

# Titainox e Superleghe

**Titainox e Superleghe** rappresentano l'innovativa proposta per la lavorazione di acciai inossidabili, titanio e superleghe in grado di raggiungere parametri di taglio nettamente superiori a quanto viene offerto nell'alto di gamma

L'**innovativo filo tagliente** eseguito con una qualità superiore, il trattamento specifico della superficie di spoglia superiore unite al processo di superfinitura Silmax 4S permettono di combinare una finitura eccezionale (rugosità inferiore al micron) con il mantenimento della massima taglienza. Il risultato si traduce in un significativo aumento della velocità di taglio e degli avanzamenti.

## Titainox and Superalloys

**Titainox and Superalloys** represent the innovative proposal for machining stainless steels, titanium and superalloys, capable of achieving cutting parameters much higher than those offered in the market.

The **innovative superior-quality cutting edge**, the specific radial rake angle surface treatment, together with Silmax 4S super-finishing process allows combining an extraordinary finishing (surface roughness below 1 micron) while ensuring the highest cutting performance. The result is a significant increase in cutting speed and feeds.



# Titainox e Superleghe

## Titainox & Superalloys

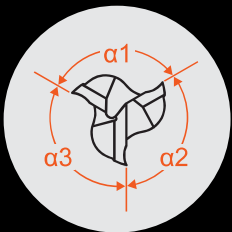


### Ampia Gamma

+ Gamma di utensili a 3, 4, 5 e 7 taglienti per un utilizzo ottimale nelle differenti applicazioni

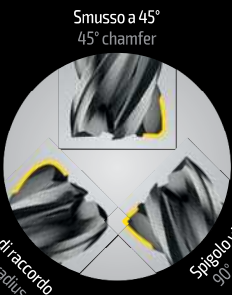
### Wide Range

+ Wide range of 3-, 4-, 5- and 7-flute tools for an optimal use in different applications



### Divisioni irregolari dei taglienti per l'eliminazione delle vibrazioni

### Unequal flute spacing to prevent vibrations



### Differenti affilature frontali per un range di applicazioni ad ampio spettro

### Different face sharpening for a large number of applications

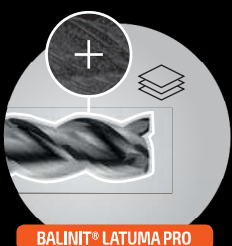


### Trattamento Silmax 4S

+ Omogeneità del filo tagliente  
 + Resistenza all'usura e riduzione degli sforzi di taglio.  
 + Adesione e resistenza del rivestimento  
 + Scorrevolezza delle superfici

### Silmax 4S Treatment

+ Cutting-edge consistency  
 + Wear-resistance and reduction of shear stress  
 + Coating adhesion and resistance  
 + Smooth surfaces minimising friction



### Rivestimento PVD

Il rivestimento PVD Balinit® Latuma rappresenta oggi la migliore proposta per la lavorazione di Titanio e Acciai inossidabili. È una ricopertura estremamente resistente all'usura, con elevata durezza a caldo e un'ottima stabilità agli shock termici.

### PVD Coating

The PVD Balinit® Latuma coating currently represents the best proposal for machining titanium and stainless steels. It is an extremely wear-resistant coating, offering high heat hardness and excellent thermal-shock stability.

Per maggiori informazioni  
scarica la brochure digitale.

For further information  
download the digital brochure.

[silmax.it/tis](http://silmax.it/tis)



### 183

Fresa 3 taglienti  
per lavorazioni  
ad elevate  
asportazioni  
3 flute end mill for  
high chip removal

→ 117

### 184

Fresa 4 taglienti  
per lavorazioni  
ad elevate  
asportazioni  
4 flute end mill for  
high chip removal

→ 119

### 284

Fresa 4 taglienti  
per lavorazioni  
ad elevate  
asportazioni  
con fori di  
lubrificazione  
4 flute end mill  
for high chip  
removal with  
internal coolant

→ 121



### 185

Fresa 5 taglienti  
per lavorazioni  
ad elevate  
asportazioni  
5 flute end mill for  
high chip removal

