic, Ferritic and Martensitic Stainless Steel, Precipitation Hardening Stainless Steel, Cobalt Chrome Alloys, Titanium Alloys			Heat Resistant Alloys		
DC		RE		Revolution n (min-1)	Feed Rate vf (IPM)	Depth of cut ae	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of cut ae	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of cut ae
(mm)	(inch)	(mm)	(inch)									
12	**.472**	**6**	**.236**	2700	38.2	.018	2100	24.8	.018	800	5.1	.014
	.500		**.250**	2500	35.4	.019	2000	23.6	.019	750	4.7	.015
	.625		**.313**	2000	31.5	.024	1600	20.1	.024	600	4.3	.019
16	**.630**	**8**	**.315**	2000	31.5	.024	1600	20.1	.024	600	4.3	.019
	.750		**.375**	1700	26.8	.028	1300	18.5	.028	500	3.9	.022
20	**.787**	**10**	**.394**	1600	25.2	.030	1300	18.5	.030	480	3.8	.024

■Internal Profile Milling, Undercut Machining (L/D=5)

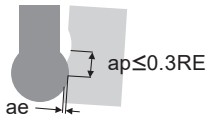
(inch)

Workpiece Material				Mild Steel, Carbon Steel, Alloy Steel, Pre-hardened Steel, Copper Alloys			Austenitic, Ferritic and Martensitic Stainless Steel, Precipitation Hardening Stainless Steel, Cobalt Chrome Alloys, Titanium Alloys			Heat Resistant Alloys		
DC		RE		Revolution n (min-1)	Feed Rate vf (IPM)	Depth of cut ae	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of cut ae	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of cut ae
(mm)	(inch)	(mm)	(inch)									
12	**.472**	**6**	**.236**	1900	20.9	.012	1300	10.2	.012	530	2.5	.009
	.500		**.250**	1800	19.7	.013	1300	10.2	.013	500	2.4	.010
	.625		**.313**	1400	17.7	.016	1000	9.4	.016	400	2.5	.013
16	**.630**	**8**	**.315**	1400	17.7	.016	990	9.4	.016	400	2.5	.013
	.750		**.375**	1200	15.0	.019	840	9.4	.019	330	2.1	.015
20	**.787**	**10**	**.394**	1100	13.8	.020	800	8.7	.020	320	2.0	.016

■Internal Profile Milling, Undercut Machining (L/D=7)

(inch)

Workpiece Material				Mild Steel, Carbon Steel, Alloy Steel, Pre-hardened Steel, Copper Alloys			Austenitic, Ferritic and Martensitic Stainless Steel, Precipitation Hardening Stainless Steel, Cobalt Chrome Alloys, Titanium Alloys		
DC		RE		Revolution n (min-1)	Feed Rate vf (IPM)	Depth of cut ae	Revolution n (min-1)	Feed Rate vf (IPM)	Depth of cut ae
(mm)	(inch)	(mm)	(inch)						
12	**.472**	**6**	**.236**	1300	6.3	.006	800	3.1	.006
	.500		**.250**	1300	6.3	.006	750	3.5	.006
	.625		**.313**	1000	5.5	.008	600	3.3	.008
16	**.630**	**8**	**.315**	990	5.5	.008	600	2.8	.008
	.750		**.375**	840	5.1	.009	500	2.8	.009
20	**.787**	**10**	**.394**	800	5.1	.010	480	2.6	.010



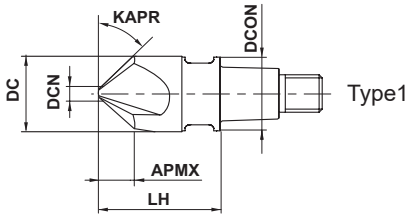
Note 1) Vibration may occur if the rigidity of machine or workpiece material is low.
In this case, please reduce the revolution and the feed rate proportionately, or set a lower depth of cut.
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.
Note 3) In case of L/D >5, it is recommended to use a taper neck type holder.
Note 4) For stainless steel, titanium alloys and heat resistant alloys, the use of water-soluble coolant is effective.

iMX-CH3L – Inch Sizes

Chamfer head, 3 flute

UWC γ 5°

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○	○		◎	◎		



DCN=.060"				
±0.0008"				

- Chamfered cutting head suitable for inner and outer circumference.
- Anti-vibration priority design.

