INOX-INTEG

HR37SS

Stainless steel specialized end mills

palbit

MILLING
Solid Carbide

SINCE 1916

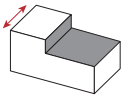
INOX INTEG Stainless Steel Specialized End mills

The HR37SS solid carbide end mill is specifically engineered to overcome the challenges of machining stainless steel, ensuring exceptional performance across a broad range of applications. Featuring a newly developed four-edge corner radius geometry, it delivers enhanced multi-functional performance, from roughing to finishing operations. Designed to address the unique difficulties of stainless steel - such as high work hardening, shear resistance, chip adhesion, and elevated machining temperatures - it incorporates a high-toughness substrate and advanced coating for superior wear resistance and chip adhesion prevention. Additionally, the optimized cutting edge reduces cutting loads, minimizes chatter, and prevents unexpected chipping, ensuring consistent and efficient machining performance.

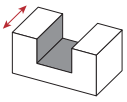
Benefits

- High performance in stainless steels;
- Complex flute geometry for superior surface quality;
- Strong cutting edge with excellent chipping resistance;
- Reliable machining performance up to 2xDC;
- High angles in ramp and helical interpolation, up to 15°;
- Suitable for dynamic trochoidal milling;
- PHF coating for application temperatures up to 1100° C;
- PHF920 grade for durability and wear resistance.