→ 123

### 195

Fresa 5 taglienti  
con divisione  
irregolare e  
tagliente lungo  
5 flute end mill  
with unequal  
flute spacing,  
long version

→ 125



### 197

Fresa 5/7 taglienti  
con divisione  
irregolare  
e tagliente  
extra lungo  
5/7 flute end mill  
with unequal  
flute spacing,  
extra long version

→ 125

### 118

Fresa 4 taglienti  
per lavorazioni  
di superleghe  
4 flute end mill  
for the machining  
of superalloys

→ 127

### 119

Fresa 4 taglienti  
per lavorazioni  
di duplex  
4 flute end mill  
for the machining  
of duplex

→ 127



### 737

Fresa 2 taglienti  
semisferica serie  
normale  
2 flute ball nose  
end mill, regular  
version

→ 129

### 737R

Fresa 2 taglienti  
semisferica serie  
normale  
2 flute ball nose  
end mill, regular  
version

→ 129

### 133 NEW

Fresa 4 taglienti  
semisferica serie  
lunga  
4 flute ball nose  
end mill,  
long version

→ 131



### 154 NEW

Fresa a 5 taglienti  
serie normale per  
lavorazioni  
di superleghe  
5 flute end mill,  
regular version  
for the machining  
of superalloys

→ 133

### 157 NEW

Fresa a 7 taglienti  
serie lunga  
per lavorazioni  
di titanio  
7 flute end mill  
for the machining  
of Titanium,  
long version

→ 135



## SIL SERVICE

L'esperienza Silmax dimostra che  
un utensile correttamente affilato  
ha un rendimento uguale a quello nuovo.

Silmax experience shows that  
a properly sharpened tool grants  
the same performances of a new tool.



Riaffilatura e  
rigenerazione  
Resharpener and  
Reconditioning



Esecuzione  
perfetta  
Perfect  
Execution



Rivestimento  
PVD  
PVD Coating



Trattamento  
4S  
4S Treatment

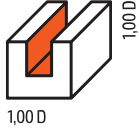
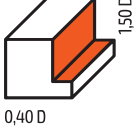
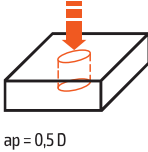


Consegna  
rapida  
Fast Delivery

## Titainox

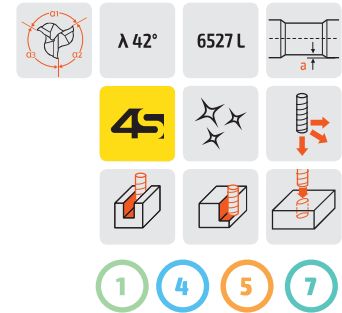
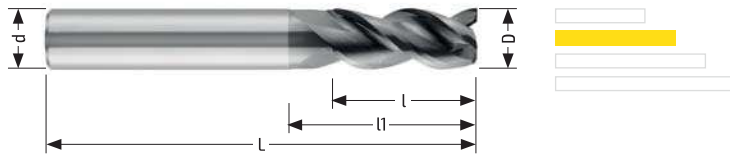
183

Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter												
		1,00 D				0,40 D				ap = 0,5 D			
Inox ferritico Ferritic stainless steel	m/min	Vc=130				Vc=130				Vc=130			
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm			
	2,0	0,010	621	20690	0,015	931	20690	0,004	248	20690			
	4,0	0,020	621	10345	0,025	776	10345	0,008	248	10345			
	6,0	0,028	579	6897	0,033	683	6897	0,013	269	6897			
	8,0	0,035	543	5173	0,040	621	5173	0,018	279	5173			
	10,0	0,044	546	4138	0,049	608	4138	0,023	286	4138			
	12,0	0,053	548	3448	0,058	600	3448	0,030	310	3448			
	14,0	0,061	541	2956	0,066	585	2956	0,035	310	2956			
	16,0	0,070	543	2586	0,075	582	2586	0,035	272	2586			
20,0	0,078	484	2069	0,088	546	2069	0,043	267	2069				
Inox austenitico Austenitic stainless steel	m/min	Vc=110				Vc=110				Vc=110			
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm			
	2,0	0,010	525	17507	0,015	788	17507	0,004	210	17507			
	4,0	0,020	525	8754	0,025	657	8754	0,008	210	8754			
	6,0	0,028	490	5836	0,033	578	5836	0,013	228	5836			
	8,0	0,035	460	4377	0,040	525	4377	0,018	236	4377			
	10,0	0,044	462	3501	0,049	515	3501	0,023	242	3501			
	12,0	0,053	464	2918	0,058	508	2918	0,030	263	2918			
	14,0	0,061	458	2501	0,066	495	2501	0,035	263	2501			
	16,0	0,070	460	2188	0,075	492	2188	0,035	230	2188			
20,0	0,078	410	1751	0,088	462	1751	0,043	226	1751				
Titanio Titanium	m/min	Vc=90				Vc=80				Vc=90			
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm			
	2,0	0,003	129	14324	0,005	191	12732	0,004	172	14324			
	4,0	0,008	172	7162	0,013	248	6366	0,008	172	7162			
	6,0	0,016	229	4775	0,021	267	4244	0,013	186	4775			
	8,0	0,023	247	3581	0,028	267	3183	0,018	193	3581			
	10,0	0,032	275	2865	0,037	283	2546	0,023	198	2865			
	12,0	0,041	294	2387	0,046	293	2122	0,030	215	2387			
	14,0	0,049	301	2046	0,054	295	1819	0,035	215	2046			
	16,0	0,058	312	1790	0,063	301	1592	0,035	188	1790			
20,0	0,066	284	1432	0,076	290	1273	0,043	185	1432				
Acciaio < 800 N/mm <sup>2</sup> Steel < 800 N/mm <sup>2</sup>	m/min	Vc=170				Vc=180				Vc=170			
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm			
	2,0	0,007	568	27056	0,007	602	28684	0,003	244	27056			
	4,0	0,016	649	13528	0,018	773	14324	0,007	284	13528			
	6,0	0,024	649	9019	0,027	773	9549	0,011	298	9019			
	8,0	0,032	649	6764	0,036	773	7162	0,015	304	6764			
	10,0	0,040	649	5411	0,045	773	5730	0,019	308	5411			
	12,0	0,048	649	4509	0,054	773	4775	0,022	298	4509			
	14,0	0,055	638	3865	0,060	737	4093	0,024	278	3865			
	16,0	0,060	609	3382	0,065	698	3581	0,026	264	3382			
20,0	0,075	609	2706	0,080	698	2865	0,028	227	2706				
Acciaio < 1000 N/mm <sup>2</sup> - Ghisa Steel < 1000 N/mm <sup>2</sup> - Cast iron	m/min	Vc=130				Vc=150				Vc=130			
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm			
	2,0	0,007	434	20690	0,007	501	23873	0,003	186	20690			
	4,0	0,016	497	10345	0,018	645	11937	0,007	217	10345			
	6,0	0,024	497	6897	0,027	645	7958	0,011	228	6897			
	8,0	0,032	497	5173	0,036	645	5968	0,015	233	5173			
	10,0	0,040	497	4138	0,045	645	4775	0,019	236	4138			
	12,0	0,048	497	3448	0,054	645	3979	0,022	228	3448			
	14,0	0,055	488	2956	0,060	614	3410	0,024	213	2956			
	16,0	0,060	466	2586	0,065	582	2984	0,026	202	2586			
20,0	0,075	466	2069	0,080	573	2387	0,028	174	2069				

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Fresa 3 taglienti per lavorazioni ad elevate asportazioni  
3 flute end mill for high chip removal