(inch)

Order Number	DC	APMX	KAPR	DCN	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10CH3L0375A45	.375	.157	45°	.060	.630	.363	3	●	1
IMX12CH3L0500A45	.500	.220	45°	.060	.789	.488	3	●	1
IMX16CH3L0625A45	.625	.283	45°	.060	.945	.605	3	●	1
IMX20CH3L0750A45	.750	.345	45°	.060	1.181	.730	3	●	1

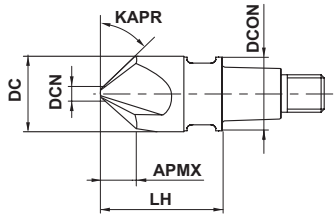
Note 1) The fastening size of the holder and head should be the same. (refer to J002)
Note 2) This end mill is not capable of drilling.

iMX-CH3L

Chamfer head, 3 flute

UWC γ 5°

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel,Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○	○		◎	◎		



Type1

DCN=1.5				
±0.020				

- Chamfered cutting head suitable for inner and outer circumference.
- Anti-vibration priority design.

(mm)

Order Number	DC	APMX	KAPR	DCN	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX10CH3L100A45	10	4.2	45°	1.5	16	9.7	3	●	1
IMX12CH3L120A45	12	5.2	45°	1.5	19	11.7	3	●	1
IMX16CH3L160A45	16	7.2	45°	1.5	24	15.5	3	●	1
IMX20CH3L200A45	20	9.2	45°	1.5	30	19.5	3	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)
Note 2) This end mill is not capable of drilling.

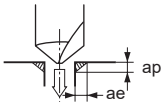
iMX-CH3L

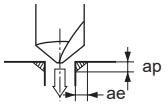
Chamfer head, 3 flute

RECOMMENDED CUTTING CONDITIONS

Chamfer Milling (Hole Circumference)

(inch)

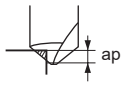
Workpiece Material		Carbon Steel, Alloy Steel, Gray Cast Iron				Alloy Tool Steel, Carbon Steel, Alloy Steel, Pre-hardened Steel				Austenitic Stainless Steel, Titanium Alloy			
DC (mm)	DC (inch)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
	.3750	1300	6.2	.071	.071	1300	4.7	.071	.071	1000	3.6	.071	.071
10	**.3937**	1300	6.2	.071	.071	1300	4.7	.071	.071	970	3.5	.071	.071
12	**.4724**	1100	5.3	.085	.085	1100	4.0	.085	.085	810	2.9	.085	.085
	.5000	990	4.8	.085	.085	990	3.6	.085	.085	760	2.7	.085	.085
	.6250	790	3.8	.094	.094	790	2.8	.094	.094	610	2.2	.094	.094
16	**.6299**	790	3.8	.094	.094	790	2.8	.094	.094	610	2.2	.094	.094
	.7500	660	3.2	.102	.102	660	2.4	.102	.102	510	1.8	.102	.102
20	**.7874**	630	3.0	.102	.102	630	2.3	.102	.102	490	1.8	.102	.102
Depth of Cut													

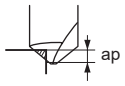
Workpiece Material		Hardenned Steel (40-55HRC)				Heat Resistant Alloy Inconel718			
DC (mm)	DC (inch)	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Width of Cut **ae**
	.3750	1000	2.4	.071	.071	1000	4.8	.071	.071
10	**.3937**	970	2.3	.071	.071	970	4.7	.071	.071
12	**.4724**	810	1.9	.085	.085	810	3.9	.085	.085
	.5000	760	1.8	.085	.085	760	3.6	.085	.085
	.6250	610	1.5	.094	.094	610	2.9	.094	.094
16	**.6299**	610	1.5	.094	.094	610	2.9	.094	.094
	.7500	510	1.2	.102	.102	510	2.4	.102	.102
20	**.7874**	490	1.2	.102	.102	490	2.4	.102	.102
Depth of Cut									

