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%

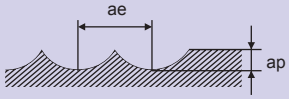
iMX-B3FV

Ball nose head, 3 flute, Irregular curve, For high efficiency machining

Recommended Cutting Conditions

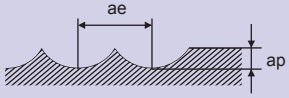
Shoulder Milling (L/D=5)

(inch)

Workpiece Material				Pre-hardened Steels, Alloy Tool Steels						Hardened Steels (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 Steels, Alloy Tool Steels						Hardened Steels (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.