45°

D h10	d h6	L	l ap	l1	a	45°	Z	Balinit® Latuma
2,0	6	57	5,0	8,0	0,10	0,05	3	HMC183020
2,5	6	57	6,0	9,0	0,10	0,05	3	HMC183025
3,0	6	57	8,0	11,0	0,10	0,10	3	HMC183030
3,5	6	57	8,0	13,0	0,10	0,10	3	HMC183035
4,0	6	57	9,0	16,0	0,10	0,10	3	HMC183040
4,5	6	57	10,0	16,0	0,10	0,10	3	HMC183045
5,0	6	57	13,0	18,0	0,10	0,10	3	HMC183050
6,0	6	57	13,0	20,0	0,15	0,10	3	HMC183060
8,0	8	63	19,0	25,0	0,15	0,15	3	HMC183080
10,0	10	72	22,0	30,0	0,15	0,15	3	HMC183100
12,0	12	83	26,0	36,0	0,20	0,15	3	HMC183120
16,0	16	92	32,0	42,0	0,20	0,20	3	HMC183160
20,0	20	104	38,0	52,0	0,20	0,20	3	HMC183200

90°

D h10	d h6	L	l ap	l1	a	90°	Z	Balinit® Latuma
2,0	6	57	5,0	8,0	0,10	-	3	HMC183020X
2,5	6	57	6,0	9,0	0,10	-	3	HMC183025X
3,0	6	57	8,0	11,0	0,10	-	3	HMC183030X
3,5	6	57	8,0	13,0	0,10	-	3	HMC183035X
4,0	6	57	9,0	16,0	0,10	-	3	HMC183040X
4,5	6	57	10,0	16,0	0,10	-	3	HMC183045X
5,0	6	57	13,0	18,0	0,10	-	3	HMC183050X
6,0	6	57	13,0	20,0	0,15	-	3	HMC183060X
7,0	8	63	19,0	25,0	0,15	-	3	HMC183070X
8,0	8	63	19,0	25,0	0,15	-	3	HMC183080X
9,0	10	72	22,0	30,0	0,15	-	3	HMC183090X
10,0	10	72	22,0	30,0	0,15	-	3	HMC183100X
12,0	12	83	26,0	36,0	0,20	-	3	HMC183120X
14,0	14	83	30,0	40,0	0,20	-	3	HMC183140X
16,0	16	92	32,0	42,0	0,20	-	3	HMC183160X
20,0	20	104	38,0	52,0	0,20	-	3	HMC183200X

31  
UNV  
Universali  
Universal Line

53  
HPC  
Alto Rendimento  
High Performance

75  
HRC  
Stampi  
Molds

113  
TIS  
Titainox e Superleghe  
Titainox & Superalloys

137  
ALU  
Leghe Leggere  
Light Alloys

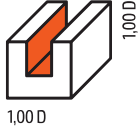
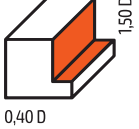
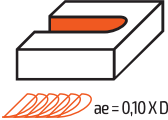
155  
CMP  
Materiali Compositi  
Composite Materials

- 1  
Acciaio  
Steel
- 2  
Ghise  
Cast Iron
- 3  
Acciai  
Temprati  
Hardened Steel
- 4  
Acciaio  
Inox  
Stainless Steel
- 5  
Titanio  
Titanium
- 6  
Leghe  
Leggere  
Light Alloys
- 7  
PH  
Duplex
- 8  
Superleghe  
Superalloys
- 9  
Compositi  
Composite Materials
- 16  
Guida alla  
lettura  
Reading  
guide
- 18  
Legenda  
Legend

# Titainox

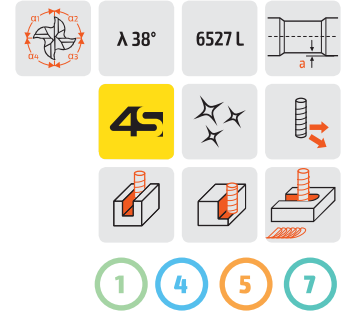
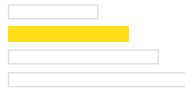
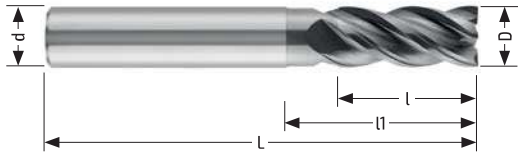
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Parametri di lavoro / Working Parameters

