

Speeds and Feeds

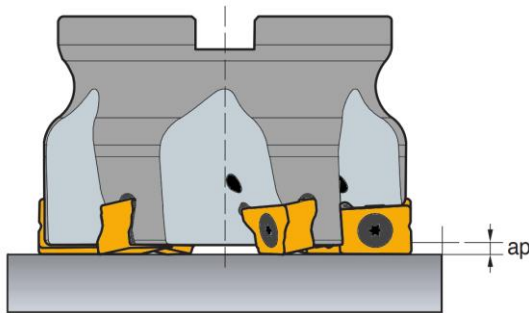


1. Select your material in the ISO colored chart.
2. Start with the recommended RPM, cutting speed, v_c (sfm) and feed rate, f_z (in/tooth). Adjust the cutting speed and/or feed rate based on your cutting conditions.
3. Warning: Calculated RPM may exceed the maximum RPM of the cutter body. Never exceed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

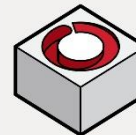
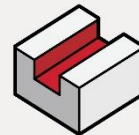
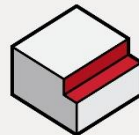
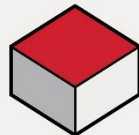
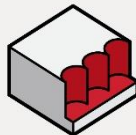
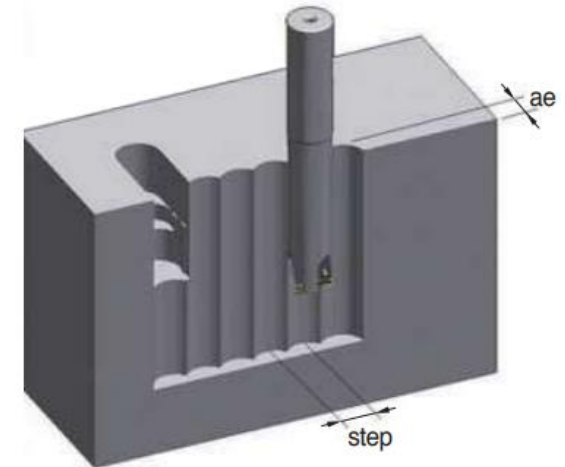
Haas Milling Cutter Series	Haas Insert Geometry	Haas Cutter Bodies
HLNP	LNMX100605-HM	01-0616
		01-0617
		01-0621
		01-0622

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	02-0979	150~250	0.10~0.30	9.0	1.5	<0.7D
	M Stainless steel	HU30	02-0980	100~250	0.08~0.30	9.0	1.5	<0.7D
	K Cast iron	HMK15	02-0981	80~180	0.05~0.20	9.0	1.5	<0.7D

In horizontal machining, Depth of cut = ap



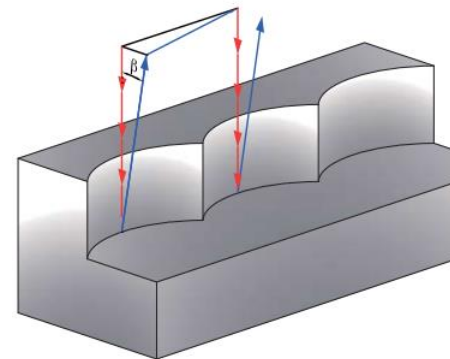
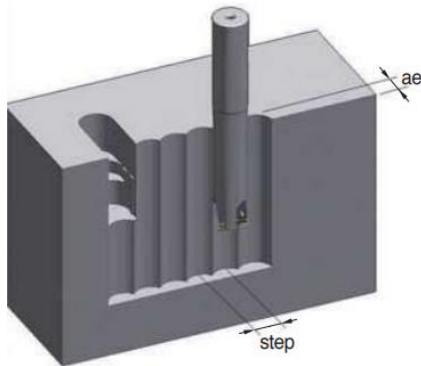
In plunging, Depth of cut = ae



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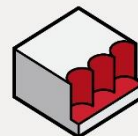


ae (mm)	Cutter Diameter (mm)								
	25	32	40	50	52	63	66	80	100
	Max step (mm)								
1	9.7	11.1	12.4	14	14.2	15.7	16.1	17.7	19.9
2	13.5	15.4	17.4	19.5	20	22	22.6	24.9	28
3	16.2	18.6	21	23.7	24.2	26.8	27.4	30.3	34.1
4	18.3	21.1	24	27.1	27.7	30.7	31.4	34.8	39.1
5	20	23.2	26.4	30	30.6	34	34.9	38.7	43.5
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

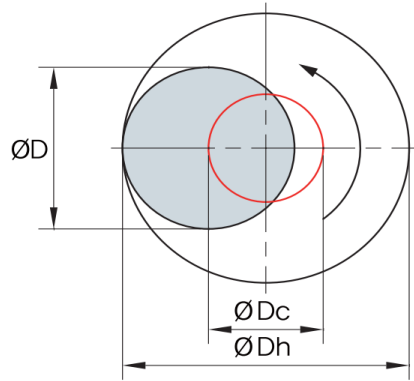


- - - Plunging feed direction
- Tool escape
- β Escape angle ($\beta \geq 1^\circ$)

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



Speeds and Feeds

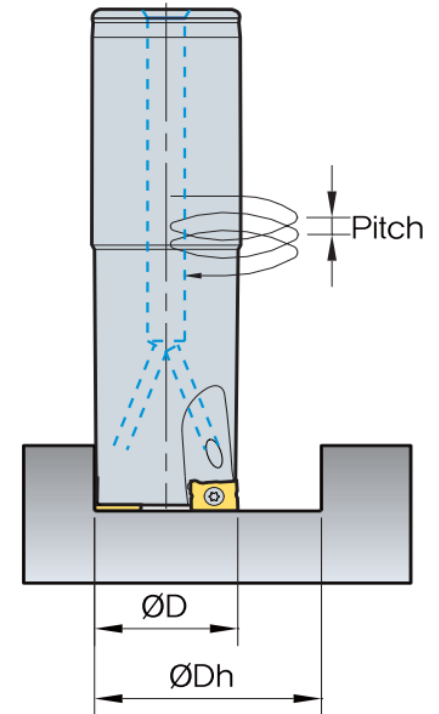


$$\text{ØDc} = \text{ØDh} - \text{ØD}$$

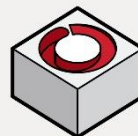
ØDc = Tool center path

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	mm/min
f_n	Feed per revolution	mm/rev
f_z	Feed per tooth	mm
v_c	Cutting speed	m/min (SMM)
n	Spindle speed	rev/min (RPM)
D_{tool}	Tool cutting diameter	mm
MMR	Material removal rate	(cm ³ /min)
a_e	Radial depth of cut	mm
a_p	Axial depth of cut	mm
Z	Number of teeth/flutes	