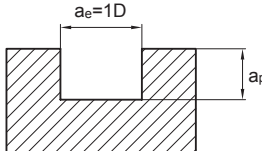
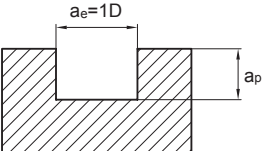


### HMX-2ES

Workpiece material	Pre-hardened steel, Hardened steel 40~50HRC		Hardened steel 50~60HRC													
	Rotating speed (min <sup>-1</sup> )	Feed speed (mm/min)	Rotating speed (min <sup>-1</sup> )	Feed speed (mm/min)												
0.3	23000	30	16500	25												
0.4	17500	30	12500	25												
0.5	14000	30	10000	25												
0.6	11500	30	8450	25												
0.7	10000	30	7500	25												
0.8	8750	30	6350	25												
0.9	8000	30	5500	25												
1.0	7000	30	5050	25												
1.5	5050	40	3550	25												
2.0	3950	40	2750	25												
2.5	3500	45	2500	30												
3.0	2750	45	2000	30												
Maximum cutting depth	 <table border="1" data-bbox="662 1002 853 1110"> <thead> <tr> <th>Diameter range</th> <th>Cutting depth a<sub>p</sub></th> </tr> </thead> <tbody> <tr> <td>D &lt; Ø1</td> <td>0.02D</td> </tr> <tr> <td>Ø1 ≤ D ≤ Ø3</td> <td>0.05D</td> </tr> </tbody> </table>		Diameter range	Cutting depth a <sub>p</sub>	D < Ø1	0.02D	Ø1 ≤ D ≤ Ø3	0.05D	 <table border="1" data-bbox="1197 1002 1388 1110"> <thead> <tr> <th>Diameter range</th> <th>Cutting depth a<sub>p</sub></th> </tr> </thead> <tbody> <tr> <td>D &lt; Ø1</td> <td>0.01D</td> </tr> <tr> <td>Ø1 ≤ D ≤ Ø3</td> <td>0.02D</td> </tr> </tbody> </table>		Diameter range	Cutting depth a <sub>p</sub>	D < Ø1	0.01D	Ø1 ≤ D ≤ Ø3	0.02D
Diameter range	Cutting depth a <sub>p</sub>															
D < Ø1	0.02D															
Ø1 ≤ D ≤ Ø3	0.05D															
Diameter range	Cutting depth a <sub>p</sub>															
D < Ø1	0.01D															
Ø1 ≤ D ≤ Ø3	0.02D															

1. Please select high-precision machine and tool holder.
2. Please use air blow or cutting liquid with high mist retardant property.
3. Make overhang of tool as short as possible in conditions of non-interference.
4. Reduce feed speed correspondingly when rotating speed is low.