Note 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.
Note 2) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

■ Chamfer Milling (Shape Circumference)

(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Gray Cast Iron			Alloy Tool Steel, Carbon Steel, Alloy Steel, Pre-hardened Steel			Austenitic Stainless Steel, Titanium Alloy		
DC		Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**
(mm)	(inch)									
	.3750	3400	20.4	.079	2300	12.4	.079	2000	9.6	.079
10	**.3937**	3200	19.2	.079	2200	11.9	.079	1900	9.1	.079
12	**.4724**	2700	16.2	.094	1900	10.3	.094	1600	7.7	.094
	.5000	2500	15.0	.094	1800	9.7	.094	1500	7.2	.094
	.6250	2000	12.0	.107	1400	7.6	.107	1200	5.8	.107
16	**.6299**	2000	12.0	.107	1400	7.6	.107	1200	5.8	.107
	.7500	1700	10.2	.126	1200	6.5	.126	990	4.8	.126
20	**.7874**	1600	9.6	.126	1100	5.9	.126	950	4.6	.126
Depth of Cut										

Workpiece Material		Hardenned Steel (40-55HRC)			Heat Resistant Alloy Inconel718		
DC		Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**
(mm)	(inch)						
	.3750	1700	6.1	.079	1000	4.8	.079
10	**.3937**	1600	5.8	.079	970	4.7	.079
12	**.4724**	1300	4.7	.094	810	3.9	.094
	.5000	1300	4.7	.094	760	3.6	.094
	.6250	1000	3.6	.107	610	2.9	.107
16	**.6299**	1000	3.6	.107	610	2.9	.107
	.7500	840	3.0	.126	510	2.4	.126
20	**.7874**	800	2.9	.126	490	2.4	.126
Depth of Cut							

Note 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.
Note 2) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

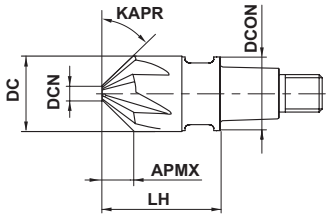
iMX-CH6V – Inch Sizes

Chamfer head, 6 flute

UWC

1°
3°

Carbon Steel, Alloy Steel, Cast Iron (<30HRC)	Tool Steel, Pre-hardened Steel, Hardened Steel (≤45HRC)	Hardened Steel (≤55HRC)	Hardened Steel (>55HRC)	Austenitic Stainless Steel	Titanium Alloy, Heat Resistant Alloy	Copper Alloy	Aluminum Alloy
◎	○	○		◎	◎		



Type1

DCN=.120"				
±0.0008"				

- Suitable for outer circumference.
- Multiple cutting design for extended tool life.

(inch)

Order Number	DC	APMX	KAPR	DCN	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX12CH6V0500A45	.500	.190	45°	.120	.789	.488	6	●	1
IMX16CH6V0625A45	.625	.252	45°	.120	.945	.605	6	●	1
IMX20CH6V0750A45	.750	.315	45°	.120	1.181	.730	6	●	1

Note 1) The fastening size of the holder and head should be the same. (refer to J002)
Note 2) This end mill is not capable of drilling.

iMX-CH6V

Chamfer head, 6 flute

UWC

1°
3°

DCN=3.0				
±0.020				

- Suitable for outer circumference.
- Multiple cutting design for extended tool life.

(mm)

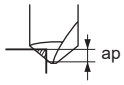
Order Number	DC	APMX	KAPR	DCN	LH	DCON	No. of Flutes	Grade EP7020	Type
IMX12CH6V120A45	12	4.5	45°	3	19	11.7	6	●	1
IMX16CH6V160A45	16	6.5	45°	3	24	15.5	6	●	1
IMX20CH6V200A45	20	8.5	45°	3	30	19.5	6	●	1

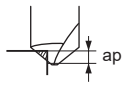
Note 1) The fastening size of the holder and head should be the same. (refer to J002)
Note 2) This end mill is not capable of drilling.

