Identification(Shoulder Milling)

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

(inch)

Workpiece Material	Carbon Steels, Alloy Steels, Mild Steels, Copper, Copper Alloys			Pre-hardened Steels, Carbon Steels, Alloy Steels, Alloy Tool Steels			Austenitic Stainless Steels, Ferritic and Martensitic Stainless Steels, Titanium Alloys		
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 Steels, Cobalt Chromium Alloys			Heat Resistant Alloys 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

Square head, 3 flute, Irregular helix

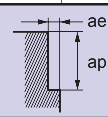
Recommended Cutting Conditions

Shoulder Milling

(inch)

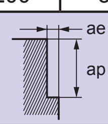
Workpiece Material		Carbon Steels, Alloy Steels, Mild Steels, Copper, Copper Alloys				Pre-hardened Steels, Carbon Steels, Alloy Steels, Alloy Tool Steels				Austenitic Stainless Steels, Ferritic and Martensitic Stainless Steels, Titanium Alloys			
DC (mm)	DC (inch)	Revolution n (min-1)	Feed Rate vf (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	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 Steels, Cobalt Chromium Alloys				Heat Resistant Alloys 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	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 steels, titanium alloys and heat resistant alloys, the use of water-soluble coolant is effective.

iMX-S3HV

Square head, 3 flute, Irregular helix

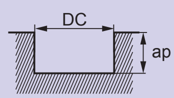
Recommended Cutting Conditions

Slot Milling

(inch)

Workpiece Material		Carbon Steels, Alloy Steels, Mild Steels, Copper, Copper Alloys			Pre-hardened Steels, Carbon Steels, Alloy Steels, Alloy Tool Steels			Austenitic Stainless Steels, Ferritic and Martensitic Stainless Steels, Titanium Alloys		
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

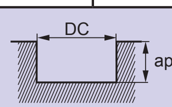
Depth of Cut



DC = Dia.

Workpiece Material		Precipitation Hardening Stainless Steels, Cobalt Chromium Alloys			Heat Resistant Alloys 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.

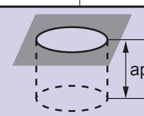
Note 1) The irregular helix flute end mill has a larger effect on controlling vibration when compared to standard end mills. However, if the rigidity of the machine or the workpiece material installation is poor, vibration or abnormal sound can occur.
In this case, please reduce the revolution and the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

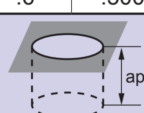
Note 2) If the depth of cut is smaller, the revolution and the feed rate can be increased.

Note 3) For stainless steels, titanium alloys and heat resistant alloys, the use of water-soluble coolant is effective.

Plunging

(inch)

Workpiece Material		Carbon Steels, Alloy Steels, Mild Steels, Copper, Copper Alloys				Pre-hardened Steels, Carbon Steels, Alloy Steels, Alloy Tool Steels				Austenitic Stainless Steels, Ferritic and Martensitic Stainless Steels, Titanium Alloys			
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 Steels, Cobalt Chromium Alloys			
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 steels, titanium alloys and heat resistant alloys, the use of water-soluble coolant is effective.