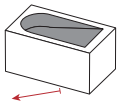
Operations



Shouldering

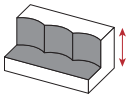


Slotting

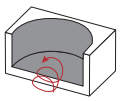


Ramp Down

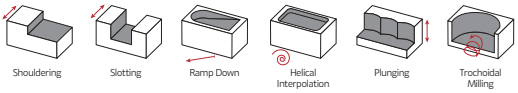
Helical Interpolation



Plunging



Trochoidal Milling

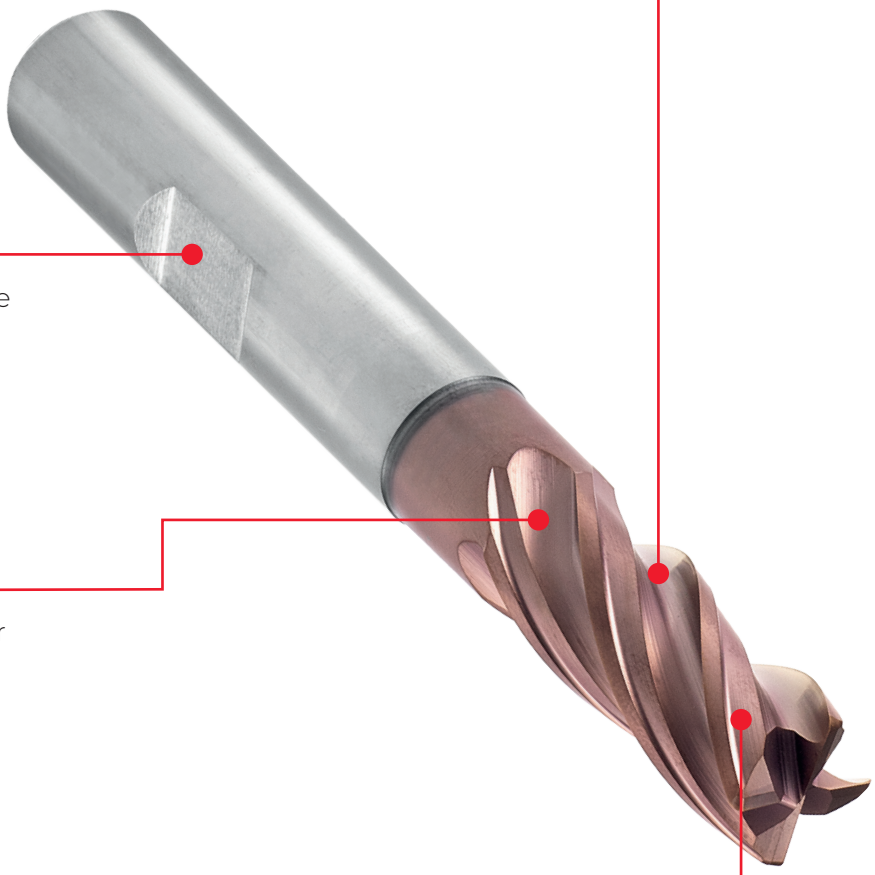


Variable Helix and Pitch Angle

Ensures smooth and stable cutting, reducing vibrations and improving surface finish.

Shank Type

With weldon shank for improved balance during machining.



Conical Core

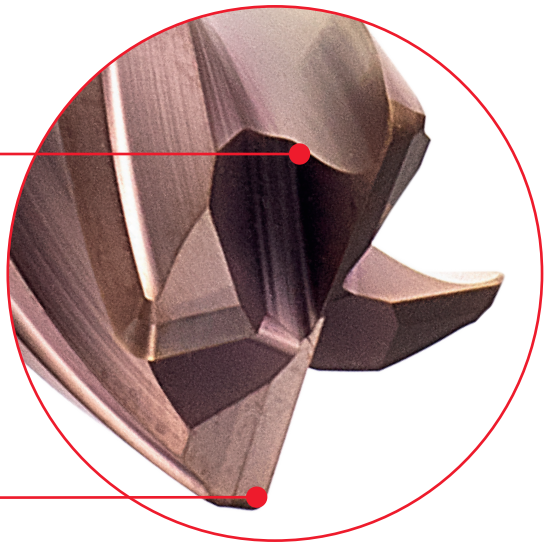
Provides an increased tool robustness for higher cutting depths.

High Performance Coating

PHF provides excellent thermal stability.

Front Cutting Edge Cavity

Radiused gash shape for better chip evacuation.

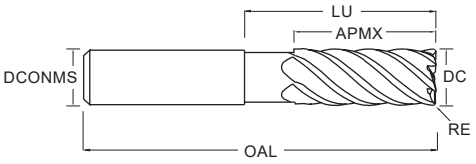


Corner Radius

Optimized S-gash with reinforced cutting edge.

HR37SS Corner radius

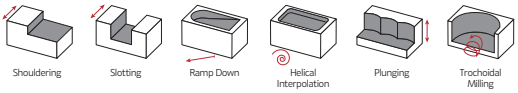
M



		[2] Grade code		1F	Dimensions | Dimensões | Dimensiones (mm)					
[1] Order code		Reference Referência Referencia	NOF	PHF920						
HA (Cylindrical)	HB (Weldon)				DC	DCONMS	APMX	RE	LU	OAL
-	1182351	HR37SS 4 020 05 R020-W	4	◎	2	6	5	0,2	11	57
-	1182352	HR37SS 4 030 08 R020-W	4	◎	3	6	8	0,2	16	57
-	1182353	HR37SS 4 040 08 R020-W	4	◎	4	6	8	0,2	19	57
-	1182354	HR37SS 4 050 10 R020-W	4	◎	5	6	10	0,2	21	57
-	1182355	HR37SS 4 060 13 R030-W	4	◎	6	6	13	0,3	23	57
-	1182356	HR37SS 4 080 19 R050-W	4	◎	8	8	19	0,5	31	63
-	1181510	HR37SS 4 100 22 R050-W	4	◎	10	10	22	0,5	33	72
-	1182357	HR37SS 4 120 26 R100-W	4	◎	12	12	26	1,0	37	83
-	1182358	HR37SS 4 160 32 R100-W	4	◎	16	16	32	1,0	44	92
-	1182359	HR37SS 4 200 38 R100-W	4	◎	20	20	38	1,0	55	104