RECOMMENDED CUTTING CONDITIONS

■ Chamfer Milling (Shape Circumference)

(inch)

Workpiece Material		Carbon Steel, Alloy Steel, Gray Cast Iron			Alloy Tool Steel, Carbon Steel, Alloy Steel, Pre-hardened Steel			Austenitic Stainless Steel, Titanium Alloy		
DC		Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**
(mm)	(inch)									
12	**.4724**	2700	32.4	.094	1900	20.5	.094	1600	15.4	.094
	.5000	2500	30.0	.094	1800	19.4	.094	1500	14.4	.094
	.6250	2000	24.0	.107	1400	15.1	.107	1200	11.5	.107
16	**.6299**	2000	24.0	.107	1400	15.1	.107	1200	11.5	.107
	.7500	1700	20.4	.126	1200	13.0	.126	990	9.5	.126
20	**.7874**	1600	19.2	.126	1100	11.9	.126	950	9.1	.126
Depth of Cut										

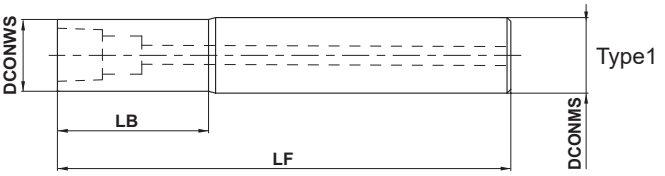
Workpiece Material		Hardenned Steel (40-55HRC)			Heat Resistant Alloy Inconel718		
DC		Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**	Revolution **n** (min-1)	Feed Rate **vf** (IPM)	Depth of Cut **ap**
(mm)	(inch)						
12	**.4724**	1300	9.4	.094	810	7.8	.094
	.5000	1300	9.4	.094	760	7.3	.094
	.6250	1000	7.2	.107	610	5.9	.107
16	**.6299**	1000	7.2	.107	610	5.9	.107
	.7500	840	6.0	.126	510	4.9	.126
20	**.7874**	800	5.8	.126	490	4.7	.126
Depth of Cut							

Note 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.
Note 2) For stainless steel, titanium alloy and heat resistant alloy, the use of water-soluble coolant is effective.

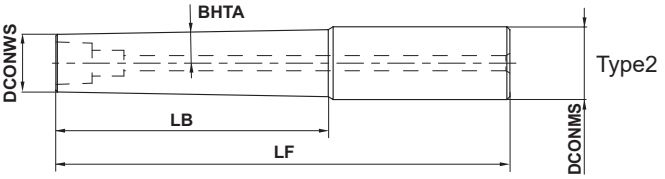
iMX – Inch Sizes

Carbide Holder

■ Undercut



■ Taper Neck Type



h6

DCONMS=.375	.500 ≤DCONMS ≤.625	.750 ≤DCONMS ≤1.000		
0 - .00035"	0 - .00043"	0 - .00051"		

■ Carbide Holder

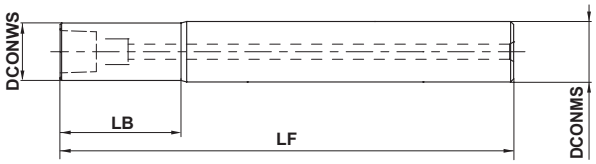
(inch)

