

Speeds and Feeds

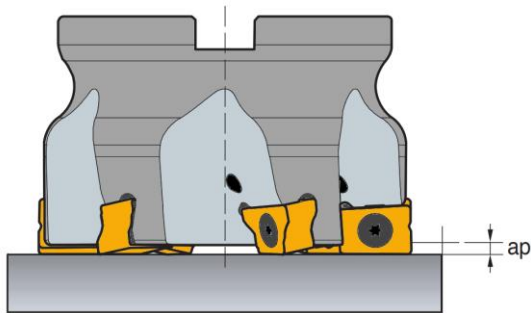


1. Select your material in the ISO colored chart.
2. Start with the recommended RPM, cutting speed, v_c (sfm) and feed rate, f_z (in/tooth). Adjust the cutting speed and/or feed rate based on your cutting conditions.
3. Warning: Calculated RPM may exceed the maximum RPM of the cutter body. Never exceed the maximum RPM rating of the cutter body.

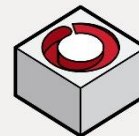
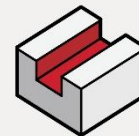
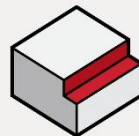
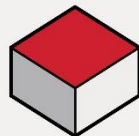
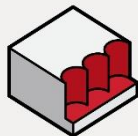
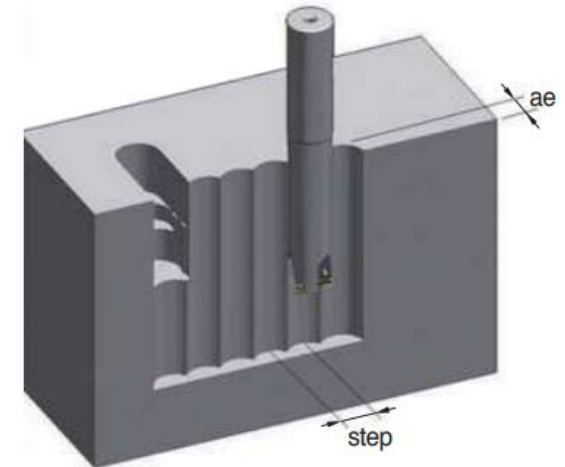
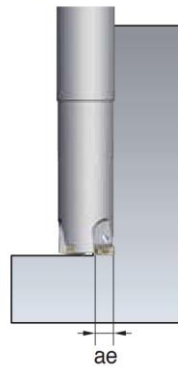
Haas Milling Cutter Series	Haas Insert Geometry	Haas Cutter Bodies
HLNP	LNMX151008-HM	01-0618
		01-0619
		01-0620

Haas Milling Cutter Series	Workpiece Material	Haas Grade	Haas Inserts	v_c (m/min)	f_z (mm/t)	max ae (mm)	max ap (mm)	max step
HLNP	P Steel	HMP40C	02-0982	150~250	0.10~0.30	14.0	2.5	<0.7D
	M Stainless steel	HU30	02-0983	120~250	0.08~0.30	14.0	2.5	<0.7D
	K Cast iron	HMK15	02-0984	100~180	0.05~0.20	14.0	2.5	<0.7D

In horizontal machining, Depth of cut = ap



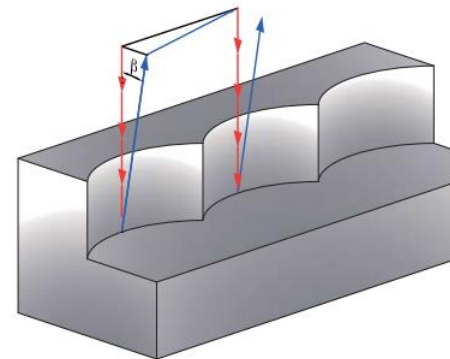
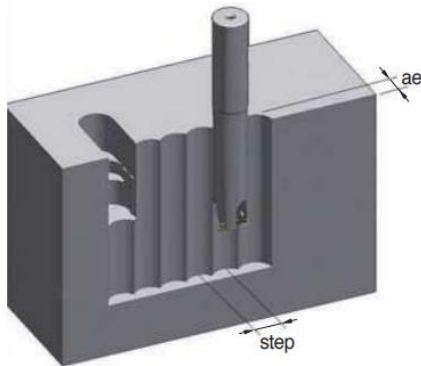
In plunging, Depth of cut = ae



