


# CUTTING CONDITIONS


Milling | Endmills | Cutting conditions

## AE-CRE-H

Frontal Milling

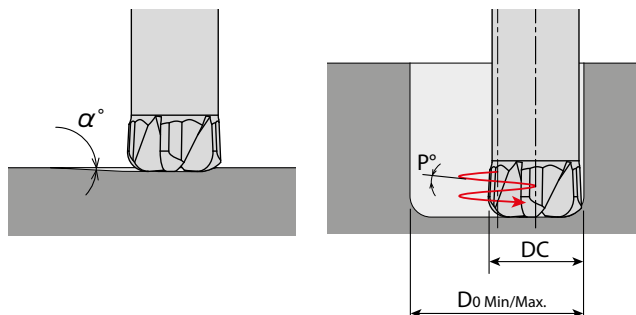
	ToolSteel • Hardened Steel • Prehardened Steel		Hardened Steel																			
	SKD11 • SKD61 • NAK80																					
	~45HRC		~ 55HRC		~ 62HRC		~ 66HRC		~ 70HRC													
(m/min)	140~160		140~160		90~110		70~90		50~70													
DC x RE	S (min <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	F (mm/min)												
1 xR0,2	48.000	7.250	48.000	6.800	32.000	2.900	25.500	1.650	19.500	950												
2 xR0,5	24.000	7.250	24.000	6.800	16.000	2.900	13.000	1.700	9.550	950												
3 xR0,75	16.000	8.600	16.000	8.050	10.700	3.450	8.450	1.950	6.350	1.100												
4 xR1	12.000	9.550	12.000	8.950	7.950	3.800	6.350	2.200	4.750	1.200												
5 xR1,2	9.550	9.500	9.550	8.950	6.350	3.800	5.050	2.200	3.800	1.200												
6 xR1,5	7.950	9.500	7.950	8.900	5.300	3.800	4.200	2.200	3.150	1.200												
7 xR1,5	6.800	8.550	6.800	8.000	4.500	3.400	3.600	1.950	2.700	1.100												
8 xR2	5.950	9.500	5.950	8.900	3.950	3.750	3.150	2.200	2.350	1.200												
9 xR2	5.300	8.550	5.300	8.000	3.500	3.400	2.800	1.950	2.100	1.100												
10 xR2	4.750	9.450	4.750	8.900	3.150	3.750	2.500	2.150	1.900	1.200												
11 xR2	4.300	8.500	4.300	7.950	2.850	3.350	2.300	1.950	1.700	1.100												
12 xR3	3.950	9.450	3.950	8.850	2.650	3.800	2.100	2.200	1.550	1.200												
13 xR3	3.650	8.500	3.650	8.000	2.400	3.350	1.950	1.950	1.450	1.100												
Depth of cut	<table><tr><td>ap</td><td>ae</td></tr><tr><td>0,1RE</td><td>0,3D</td></tr></table> ap Max = 0,2mm		ap	ae	0,1RE	0,3D	<table><tr><td>ap</td><td>ae</td></tr><tr><td>0,1RE</td><td>0,3D</td></tr></table> ap Max = 0,2mm		ap	ae	0,1RE	0,3D	<table><tr><td>ap</td><td>ae</td></tr><tr><td>0,05RE</td><td>0,3D</td></tr></table> ap Max = 0,1mm						ap	ae	0,05RE	0,3D
	ap	ae																				
0,1RE	0,3D																					
ap	ae																					
0,1RE	0,3D																					
ap	ae																					
0,05RE	0,3D																					
<div>1. Use a rigid and precise machine and holder.</div> <div>2. These milling conditions are based on milling with circular interpolation at corners. For milling without circular interpolation (such as right angle corners), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.</div> <div>3. We suggest using air blow or MQL (mist).</div> <div>4. Please adjust the speed, feed and cutting depth according to actual cutting conditions.</div> <div>5. These milling conditions are for overhang length of less than 4 x D. For longer overhang length, reduce the speed, feed rate, and the cutting depth in accordance to the respective coefficients to prevent chattering. It can also be used by lowering the cutting speed and adjusting the ae.</div>																						

### Cutting Condition Guide for Changes in Overhang Length

	ToolSteel • Hardened Steel • Prehardened Steel			Hardened Steel											
	SKD11 • SKD61 • NAK80														
L/D	~45HRC			~ 55HRC			~ 62HRC			~ 66HRC			~ 70HRC		
	S (min <sup>-1</sup> )	F (mm/min)	ap (mm)	S (min <sup>-1</sup> )	F (mm/min)	ap (mm)	S (min <sup>-1</sup> )	F (mm/min)	ap (mm)	S (min <sup>-1</sup> )	F (mm/min)	ap (mm)	S (min <sup>-1</sup> )	F (mm/min)	ap (mm)
L/D≤4	100%			100%			100%			100%			100%		
4<L/D<6	70%			70%			70%			60%			60%		
L/D=6	50%			50%			50%			40%			40%		

### Maximum Ramping Angle (E°)

DC X RE	Ramping Angle E°	Helical Milling (mm)		Helical Angle P°
		D0 Min.	D0 Max.	
1 xR0,2	3°	1,25	1,75	1,5°
2 xR0,5		2,5	3,5	
3 xR0,75		4,5	5,5	
4 xR1		6	7	
5 xR1,2		7,5	9	
6 xR1,5		9	11	
7 xR1,5		10,5	13	
8 xR2		12	15	
9 xR2		13,5	17	
10 xR2		15	19	
11 xR2		16,5	21	
12 xR3		18	23	
13 xR3		19,5	25	



When ramping or helical milling, after adjusting the cutting condition by changing the overhang length, set the feed rate to 50% or less.