◎ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

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



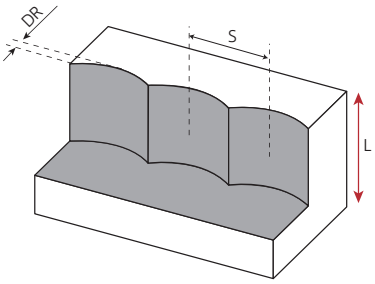
RECOMMENDED CUTTING CONDITIONS

ISO	Material	Vc (m/min)	Feed fz (mm/t)						
			DC (mm)						
			2-4	4-6	6-8	8-10	10-12	12-16	16-20
M	SS - Ferritic / Martensitic	100-180	0,022-0,040	0,026-0,055	0,036-0,070	0,045-0,085	0,055-0,097	0,063-0,121	0,077-0,140
	SS – Austenitic	100-160	0,018-0,036	0,023-0,051	0,033-0,066	0,042-0,080	0,051-0,093	0,059-0,117	0,074-0,135
	SS - Austenitic-ferritic (Duplex)	90-150	0,015-0,030	0,019-0,043	0,027-0,055	0,035-0,066	0,042-0,077	0,049-0,097	0,061-0,112

Note[1]: Vc and fz values shown in the table are for shouldering up to 2xDC.

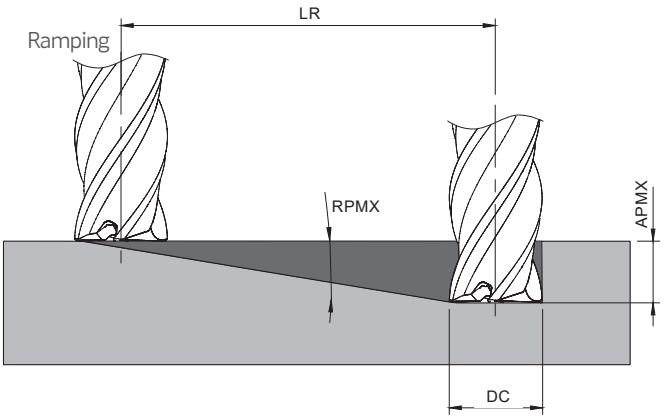
Operation	Cutting Conditions		
	Vc	fz	APMX
Slotting	90%	80%	1xDC
Plunging	70%	35%	2xDC

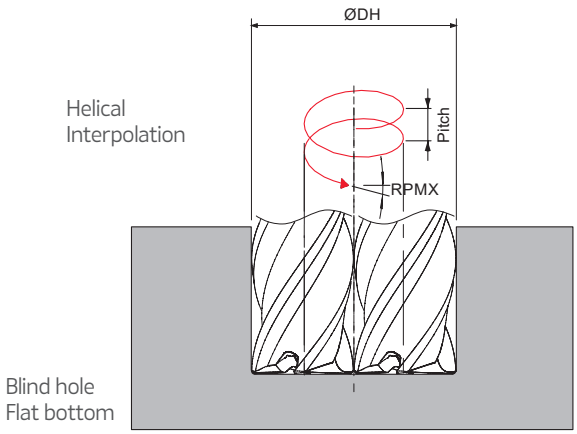
PLUNGING



S max and DR corresponding cutting diameter DC (mm)											
DR (mm)	DC (mm)										
	2	3	4	5	6	8	10	12	14	16	20
0,2	0,6	0,7	0,9	1,0	1,1	1,2	1,4	1,5	1,7	1,8	2,0
0,5	0,9	1,1	1,3	1,5	1,7	1,9	2,2	2,4	2,6	2,8	3,1
1,0	-	-	1,7	2,0	2,2	2,6	3,0	3,3	3,6	3,9	4,4
1,5	-	-	-	-	2,6	3,1	3,6	4,0	4,3	4,7	5,3
2,0	-	-	-	-	-	3,5	4,0	4,5	4,9	5,3	6,0
2,5	-	-	-	-	-	-	4,3	4,9	5,4	5,8	6,6
3,0	-	-	-	-	-	-	-	5,2	5,7	6,2	7,1
4,0	-	-	-	-	-	-	-	-	-	6,9	8,0
5,0	-	-	-	-	-	-	-	-	-	-	8,7

