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TOOLING SOLUTIONS EXPERTS
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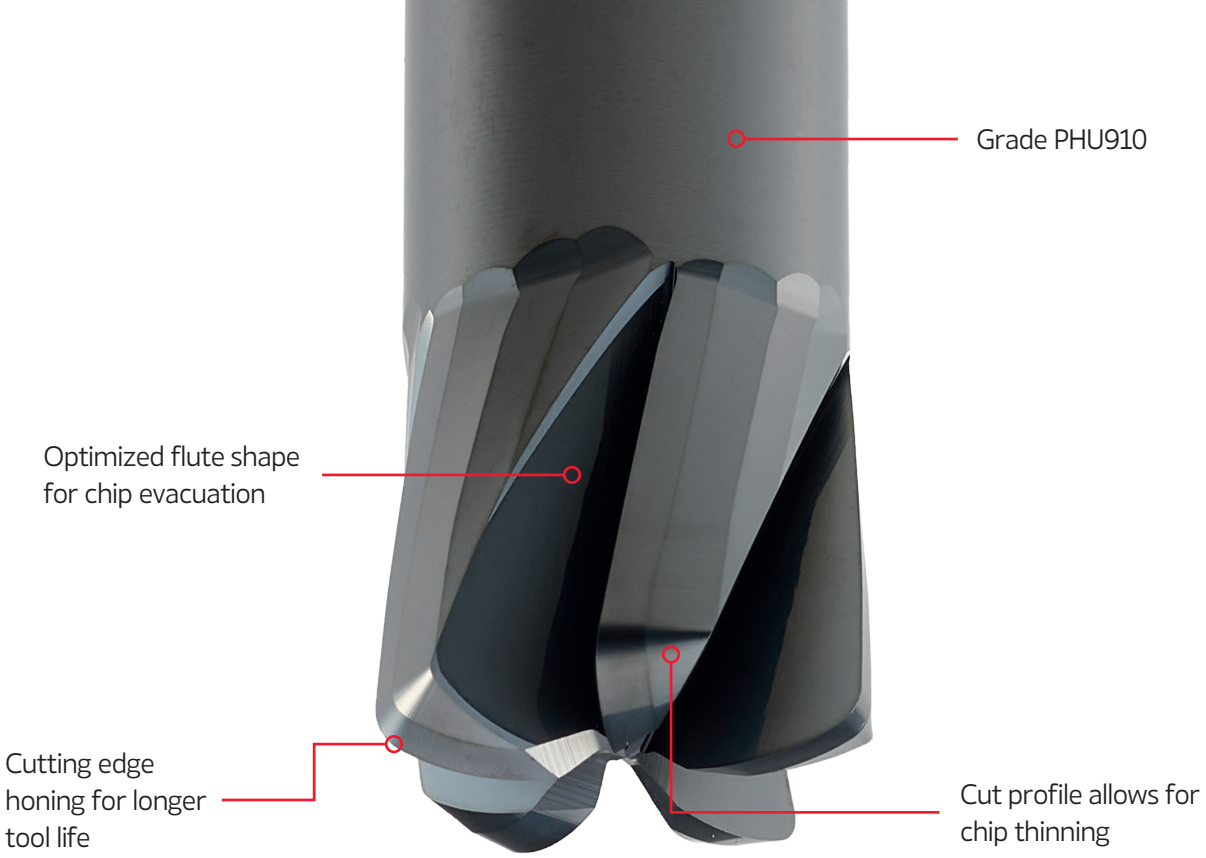
PILOT
Precision Products

HIFEED INTEG
High Feed Endmills

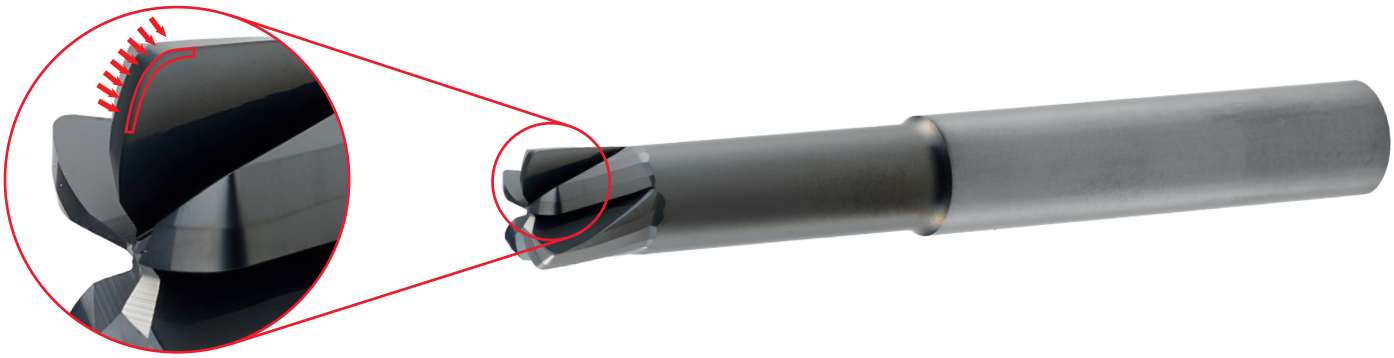
IMPERIAL



Achieve better productivity and longer tool life with our new line of high feed solid carbide endmills!