Materiale / Material	Diametro / Diameter									
Inox ferritico Ferritic stainless steel	m/min	Vc=140		Vc=130	Vc=170					
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,013	772	14854	0,013	717	13793	0,020	1443	18038
	4,0	0,020	891	11141	0,020	828	10345	0,060	3247	13528
	6,0	0,030	891	7427	0,030	828	6897	0,130	4690	9019
	8,0	0,040	891	5570	0,040	828	5173	0,160	4329	6764
	10,0	0,050	891	4456	0,050	828	4138	0,190	4113	5411
	12,0	0,060	891	3714	0,060	828	3448	0,220	3968	4509
	14,0	0,065	828	3183	0,065	768	2956	0,250	3865	3865
	16,0	0,070	780	2785	0,070	724	2586	0,250	3382	3382
	20,0	0,080	713	2228	0,080	662	2069	0,300	3247	2706
25,0	0,090	642	1783	0,090	596	1655	0,350	3030	2165	
Inox austenitico Austenitic stainless steel	m/min	Vc=120		Vc=110	Vc=150					
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,013	662	12732	0,013	607	11671	0,020	1273	15915
	4,0	0,020	764	9549	0,020	700	8754	0,060	2865	11937
	6,0	0,030	764	6366	0,030	700	5836	0,130	4138	7958
	8,0	0,040	764	4775	0,040	700	4377	0,160	3820	5968
	10,0	0,050	764	3820	0,050	700	3501	0,190	3629	4775
	12,0	0,060	764	3183	0,060	700	2918	0,220	3501	3979
	14,0	0,065	709	2728	0,065	650	2501	0,250	3410	3410
	16,0	0,070	668	2387	0,070	613	2188	0,250	2984	2984
	20,0	0,080	611	1910	0,080	560	1751	0,300	2865	2387
25,0	0,090	550	1528	0,090	504	1401	0,350	2674	1910	
Titanio Titanium	m/min	Vc=80		Vc=80	Vc=100					
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,004	136	8488	0,011	373	8488	0,020	849	10610
	4,0	0,006	153	6366	0,015	382	6366	0,060	1910	7958
	6,0	0,009	153	4244	0,023	390	4244	0,130	2759	5305
	8,0	0,012	153	3183	0,030	382	3183	0,160	2546	3979
	10,0	0,015	153	2546	0,040	407	2546	0,190	2419	3183
	12,0	0,020	170	2122	0,050	424	2122	0,220	2334	2653
	14,0	0,025	182	1819	0,055	400	1819	0,250	2274	2274
	16,0	0,030	191	1592	0,060	382	1592	0,250	1989	1989
	20,0	0,040	204	1273	0,075	382	1273	0,300	1910	1592
25,0	0,050	204	1019	0,090	367	1019	0,350	1783	1273	
Acciaio < 800 N/mm² - Steel < 800 N/mm²	m/min	Vc=195		Vc=210	Vc=220					
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,008	662	20690	0,008	713	22282	0,020	1867	23343
	4,0	0,012	745	15518	0,012	802	16711	0,060	4202	17507
	6,0	0,020	828	10345	0,020	891	11141	0,130	6069	11671
	8,0	0,030	931	7759	0,030	1003	8356	0,160	5602	8754
	10,0	0,040	993	6207	0,040	1070	6685	0,190	5322	7003
	12,0	0,050	1035	5173	0,050	1114	5570	0,220	5135	5836
	14,0	0,055	975	4434	0,055	1050	4775	0,250	5002	5002
	16,0	0,060	931	3879	0,060	1003	4178	0,250	4377	4377
	20,0	0,070	869	3104	0,070	936	3342	0,300	4202	3501
25,0	0,080	795	2483	0,080	856	2674	0,350	3922	2801	
Acciaio < 1000 N/mm² - Ghisa Steel < 1000 N/mm² - Cast iron	m/min	Vc=140		Vc=150	Vc=180					
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,008	475	14854	0,008	509	15915	0,020	1528	19099
	4,0	0,012	535	11141	0,012	573	11937	0,060	3438	14324
	6,0	0,020	594	7427	0,020	637	7958	0,130	4966	9549
	8,0	0,030	668	5570	0,030	716	5968	0,160	4584	7162
	10,0	0,040	713	4456	0,040	764	4775	0,190	4354	5730
	12,0	0,050	743	3714	0,050	796	3979	0,220	4202	4775
	14,0	0,055	700	3183	0,055	750	3410	0,250	4093	4093
	16,0	0,060	668	2785	0,060	716	2984	0,250	3581	3581
	20,0	0,070	624	2228	0,070	668	2387	0,300	3438	2865
25,0	0,080	570	1783	0,080	611	1910	0,350	3209	2292	