RAMPING AND HELICAL INTERPOLATION

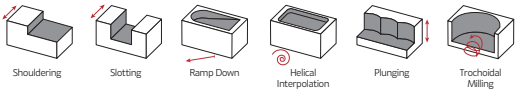




ØDi = ØDH - DC

DC	Ramping			Helical Interpolation		
	RPMX	APMX	Min LR	ØDHmin	ØDHmax	Max Pitch/Rev.
2	15,0	5,0	18,7	2,7 -	- 3,6	0,56 1,30
3	15,0	8,0	29,9	4,0 -	- 5,6	0,84 2,15
4	15,0	8,0	29,9	5,3 -	- 7,6	1,09 3,00
5	15,0	10,0	37,3	6,7 -	- 9,6	1,40 3,85
6	15,0	13,0	48,5	8,0 -	- 11,4	1,68 4,50
8	15,0	19,0	70,9	10,7 -	- 15,0	2,24 5,85
10	15,0	22,0	82,1	13,3 -	- 19,0	2,77 7,55
12	15,0	26,0	97,0	16,0 -	- 22,0	3,36 8,40
14	15,0	26,0	97,0	18,7 -	- 26,0	3,96 10,10
16	15,0	32,0	119,4	21,3 -	- 30,0	4,45 11,75
20	15,0	38,0	141,8	26,7 -	- 38,0	5,64 15,15

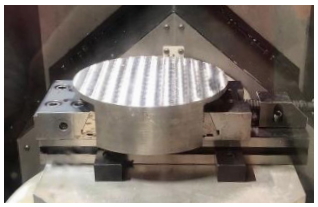
Note: During helical interpolation do not exceed APMX.



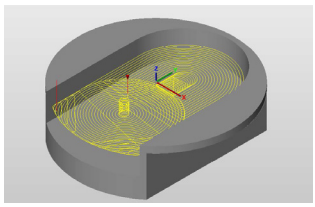
TEST REPORT

End mill	HR37SS 4 100 22 R05 - W				
Grade	PHF920				
Operations	Helical Interpolation and Pocket Milling				
Coolant	Emulsion				
Cutting conditions	Vc = 130 m/min	Fz = 0,03 mm/t	ramp angle = 3°	Ae = 3 mm (30%)	Depth of hole = 15 mm (1,5xDC)
	Vc = 130 m/min	Fz = 0,03 mm/t	Ap= 15 mm (1,5xDC)	Ae = 3 mm (30%)	

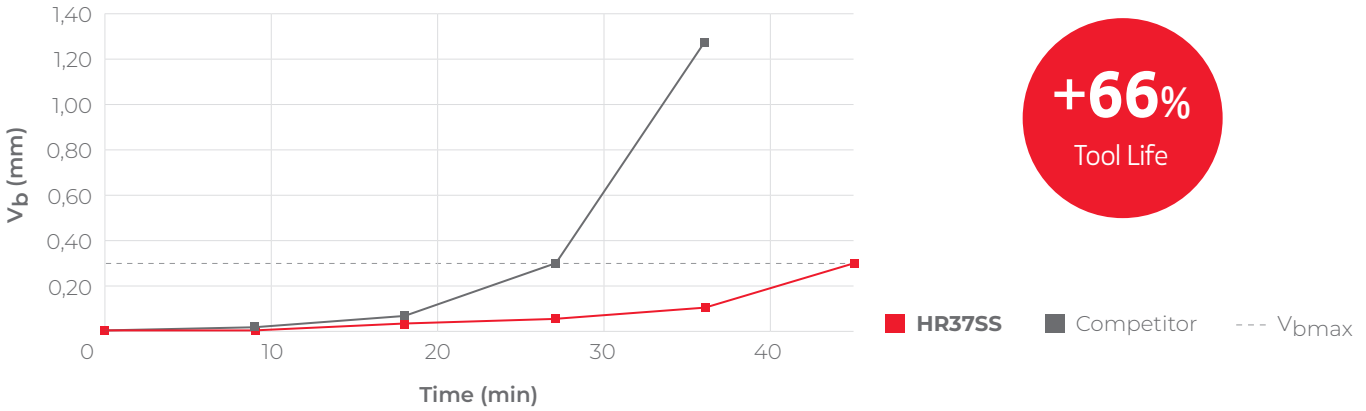
Workpiece to machine :