This innovative curved profile of the cutting edge, along with a low lead angle:

- Causes a chip thinning effect and aggressive feed rates.
- Reduces the axial loads on the endmill and consequently tool deflection and vibration, leading to more stability.



These combined improvements result in up to **30% more tool life** when processing hardened materials compared to typical solid carbide endmills.

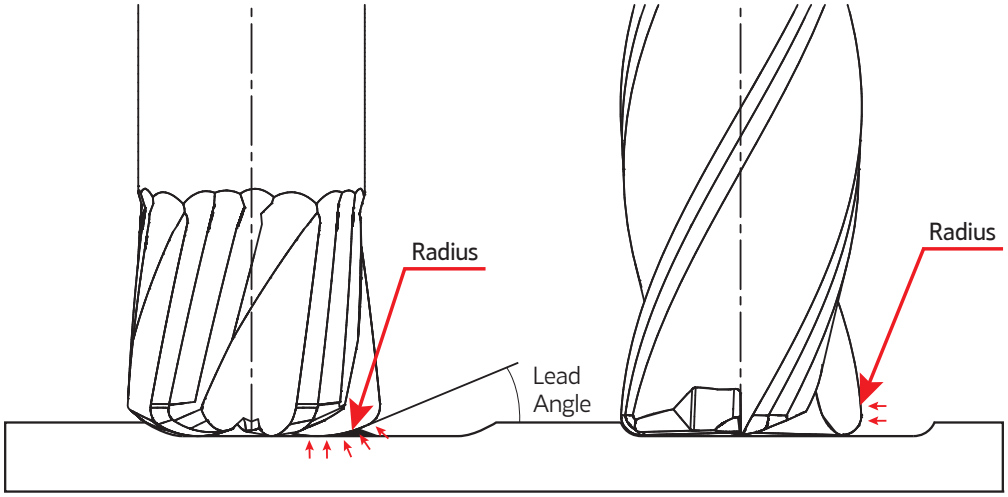
High feed endmills are the first choice for:

1. High material removal rates
2. Machining in unstable conditions
3. Versatility to machine deep or shallow parts
4. Plunge milling machine methods

HIFEED INTEG High Feed Endmills

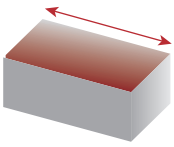
HXR30HFGS Special radius roughing

Thanks to the small lead angle and large part radius of the high feed endmill, it is possible to minimize tool deflection, once the cutting force is transferred axially against the spindle, minimizing radial forces. These tools are ideal for the machining of thin walls and contouring of deep pockets.

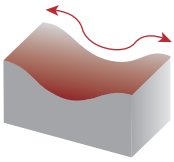


Hifeed Integ | Corner radius endmill

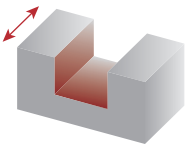
OPERATIONS



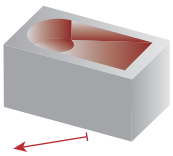
Facing



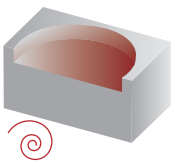
Profiling



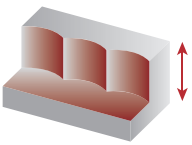
Slotting



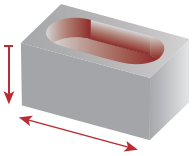
Ramp Down



Helical Interpolation



Plunging



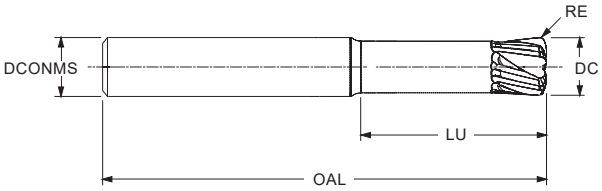
Pocket Milling

HIFEED INTEG High Feed Endmills

HXR30HFGS Special radius roughing

P M K S H

All order codes are for cylindrical shanks.
Weldon shanks available upon request.



