
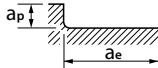


CUTTING CONDITIONS


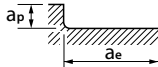
Milling | Endmills | Cutting conditions

AE-HFE-H

Frontal Milling $L/D \leq 4$

	ToolSteel • Hardened Steel • Prehardened Steel		Hardened Steel											
	SKD11 • SKD61 • NAK80													
	~45HRC		~55HRC		~62HRC		~66HRC		~70HRC					
(m/min)	120~140		100~120		80~100		70~90		60~80					
DC X rt	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)				
1 ×R0,1	41.000	7.400	35.000	5.300	28.500	3.200	25.000	1.650	22.000	1.250				
2 ×R0,2	20.500	7.400	17.500	5.300	14.000	3.150	12.500	1.650	11.000	1.250				
3 ×R0,3	13.500	9.100	11.500	6.550	9.550	4.050	8.450	2.100	7.400	1.550				
4 ×R0,35	10.000	9.450	8.750	6.950	7.150	4.250	6.350	2.200	5.550	1.650				
5 ×R0,4	8.250	9.750	7.000	6.950	5.700	4.250	5.050	2.200	4.450	1.650				
6 ×R0,45	6.900	9.800	5.800	6.950	4.750	4.250	4.200	2.200	3.700	1.650				
8 ×R0,65	5.150	9.750	4.350	6.950	3.550	4.250	3.150	2.200	2.750	1.600				
10 ×R0,7	4.100	9.700	3.500	6.950	2.850	4.250	2.500	2.150	2.200	1.600				
12 ×R0,8	3.450	9.800	2.900	6.950	2.350	4.200	2.100	2.200	1.850	1.650				
Depth of cut	<div><table><tr><td>ap</td><td>ae</td></tr><tr><td>0,04D</td><td>0,6D</td></tr></table></div>										ap	ae	0,04D	0,6D
ap	ae													
0,04D	0,6D													

Frontal Milling $4 < L/D \leq 6$

	ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80		Hardened Steel											
	~45HRC		~55HRC		~62HRC		~66HRC		~70HRC					
(m/min)	110~130		90~110		70~90		60~80		40~60					
DC X rt	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)				
1 ×R0,1	38.000	5.750	31.500	3.550	25.000	2.800	22.000	1.450	15.500	850				
2 ×R0,2	19.000	5.750	15.500	3.500	12.500	2.800	11.000	1.450	7.950	900				
3 ×R0,3	12.500	7.100	10.500	4.450	8.450	3.600	7.400	1.800	5.300	1.100				
4 ×R0,35	9.550	7.600	7.950	4.750	6.350	3.800	5.550	1.900	3.950	1.150				
5 ×R0,4	7.600	7.550	6.350	4.750	5.050	3.750	4.450	1.900	3.150	1.150				
6 ×R0,45	6.350	7.600	5.300	4.750	4.200	3.750	3.700	1.900	2.650	1.150				
8 ×R0,65	4.750	7.550	3.950	4.700	3.150	3.750	2.750	1.900	1.950	1.150				
10 ×R0,7	3.800	7.550	3.150	4.700	2.500	3.700	2.200	1.900	1.550	1.150				
12 ×R0,8	3.150	7.550	2.650	4.750	2.100	3.750	1.850	1.900	1.300	1.150				
Depth of cut	<div><table><tr><td>ap</td><td>ae</td></tr><tr><td>0,03D</td><td>0,5D</td></tr></table></div>										ap	ae	0,03D	0,5D
ap	ae													
0,03D	0,5D													


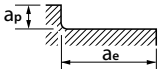
1. Use a rigid and precise machine and holder.
2. The values listed above are for reference. Please set the cutting condition in accordance with the actual machining environment.
3. When the depth of cut a_p exceeds the table above, set it so that it does not exceed the maximum depth of cut $a_{p\text{ Max}}$. Please adjust the cutting condition according to the actual machining environment.
4. Please reduce the feed rate when the depth of cut is greater than specified.
5. We suggest using air blow or MQL (mist).
6. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
7. If the pick amount is DCF or more, cusp may occur on the machined surface.

CUTTING CONDITIONS

Milling | Endmills | Cutting conditions

AE-HFE-H

Frontal Milling $6 < L/D \leq 7$

	ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80		Hardened Steel											
	~45HRC		~ 55HRC		~ 62HRC		~ 66HRC		~ 70HRC					
(m/min)	90~110		65~85		50~70		45~65		30~50					
DC X rt	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)				
1 xR0,1	31.500	4.150	23.500	2.650	19.000	1.400	17.500	950	12.500	550				
2 xR0,2	15.500	4.100	11.500	2.600	9.550	1.450	8.750	950	6.000	550				
3 xR0,3	10.500	5.200	7.950	3.350	6.350	1.800	5.800	1.200	4.200	700				
4 xR0,35	7.950	5.550	5.950	3.550	4.750	1.850	4.350	1.300	3.150	750				
5 xR0,4	6.350	5.550	4.750	3.550	3.800	1.850	3.500	1.300	2.500	750				
6 xR0,45	5.300	5.550	3.950	3.550	3.150	1.850	2.900	1.300	2.100	750				
8 xR0,65	3.950	5.500	2.950	3.500	2.350	1.850	2.150	1.250	1.550	750				
10 xR0,7	3.150	5.500	2.350	3.500	1.900	1.850	1.750	1.300	1.250	750				
12 xR0,8	2.650	5.550	1.950	3.500	1.550	1.850	1.450	1.300	1.050	750				
Depth of cut	<div><table><tr><td>ap</td><td>ae</td></tr><tr><td>0,02D</td><td>0,4D</td></tr></table></div>										ap	ae	0,02D	0,4D
ap	ae													
0,02D	0,4D													

Maximum Ramping Angle (E°)

DC X rt	Ramping Angle E°	Helical Milling (mm)		Helical Angle P°
		D0 Min.	D0 Max.	
1 xR0,1	3°	1,25	1,75	1,5°
2 xR0,2		2,5	3,5	
3 xR0,3		4,5	5,5	
4 xR0,35		6	7	
5 xR0,4		7,5	9	
6 xR0,45		9	11	
8 xR0,65		12	15	
10 xR0,7		15	19	
12 xR0,8		18	23	

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

Edge shape definitions for the purpose of creating a program

DC	rt	Remainder Z
1	R0,1	0,04
2	R0,2	0,073
3	R0,3	0,11
4	R0,35	0,143
5	R0,4	0,185
6	R0,45	0,227
8	R0,65	0,294
10	R0,7	0,351
12	R0,8	0,428

Maximum depth of cut

DC	Remainder Z
1	0,04
2	0,08
3	0,12
4	0,16
5	0,2
6	0,24
8	0,32
10	0,4
12	0,48