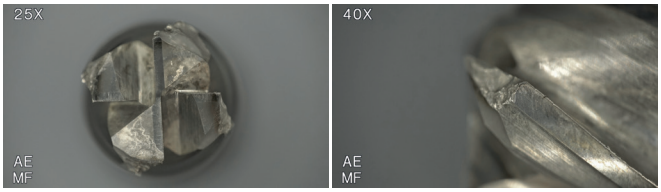
Workpiece CAM program :



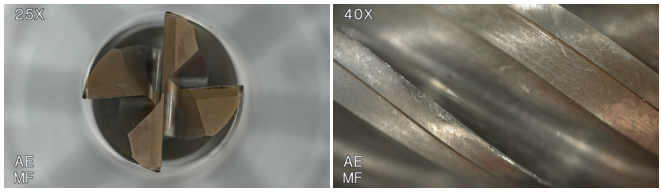
Workpiece Material 1.4404 | 316 L



Competitor after 36 minutes :



HR37SS after 45 minutes :



VIBRATION ANALYSIS

Machined slots :

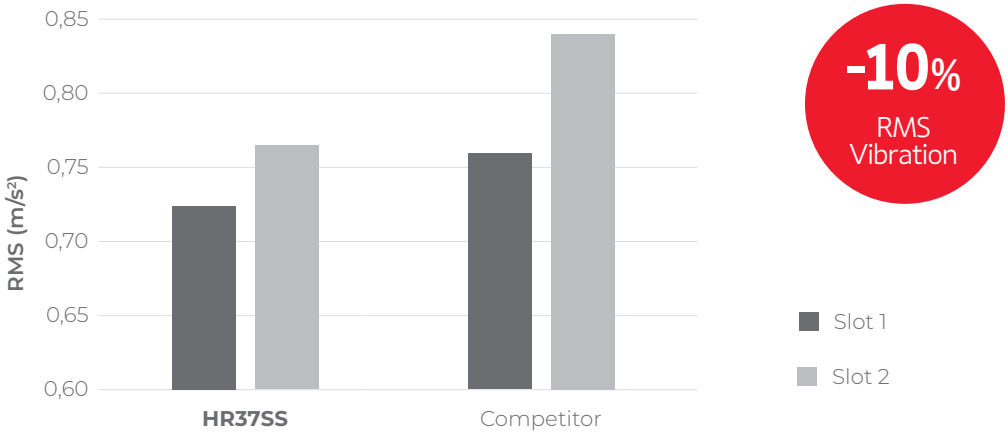
Cutting conditions:

Vc = 100 m/min

Fz = 0,03 mm/t

Ae = 10 mm (100%)

Ap = 10 mm (1xDC)



The RMS (root mean square) is directly related to the energy content of the vibration profile and thus the destructive capability of the vibration.

INOX-INTEG

HR37SS

Stainless steel specialized end mills

Check the QrCode for more information

palbit

HEADQUARTERS

PALBIT. S.A.

T (+351) 234 540 300 | F (+351) 234 540 301

palbit@palbit.pt | www.palbit.pt

Branch office

PALBIT México, S de RL de CV

T (+52) 5555 454 543 | F (+52) 5552 509 190

info@palbit.com.mx | www.palbit.pt/mx

Branch office

PALBIT Brasil

T (+55) 011 25 343 648

palbit@palbit.com.br | www.palbit.pt/br