# 184

Fresa 4 taglienti per lavorazioni ad elevate asportazioni  
4 flute end mill for high chip removal



45°

D h10	d h6	L	l ap	l1	a	45°	Z	Balinit® Latuma
3,0	6	57	8,0	11,0	0,10	0,10	4	HMC184030
4,0	6	57	9,0	16,0	0,10	0,10	4	HMC184040
5,0	6	57	13,0	18,0	0,10	0,10	4	HMC184050
6,0	6	57	13,0	20,0	0,15	0,10	4	HMC184060
8,0	8	63	19,0	25,0	0,15	0,15	4	HMC184080
10,0	10	72	22,0	30,0	0,15	0,15	4	HMC184100
12,0	12	83	26,0	36,0	0,20	0,15	4	HMC184120
16,0	16	92	32,0	42,0	0,20	0,20	4	HMC184160
20,0	20	104	38,0	52,0	0,20	0,20	4	HMC184200
25,0	25	125	45,0	65,0	0,25	0,20	4	HMC184250

Cr

D h10	d h6	L	l ap	l1	a	Cr	Z	Balinit® Latuma
6,0	6	57	13,0	20,0	0,15	0,50	4	HMC184060CR05
6,0	6	57	13,0	20,0	0,15	1,00	4	HMC184060CR10
8,0	8	63	19,0	25,0	0,15	0,50	4	HMC184080CR05
8,0	8	63	19,0	25,0	0,15	1,00	4	HMC184080CR10
8,0	8	63	19,0	25,0	0,15	2,00	4	HMC184080CR20
10,0	10	72	22,0	30,0	0,20	0,50	4	HMC184100CR05
10,0	10	72	22,0	30,0	0,20	1,00	4	HMC184100CR10
10,0	10	72	22,0	30,0	0,20	2,00	4	HMC184100CR20
12,0	12	83	26,0	36,0	0,20	0,50	4	HMC184120CR05
12,0	12	83	26,0	36,0	0,20	1,00	4	HMC184120CR10
12,0	12	83	26,0	36,0	0,20	2,00	4	HMC184120CR20
12,0	12	83	26,0	36,0	0,20	3,00	4	HMC184120CR30
16,0	16	92	32,0	42,0	0,20	1,00	4	HMC184160CR10
16,0	16	92	32,0	42,0	0,20	2,00	4	HMC184160CR20
16,0	16	92	32,0	42,0	0,20	3,00	4	HMC184160CR30
16,0	16	92	32,0	42,0	0,20	4,00	4	HMC184160CR40
20,0	20	104	38,0	52,0	0,20	1,00	4	HMC184200CR10
20,0	20	104	38,0	52,0	0,20	2,00	4	HMC184200CR20
20,0	20	104	38,0	52,0	0,20	3,00	4	HMC184200CR30
20,0	20	104	38,0	52,0	0,20	4,00	4	HMC184200CR40
25,0	25	124	45,0	65,0	0,22	2,00	4	HMC184250CR20
25,0	25	124	45,0	65,0	0,25	3,00	4	HMC184250CR30
25,0	25	124	45,0	65,0	0,25	4,00	4	HMC184250CR40