Order Number	BHTA	LB	DCONWS	LF	DCONMS	Stock	Type	Suitable Head	Wrench
IMX10-U0375N049L27C	—	.495	.363	2.755	.375	●	1	IMX10	IMX10-WR
IMX10-U0375N124L35C	—	1.245	.363	3.543	.375	●	1	IMX10	IMX10-WR
IMX10-U0375N199L43C	—	1.995	.363	4.330	.375	●	1	IMX10	IMX10-WR
IMX10-A0500N199L43C	1°	1.995	.363	4.330	.500	●	2	IMX10	IMX10-WR
IMX12-U0500N071L31C	—	.711	.488	3.149	.500	●	1	IMX12	IMX12-WR
IMX12-U0500N171L39C	—	1.711	.488	3.937	.500	●	1	IMX12	IMX12-WR
IMX12-U0500N271L51C	—	2.711	.488	5.118	.500	●	1	IMX12	IMX12-WR
IMX12-A0625N271L51C	1°	2.711	.488	5.118	.625	●	2	IMX12	IMX12-WR
IMX16-U0625N093L31C	—	.930	.605	3.149	.625	●	1	IMX16	IMX16-WR
IMX16-U0625N218L43C	—	2.180	.605	4.330	.625	●	1	IMX16	IMX16-WR
IMX16-U0625N343L59C	—	3.430	.605	5.905	.625	●	1	IMX16	IMX16-WR
IMX16-A0750N343L59C	1°	3.430	.605	5.905	.750	●	2	IMX16	IMX16-WR
IMX20-U0750N106L35C	—	1.069	.730	3.543	.750	●	1	IMX20	IMX20-WR
IMX20-U0750N256L51C	—	2.569	.730	5.118	.750	●	1	IMX20	IMX20-WR
IMX20-U0750N406L70C	—	4.069	.730	7.086	.750	●	1	IMX20	IMX20-WR
IMX20-A1000N406L70C	1°	4.069	.730	7.086	1.000	●	2	IMX20	IMX20-WR
IMX25-U1000N150L43C	—	1.500	.980	4.330	1.000	●	1	IMX25	IMX25-WR
IMX25-U1000N350L62C	—	3.500	.980	6.299	1.000	●	1	IMX25	IMX25-WR

Note 1) The fastening size of the holder and head should be the same. (refer to J002)
Note 2) Inch head should be mounted in inch holder.
* See page J082 and J083 regarding how to install the head.

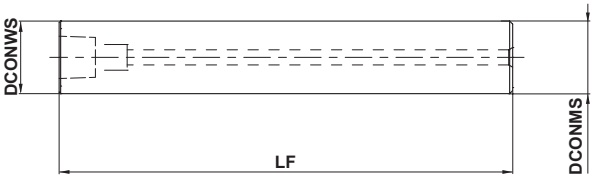
iMX
Carbide Holder

■Undercut



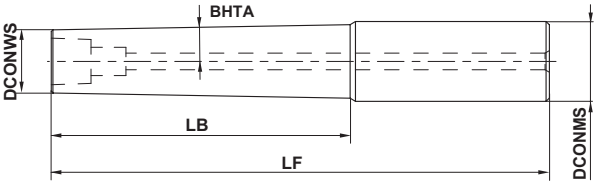
Type1

■Straight



Type2

■Taper Neck Type



Type3

h6

DCONMS=10	12 ≤DCONMS ≤16	20 ≤DCONMS ≤25		
0 - 0.009	0 - 0.011	0 - 0.013		

■Carbide Holder

(mm)

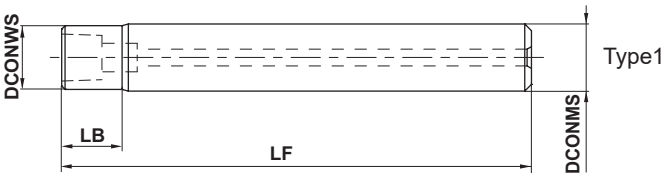
Order Number	BHTA	LB	DCONWS	LF	DCONMS	Stock	Type	Suitable Head	Wrench
IMX10-U10N014L070C	—	14	9.7	70	10	●	1	IMX10	IMX10-WR
IMX10-S10L090C	—	—	10	90	10	●	2	IMX10	IMX10-WR
IMX10-U10N034L090C	—	34	9.7	90	10	●	1	IMX10	IMX10-WR
IMX10-S10L110C	—	—	10	110	10	●	2	IMX10	IMX10-WR
IMX10-U10N054L110C	—	54	9.7	110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

Note 1) The fastening size of the holder and head should be the same. (refer to J002)
Note 2) Metric head should be mounted in metric holder.

