


A Brand AE-HFE-H


Advanced Performance End Mills for High-hardness Steels

List 8571 - A Brand AE-HFE-H: Multi-Flute, High Feed Radius, Stub

L/D ≤ 4

Hardness	Up to 45HRC		Up to 55HRC		Up to 62HRC		Up to 66HRC		Up to 70HRC					
Work Material	Hardened Steel, Prehardened Steel, Carbon Steels, D2, P21		Hardened Steels		Hardened Steels		Hardened Steels		Hardened Steels					
Cutting Speed (SFM)	390 - 460		330 - 390		260 - 330		230 - 300		200 - 260					
Depth of Cut (Max) 	<table border="1"> <tr> <th>a_a Max</th> <th>a_r Max</th> </tr> <tr> <td>0.04D</td> <td>0.60D</td> </tr> </table>										a _a Max	a _r Max	0.04D	0.60D
											a _a Max	a _r Max		
0.04D	0.60D													
Mill Dia. (mm)	Speed (RPM)	Feed (mm/min)	Speed (RPM)	Feed (mm/min)	Speed (RPM)	Feed (mm/min)	Speed (RPM)	Feed (mm/min)	Speed (RPM)	Feed (mm/min)				
1	41,000	291.3	35,000	208.7	28,500	126.0	25,000	65.0	22,000	49.2				
2	20,500	291.3	17,500	208.7	14,000	124.0	12,500	65.0	11,000	49.2				
3	13,500	358.3	11,500	257.9	9,550	159.4	8,450	82.7	7,400	61.0				
4	10,000	372.0	8,750	273.6	7,150	167.3	6,350	86.6	5,550	65.0				
5	8,250	383.9	7,000	273.6	5,700	167.3	5,050	86.6	4,450	65.0				
6	6,900	385.8	5,800	273.6	4,750	167.3	4,200	86.6	3,700	65.0				
8	5,150	383.9	4,350	273.6	3,550	167.3	3,150	86.6	2,750	63.0				
10	4,100	381.9	3,500	273.6	2,850	167.3	2,500	84.6	2,200	63.0				
12	3,450	385.8	2,900	273.6	2,350	165.4	2,100	86.6	1,850	65.0				

4 < L/D ≤ 6

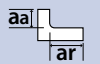
Hardness	Up to 45HRC		Up to 55HRC		Up to 62HRC		Up to 66HRC		Up to 70HRC					
Work Material	Hardened Steel, Prehardened Steel, Carbon Steels, D2, P21		Hardened Steels		Hardened Steels		Hardened Steels		Hardened Steels					
Cutting Speed (SFM)	360 - 430		300 - 360		230 - 300		200 - 260		130 - 200					
Depth of Cut (Max) 	<table border="1"> <tr> <th>a_a Max</th> <th>a_r Max</th> </tr> <tr> <td>0.03D</td> <td>0.50D</td> </tr> </table>										a _a Max	a _r Max	0.03D	0.50D
											a _a Max	a _r Max		
0.03D	0.50D													
Mill Dia. (mm)	Speed (RPM)	Feed (mm/min)	Speed (RPM)	Feed (mm/min)	Speed (RPM)	Feed (mm/min)	Speed (RPM)	Feed (mm/min)	Speed (RPM)	Feed (mm/min)				
1	38,000	226.4	31,500	139.8	25,000	110.2	22,000	57.1	15,500	33.5				
2	19,000	226.4	15,500	137.8	12,500	110.2	11,000	57.1	7,950	35.4				
3	12,500	279.5	10,500	175.2	8,450	141.7	7,400	70.9	5,300	43.3				
4	9,550	299.2	7,950	187.0	6,350	149.6	5,550	74.8	3,950	45.3				
5	7,600	297.2	6,350	187.0	5,050	147.6	4,450	74.8	3,150	45.3				
6	6,350	299.2	5,300	187.0	4,200	147.6	3,700	74.8	2,650	45.3				
8	4,750	297.2	3,950	185.0	3,150	147.6	2,750	74.8	1,950	45.3				
10	3,800	297.2	3,150	185.0	2,500	145.7	2,200	74.8	1,550	45.3				
12	3,150	297.2	2,650	187.0	2,100	147.6	1,850	74.8	1,300	45.3				



A Brand AE-HFE-H

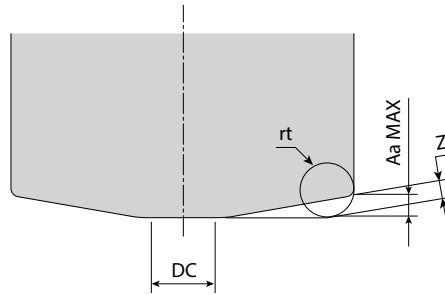
Advanced Performance End Mills for High-hardness Steels