(1) Geometry Code	(2) Grade Code		2A	Dimensions (mm)						
	Reference	NOF	PHU910	DC	DCONMS	APMX	RE	PR*	LU	OAL
1181449	HXR30HFGS 4 030 002 XR020	4	◈	0.118	0.236	0.008	0.008	0.016	0.354	2.480
1181450	HXR30HFGS 4 040 003 XR030	4	◈	0.157	0.236	0.012	0.012	0.020	0.472	2.480
1181451	HXR30HFGS 4 050 003 XR040	4	◈	0.197	0.236	0.012	0.016	0.024	0.591	2.480
1181452	HXR30HFGS 4 060 004 XR050	4	◈	0.236	0.236	0.016	0.020	0.031	0.945	2.480
1181453	HXR30HFGS 5 080 004 XR060	5	◈	0.315	0.315	0.016	0.024	0.035	1.260	2.953
1181430	HXR30HFGS 5 100 005 XR080	5	◈	0.394	0.394	0.020	0.031	0.047	1.260	2.953
1181454	HXR30HFGS 5 120 005 XR100	5	◈	0.472	0.472	0.020	0.039	0.055	1.417	3.268

◈ Stock item ◯ Available Upon Request

End mill order code = (1) Geometry Code + (2) Grade Code

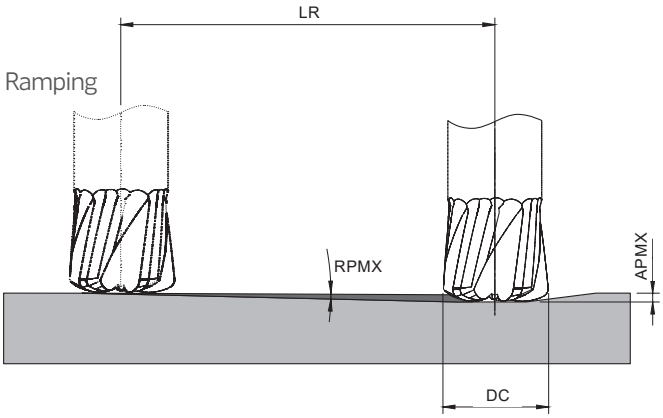
*Programming radius

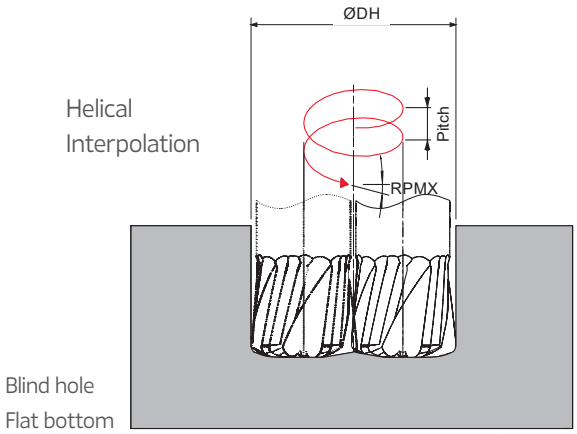
RECOMMENDED CUTTING CONDITIONS

ISO	Workpiece Material	f_z (in/t)			v_c (sfm)			Plunging	
		a_e = 25%	a_e = 50%	a_e = 100%	a_e = 25%	a_e = 50%	a_e = 100%	f_z (in/t)	v_c (sfm)
P	Unalloyed Steel	0.044 x DC	0.038 x DC	0.023 x DC	984	918	886	0.004 x DC	525
	Low-Alloyed Steel	0.044 x DC	0.038 x DC	0.023 x DC	918	820	754	0.004 x DC	459
	High-Alloyed Steel	0.040 x DC	0.036 x DC	0.020 x DC	656	590	492	0.004 x DC	394
M	Stainless Steel (Ferritic / Martensitic)	0.035 x DC	0.035 x DC	0.018 x DC	590	525	492	0.003 x DC	361
	Stainless Steel (Austenitic)	0.035 x DC	0.033 x DC	0.018 x DC	394	361	328	0.003 x DC	328
	Stainless Steel (Austenitic/Ferritic/Duplex)	0.033 x DC	0.031 x DC	0.018 x DC	262	230	197	0.003 x DC	197
K	Malleable Cast Iron	0.034 x DC	0.032 x DC	0.021 x DC	558	492	426	0.003 x DC	361
	Grey Cast Iron	0.035 x DC	0.035 x DC	0.021 x DC	722	656	590	0.003 x DC	394
	Nodular Cast Iron	0.034 x DC	0.032 x DC	0.021 x DC	525	459	394	0.003 x DC	361
S	Heat Resistant Super Alloys	0.022 x DC	0.017 x DC	0.014 x DC	131	115	98	0.002 x DC	98
H	Hardened Steels	0.026 x DC	0.021 x DC	0.014 x DC	295	279	230	0.002 x DC	230