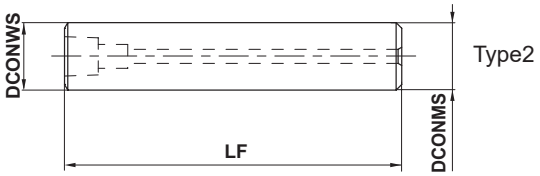
iMX – Inch Sizes

Steel Holder

■ Undercut



■ Straight Oversize



h6

DCONMS=.375"	.500" ≤DCONMS ≤.625"	.750"≤DCONMS≤1.000"	DCONMS=1.250"	
0 - 0.00035"	0 - 0.00043"	0 - 0.00051"	0 - 0.00063"	

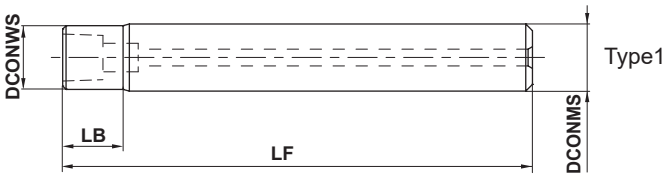
■ Steel Holder

(inch)

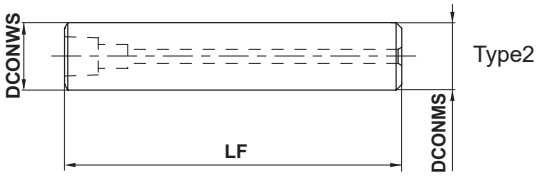
Order Number	LB	DCONWS	LF	DCONMS	Stock	Type	Suitable Head	Wrench
IMX10-U0375N030L27S	.308	.363	2.755	.375	●	1	IMX10	IMX10-WR
IMX10-G0500L23S	—	.500	2.362	.500	●	2	IMX10	IMX10-WR
IMX12-U0500N046L31S	.461	.488	3.149	.500	●	1	IMX12	IMX12-WR
IMX12-G0625L27S	—	.625	2.755	.625	●	2	IMX12	IMX12-WR
IMX16-U0625N061L31S	.618	.605	3.149	.625	●	1	IMX16	IMX16-WR
IMX16-G0750L27S	—	.750	2.755	.750	●	2	IMX16	IMX16-WR
IMX20-U0750N069L35S	.694	.730	3.543	.750	●	1	IMX20	IMX20-WR
IMX20-G1000L31S	—	1.000	3.149	1.000	●	2	IMX20	IMX20-WR
IMX25-U1000N100L43S	1.000	.980	4.330	1.000	●	1	IMX25	IMX25-WR
IMX25-G1250L39S	—	1.250	3.937	1.250	●	2	IMX25	IMX25-WR

Note 1) The fastening size of the holder and head should be the same. (refer to J002)
Note 2) Inch head should be mounted in inch holder.
* See page J082 and J083 regarding how to install the head.

■Undercut



■Straight Oversize



h6

DCONMS=10	12 ≤DCONMS ≤16	20 ≤DCONMS ≤25	DCONMS=32	
0 - 0.009	0 - 0.011	0 - 0.013	0 - 0.160	

■Steel Holder

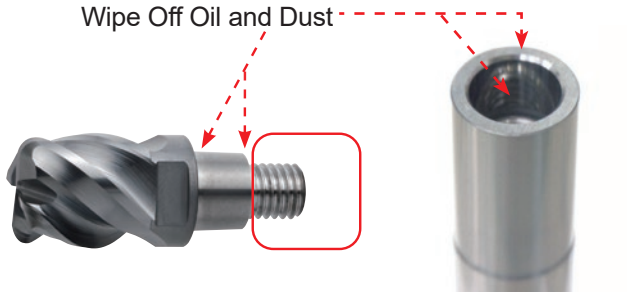
(mm)

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

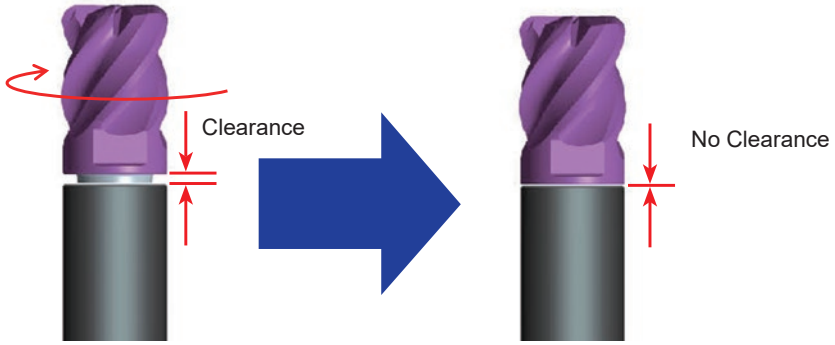
Note 1) The fastening size of the holder and head should be the same. (refer to J002)
Note 2) Metric head should be mounted in metric holder.
∗ See page J082 and J083 regarding how to install the head.

