




# Technical Details



## How To Use This Chart:

- 1) Select your material in the ISO colored chart
- 2) Start with the recommended SFM (Vc) and feed (inch/tooth)
  - Adjust the SFM and/or feed rate based on your cutting conditions.

## HSHF - Haas Square High Feed

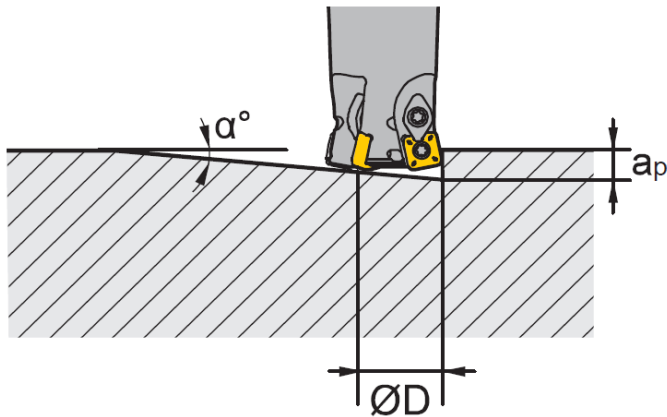
		Cutting Data											
		Insert Grade	HMP20	HMP35	HCSHFI - Haas Square High Feed								
		Workpiece Material	Hardness HB	Starting SFM (Range)	Starting SFM (Range)	Starting Feed Per Tooth (Range)						Plunge Milling 	
						Face Milling 			Helical Milling 				
						Axial Depth of Cut (Ap)	Ø 2.0" / 2.5" Feed Per Tooth	Ø 3.0" Feed Per Tooth	Ø 2.0" Feed Per Tooth	Ø 2.5" Feed Per Tooth	Ø 3.0" Feed Per Tooth	Radial Width of Cut Max (Ae)	Ø 2.0" Ø 2.5" Ø 3.0"
P Steel	Soft Steel Carbon Steel	≤ 180 180 - 280	550 (390 - 720)	550 (390 - 720)	0.06	0.051 (0.043" - 0.060")	0.05 (0.040" - 0.060")	0.0197 (0.0164" - 0.0230")	0.0211 (0.0176" - 0.0246")	0.0219 (0.0183" - 0.0256")	0.315" MAX.	0.0095 (.004 - .012)	
	Alloy Steel Alloy Tool Steel	280 - 350	420 (260 - 590)	420 (260 - 590)	0.051	0.051 (0.043" - 0.060")	0.050 (0.040" - 0.060")	0.0197 (0.0164" - 0.0230")	0.0211 (0.0176" - 0.0246")	0.0219 (0.0183" - 0.0256")	0.315" MAX.	.008 (.004 - .012)	
	Pre-Hardened Steel	≤ 35 HRc	390 (260 - 520)	390 (260 - 520)	0.051	0.043 (0.035" - 0.051")	0.041 (0.032" - 0.051")	0.0157 (0.0131" - 0.0184")	0.0168 (0.0141" - 0.0196")	0.0175 (0.0146" - 0.0204")	0.315" MAX.	.006 (.004 - .012)	
M Stainless Steel	Stainless Steel	≤ 270	400 (260 - 600)	400 (260 - 600)	0.06	0.043 (0.035" - 0.051")	0.041 (0.032" - 0.051")	0.0157 (0.0131" - 0.0184")	0.0168 (0.0141" - 0.0196")	0.0175 (0.0146" - 0.0204")	0.315" MAX.	.007 (.004 - .012)	



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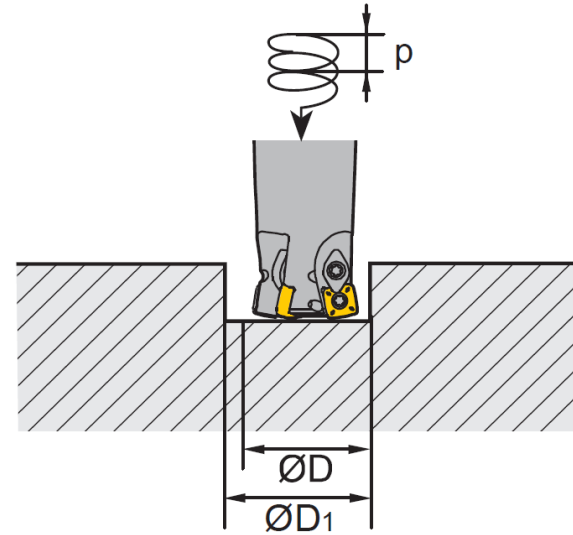
## 1. Ramping



$$L_m = \frac{a_p}{\tan \alpha}$$

$\alpha$ : Plunge angle

## 2. Helical Ramping



$$P = \tan \alpha \times \pi \times D_1$$

$\alpha$ : Helix angle

Tool Diameter $\varnothing D$	$a_p$ (max.)	1. Ramping		2. Helical Cutting			
		Maximum Angle $\alpha^\circ$	Minimum Length (Lm)	Minimum Machining Dia. $\varnothing DH_{min}$	Maximum Pitch	Maximum Machining Dia. $\varnothing DH_{max}$	Maximum Pitch
2.00	0.070	0.3°	13.37	3.244	0.053	3.275	0.053
2.50		0.2°	20.06	4.244	0.046	4.275	0.046
3.00		0.15°	26.74	5.244	0.043	5.275	0.043