6 < L/D ≤ 7

Hardness	Up to 45HRC		Up to 55HRC		Up to 62HRC		Up to 66HRC		Up to 70HRC					
Work Material	Hardened Steel, Prehardened Steel, Carbon Steels, D2, P21		Hardened Steels		Hardened Steels		Hardened Steels		Hardened Steels					
Cutting Speed (SFM)	300 - 360		210 - 280		160 - 230		140 - 220		100 - 170					
Depth of Cut (Max) 	<table border="1"> <tr> <th>a_a Max</th> <th>a_r Max</th> </tr> <tr> <td>0.02D</td> <td>0.40D</td> </tr> </table>										a _a Max	a _r Max	0.02D	0.40D
											a _a Max	a _r Max		
0.02D	0.40D													
Mill Dia. (mm)	Speed (RPM)	Feed (mm/min)	Speed (RPM)	Feed (mm/min)	Speed (RPM)	Feed (mm/min)	Speed (RPM)	Feed (mm/min)	Speed (RPM)	Feed (mm/min)				
1	31,500	163.4	23,500	104.3	19,000	55.1	17,500	37.4	12,500	21.7				
2	15,500	161.4	11,500	102.4	9,550	57.1	8,750	37.4	6,000	21.7				
3	10,500	204.7	7,950	131.9	6,350	70.9	5,800	47.2	4,200	27.6				
4	7,950	218.5	5,950	139.8	4,750	72.8	4,350	51.2	3,150	29.5				
5	6,350	218.5	4,750	139.8	3,800	72.8	3,500	51.2	2,500	29.5				
6	5,300	218.5	3,950	139.8	3,150	72.8	2,900	51.2	2,100	29.5				
8	3,950	216.5	2,950	137.8	2,350	72.8	2,150	49.2	1,550	29.5				
10	3,150	216.5	2,350	137.8	1,900	72.8	1,750	51.2	1,250	29.5				
12	2,650	218.5	1,950	137.8	1,550	72.8	1,450	51.2	1,050	29.5				



List 8571 - A Brand AE-HFE-H: Multi-Flute, High Feed Radius, Stub



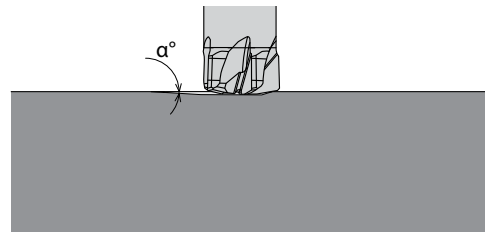
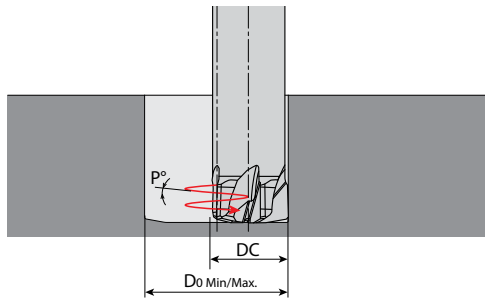
Edge Shape Definitions for the Purpose of Creating a Program

Diameter	X	Approx Radius	Lowest Point Diameter	Remainder
DC (mm)		rt (mm)	DCF	Z (mm)
1	×	R0.10	0.36	0.040
2	×	R0.20	0.73	0.073
3	×	R0.30	1.10	0.110
4	×	R0.35	1.50	0.143
5	×	R0.40	1.87	0.185
6	×	R0.45	2.24	0.227
8	×	R0.65	2.99	0.294
10	×	R0.70	3.83	0.351
12	×	R0.80	4.59	0.428

Maximum Depth of Cut

Diameter	Aa Max
DC (mm)	Aa Max (mm)
1	0.04
2	0.08
3	0.12
4	0.16
5	0.20
6	0.24
8	0.32
10	0.40
12	0.48

If the pick feed is greater than DCF, cusps may occur on the machined surface. During machining, please program the milling paths according to the recommended simulated R (rt) respective to the individual end mill diameter.



Maximum Ramping Angle

Diameter	X	Approx Radius	Ramping	Helical Milling		Helical
		rt (mm)	α (deg)	D0 (Min)	D0 (Max)	P (deg)
1	×	R0.10	3.00	1.25	1.75	1.50
2	×	R0.20		2.50	3.50	
3	×	R0.30		4.50	5.50	
4	×	R0.35		6.00	7.00	
5	×	R0.40		7.50	9.00	
6	×	R0.45		9.00	11.00	
8	×	R0.65		12.00	15.00	
10	×	R0.70		15.00	19.00	
12	×	R0.80		18.00	23.00	

For ramping and helical milling, set the feed rate to 50%.