Indexable milling tools

Solid carbide end mills

Cutting parameters for HMX series end mills

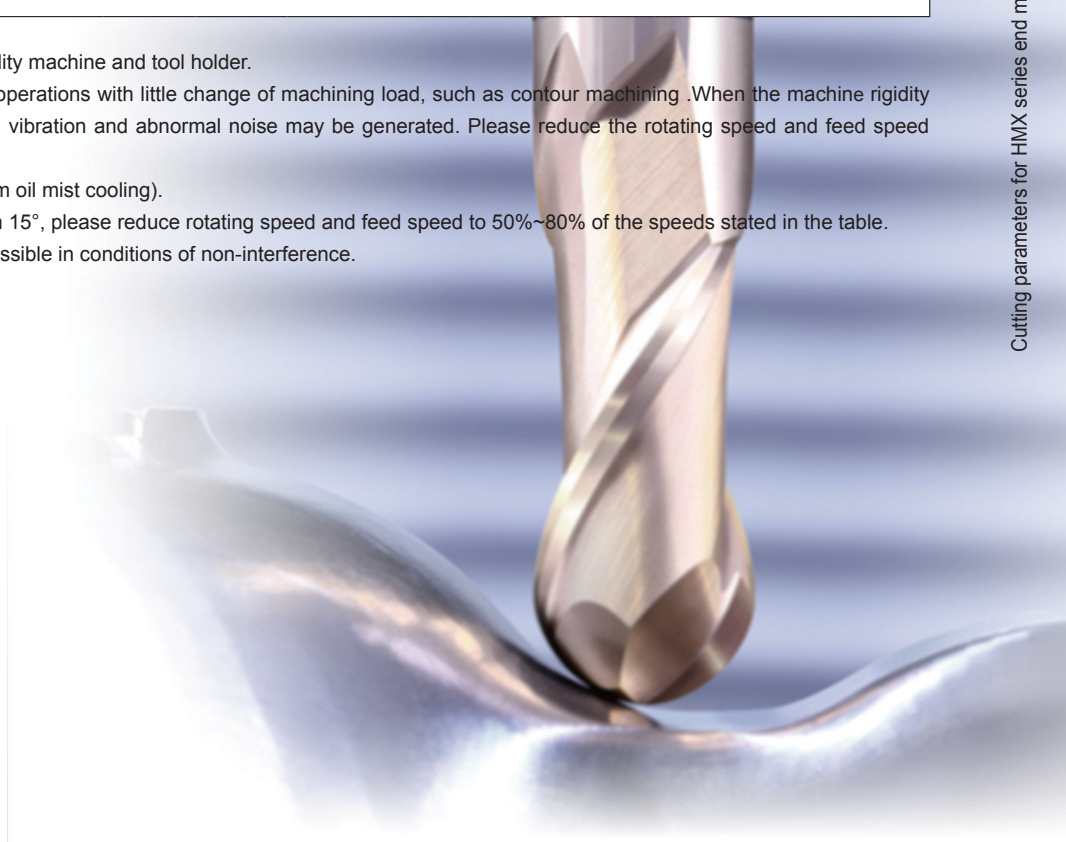
### HMX-2B★HMX-2BL/M/X★HMX-2BFP

Workpiece material	Pre-hardened steel, Hardened steel 40~50HRC				Hardened steel 50~60HRC				Hardened steel 60~68HRC			
	Rotating speed (min <sup>-1</sup> )	Feed speed (mm/min)	a <sub>p</sub> (mm)	a <sub>e</sub> (mm)	Rotating speed (min <sup>-1</sup> )	Feed speed (mm/min)	a <sub>p</sub> (mm)	a <sub>e</sub> (mm)	Rotating speed (min <sup>-1</sup> )	Feed speed (mm/min)	a <sub>p</sub> (mm)	a <sub>e</sub> (mm)
<b>R0.5</b>	40000	1900	0.01	0.05	36000	1500	0.01	0.05	32000	1400	0.01	0.05
<b>R1.0</b>	33000	3100	0.02	0.075	26000	2100	0.02	0.075	24000	2000	0.02	0.075
<b>R1.5</b>	29000	4100	0.03	0.1	23000	2900	0.03	0.1	21000	2600	0.03	0.1
<b>R2.0</b>	22000	3900	0.04	0.15	17000	2500	0.04	0.15	15500	2100	0.04	0.15
<b>R2.5</b>	17500	3500	0.05	0.15	13500	2200	0.05	0.15	13000	2000	0.05	0.15
<b>R3.0</b>	15000	3100	0.06	0.2	11500	1700	0.06	0.2	10500	1500	0.06	0.2
<b>R4.0</b>	11000	2500	0.08	0.25	8600	1600	0.08	0.25	8000	1400	0.08	0.25
<b>R5.0</b>	9000	2000	0.1	0.3	7000	1400	0.1	0.3	6000	1200	0.1	0.3
<b>R6.0</b>	7500	1800	0.1	0.35	5700	1300	0.1	0.35	5300	1200	0.1	0.35
<b>R8.0</b>	5500	1800	0.1	0.4	4300	1300	0.1	0.4	4000	1200	0.1	0.4
<b>R10.0</b>	4500	1800	0.1	0.5	3500	1300	0.1	0.5	3200	1200	0.1	0.5

Maximum cutting depth				
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1. Please select high-precision and rigidity machine and tool holder.
2. Above table shows the standard for operations with little change of machining load, such as contour machining. When the machine rigidity and workpiece fixture stability is low, vibration and abnormal noise may be generated. Please reduce the rotating speed and feed speed stated above correspondingly.
3. Please use air blow or MQL (minimum oil mist cooling).
4. When inclination angle  $\alpha$  is more than 15°, please reduce rotating speed and feed speed to 50%~80% of the speeds stated in the table.
5. Make overhang of tool as short as possible in conditions of non-interference.



Indexable milling tools

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Cutting parameters for HMX series end mills