Note: Plunge Depth = 2 x DC
Ae Stepover = 0.2 x DC

RAMPING AND HELICAL INTERPOLATION





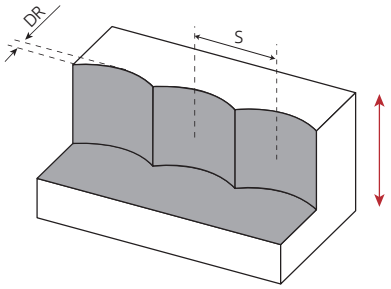
ØDi = ØDH - DC

DC	Ramping			Helical Interpolation			Max Angle (°)
	RPMX	APMX	Min LR	ØDHmin	ØDHmax	Max Pitch/Rev.	
0.118	0.596	0.787	0.299	0.157 -	- 0.236	0.276 0.787	1.5 1.5
0.157	0.596	0.118	0.453	0.287 -	- 0.315	0.394 0.118	1.5 1.3
0.197	0.596	0.118	0.453	0.264 -	- 0.394	0.394 0.118	1.5 1.0
0.236	0.596	0.157	0.624	0.315 -	- 0.472	0.596 0.157	1.5 1.2
0.315	0.596	0.157	0.624	0.421 -	- 0.630	0.787 0.157	1.5 0.9
0.394	0.596	0.197	0.752	0.524 -	- 0.787	0.984 0.197	1.5 0.9
0.472	0.596	0.197	0.752	0.630 -	- 0.945	0.118 0.197	1.5 0.7

Note: During helical interpolation do not exceed APMX.

PLUNGING

Cutting Conditions	
Vc (m/min)	fz (mm/t)
70%	35%



S Max and DR Corresponding Cutting Diameter DC (in)							
DR (mm)	DC (in)						
	0.118	0.157	0.197	0.236	0.315	0.394	0.472
0.020	0.043	0.051	0.059	0.067	0.075	0.087	0.094
0.039	0.055	0.067	0.079	0.087	0.102	0.118	0.130
0.059	-	-	0.091	0.102	0.122	0.142	0.157
0.079	-	-	-	-	0.138	0.157	0.177
0.118	-	-	-	-	-	0.181	0.205

TEST REPORT

Operation: Helical Interpolation | Slotting | Pocket Milling

Material: 1.2738 | 34-36 HRC

Tool: HXR30HFGS 5 080 004 XR060

Diameter: Ø0.315 in

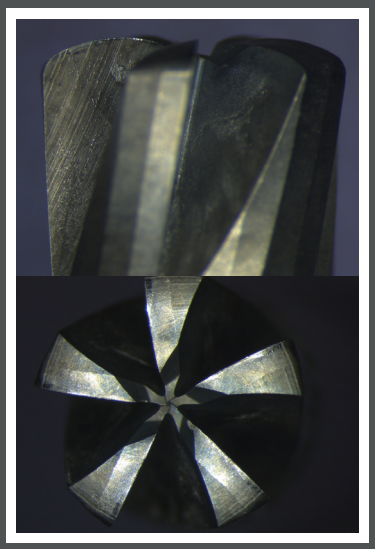
Grade: PHU910

+15% Metal Removal Rate

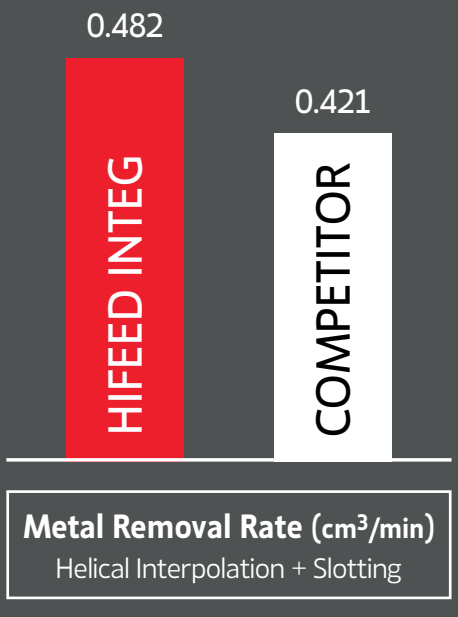
Workpiece Material: Mold Steel

Operations	Helical Interpolation	Slotting	Pocket Milling
Cutting speed: v_c	492 sfm	426 sfm	492 sfm
Feed per tooth: f_z	0.012 in/t	0.012 in/t	0.012 in/t
Depth of cut: a_p	0.012 in	0.012 in	0.012 in
Width of Cut : a_e	-	100%	60%
Coolant	Air	Air	Air

Operations were performed with a single HIFEED endmill and compared with a competitor's endmill of the same diameter and under the same cutting conditions. The HXR endmill has 5 flutes while the competitor's endmill has 4.



HXR endmill wear after 35min of helical interpolation and slotting + 70min of interrupted cutting in pocket milling



The competitor's endmill broke during slotting after 39 minutes of machining

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