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.

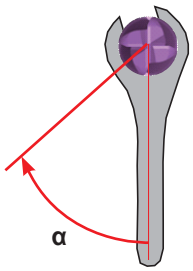


2 Be careful to avoid the possibility of cutting hands when fastening with bare hands directly near the blade tip.
Securely fasten the head and holder end surfaces using the enclosed wrench to close off any remaining gap.



3 Refer to the table at below regarding angles for recommended torque when necessary.
For stricter usage, refer to the table below for torque wrench fastening.

Fastening Size	Reference Tightening Angle α	Recommended Clamping Torque (lbf-in)
IMX10	50°	88
IMX12	50°	132
IMX16	50°	265
IMX20	40°	440
IMX25	35°	660

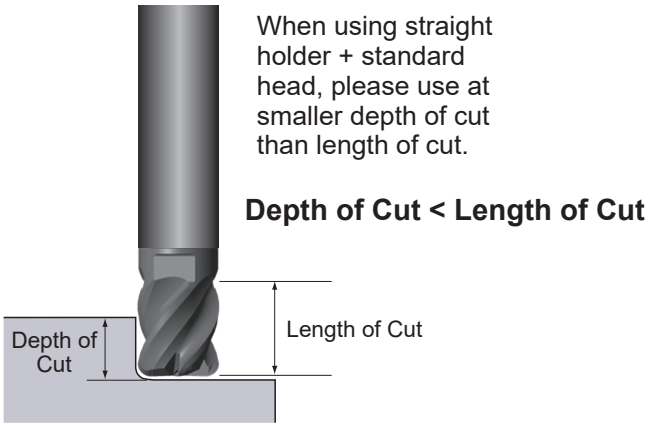


Note 1) Use the enclosed wrench only.
(Typical wrenches differ in thickness.)

How to Select iMX Holders

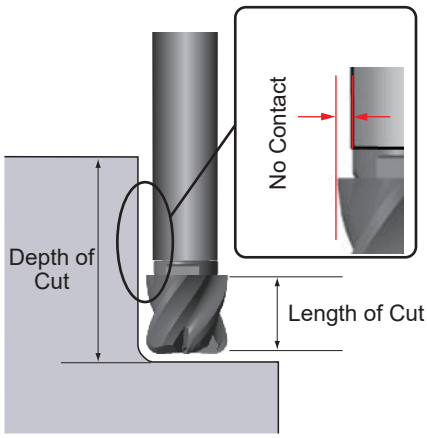
- When using straight holder + standard head, interference will occur in cases where the depth of cut is larger than the length of cut of the head.
- When using straight holder + oversize head, larger depths of cut are possible because the diameter of the head is larger than the holder.

Straight + Standard Head



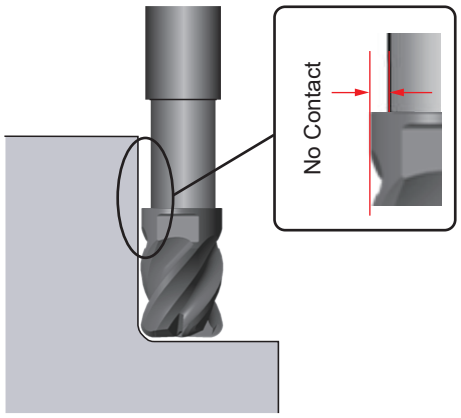
Less than DC x 3 overhang is recommended when depth of cut < length of cut.

Straight + Oversize 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 DC of each type for minimum diameter.)

Undercut + Standard Head



Taper Neck + Standard Head