Speeds and Feeds

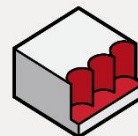


ae (mm)	Cutter Diameter (mm)								
	25	32	40	50	52	63	66	80	100
	Max step (mm)								
1	9.7	11.1	12.4	14	14.2	15.7	16.1	17.7	19.9
2	13.5	15.4	17.4	19.5	20	22	22.6	24.9	28
3	16.2	18.6	21	23.7	24.2	26.8	27.4	30.3	34.1
4	18.3	21.1	24	27.1	27.7	30.7	31.4	34.8	39.1
5	20	23.2	26.4	30	30.6	34	34.9	38.7	43.5
6	21.3	24.9	28.5	32.4	33.2	36.9	37.9	42.1	47.4
7	22.4	26.4	30.3	34.6	35.4	39.5	40.6	45.2	51
8	23.3	27.7	32	36.6	37.5	41.9	43	48	54.2
9	24	28.7	33.4	38.4	39.3	44	45.2	50.5	57.2
10	-	-	-	-	-	46	47.3	52.9	60
11	-	-	-	-	-	47.8	49.1	55.1	62.5
12	-	-	-	-	-	49.4	50.9	57.1	64.9
13	-	-	-	-	-	50.9	52.4	59	67.2
14	-	-	-	-	-	52.3	53.9	60.7	69.3

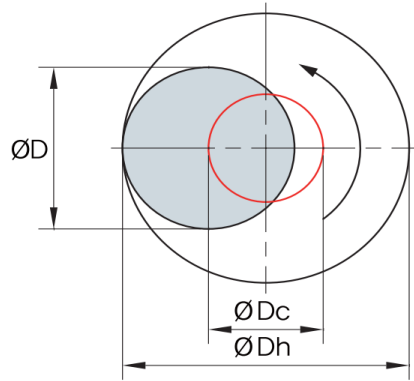


- - - Plunging feed direction
- Tool escape
- β Escape angle ($\beta \geq 1^\circ$)

*When your tool steps back after plunging, please get over 1° more escape angle

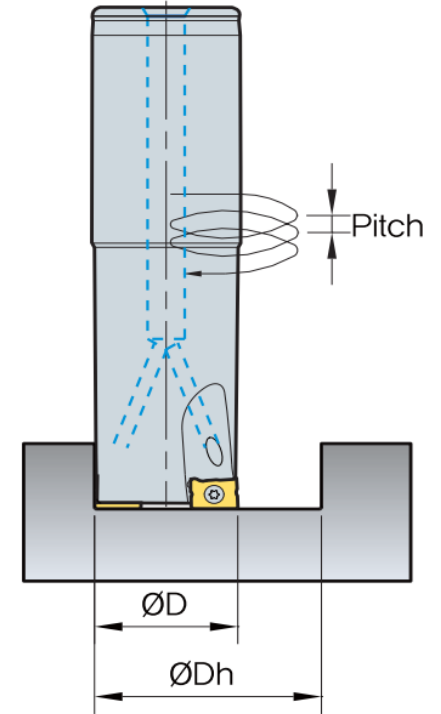


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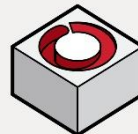


$$\text{ØDc} = \text{ØDh} - \text{ØD}$$

ØDc = Tool center path
 ØDh = Desired hole diameter
 ØD = Tool Dia.



Cutter Diameter ØD (mm)	Helical data			
	ØDh min (mm)	ØDh max (mm)	Min. Pitch (mm)	Max. Pitch (mm)
25.0	30	48	0.4	1.8
32.0	43	62	0.3	0.9
40.0	59	78	0.3	0.6
50.0	79	98	0.3	0.5
52.0	83	102	0.3	0.5
63.0	95	124	0.5	1.0
66.0	101	130	0.5	1.0
80.0	129	158	0.5	0.8
100.0	169	198	0.3	0.5



Speeds and Feeds



Feed Rate, Per Revolution (mm/min)
$v_f = f_n \cdot n$

Feed Rate, Per Tooth (mm/min)
$v_f = f_z \cdot n \cdot Z$

Feed Per Revolution (mm/rev)
$f_n = \frac{v_f}{n}$

Feed Per Tooth (mm)
$f_z = \frac{v_f}{n \cdot Z}$

Cutting Speed (m/min)
$v_c = \frac{\pi \cdot D_{tool} \cdot n}{1000}$

Spindle Speed (rev/min)
$n = \frac{v_c \cdot 1000}{\pi \cdot D_{tool}}$

Material Removal Rate (cm ³ /min)
$MMR = \frac{a_p \cdot a_e \cdot v_f}{1000}$

Metric

Symbol	Definition	Unit
v_f	Feed rate	<i>mm/min</i>
f_n	Feed per revolution	<i>mm/rev</i>
f_z	Feed per tooth	<i>mm</i>
v_c	Cutting speed	<i>m/min (SMM)</i>
n	Spindle speed	<i>rev/min (RPM)</i>
D_{tool}	Tool cutting diameter	<i>mm</i>
MMR	Material removal rate	<i>(cm³/min)</i>
a_e	Radial depth of cut	<i>mm</i>
a_p	Axial depth of cut	<i>mm</i>
Z	Number of teeth/flutes	