90°

D h10	d h6	L	l ap	l1	a	90°	Z	Balinit® Latuma
3,0	6	57	8,0	11,0	0,10	-	4	HMC184030X
4,0	6	57	9,0	16,0	0,10	-	4	HMC184040X
5,0	6	57	13,0	18,0	0,10	-	4	HMC184050X
6,0	6	57	13,0	20,0	0,15	-	4	HMC184060X
8,0	8	63	19,0	25,0	0,15	-	4	HMC184080X
10,0	10	72	22,0	30,0	0,15	-	4	HMC184100X
12,0	12	83	26,0	36,0	0,20	-	4	HMC184120X
16,0	16	92	32,0	42,0	0,20	-	4	HMC184160X
20,0	20	104	38,0	52,0	0,20	-	4	HMC184200X
25,0	25	124	45,0	65,0	0,25	-	4	HMC184250X

31  
UNV  
Universali  
Universal Line

53  
HPC  
Alto Rendimento  
High Performance

75  
HRC  
Stampi  
Molds

113  
TIS  
Titainox e Superleghe  
Titainox & Superalloys

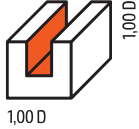
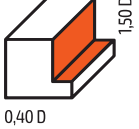
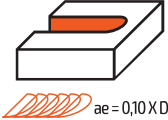
137  
ALU  
Leghe Leggere  
Light Alloys

155  
CMP  
Materiali Compositi  
Composite Materials

## Titainox

284

Parametri di lavoro / Working Parameters

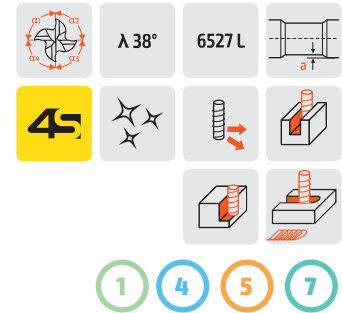
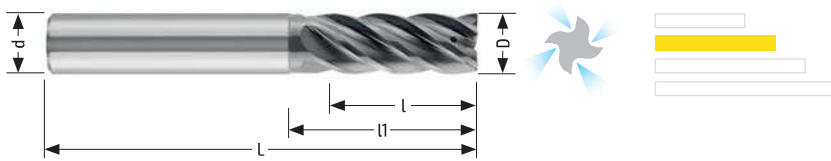
Materiale Material	Diametro Diameter										
		1,00 D				0,40 D			ae = 0,10 X D		
Inox ferritico Ferritic stainless steel	m/min	Vc=140				Vc=130			Vc=170		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	
	6,0	0,030	891	7427	0,030	828	6897	0,130	4690	9019	
	8,0	0,040	891	5570	0,040	828	5173	0,160	4329	6764	
	10,0	0,050	891	4456	0,050	828	4138	0,190	4113	5411	
	12,0	0,060	891	3714	0,060	828	3448	0,220	3968	4509	
	16,0	0,070	780	2785	0,070	724	2586	0,250	3382	3382	
	20,0	0,080	713	2228	0,080	662	2069	0,300	3247	2706	
25,0	0,090	642	1783	0,090	596	1655	0,350	3030	2165		
Inox austenitico Austenitic stainless steel	m/min	Vc=120				Vc=110			Vc=150		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	
	6,0	0,030	764	6366	0,030	700	5836	0,130	4138	7958	
	8,0	0,040	764	4775	0,040	700	4377	0,160	3820	5968	
	10,0	0,050	764	3820	0,050	700	3501	0,190	3629	4775	
	12,0	0,060	764	3183	0,060	700	2918	0,220	3501	3979	
	16,0	0,070	668	2387	0,070	613	2188	0,250	2984	2984	
	20,0	0,080	611	1910	0,080	560	1751	0,300	2865	2387	
25,0	0,090	550	1528	0,090	504	1401	0,350	2674	1910		
Titanio Titanium	m/min	Vc=80				Vc=80			Vc=100		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	
	6,0	0,009	153	4244	0,023	390	4244	0,130	2759	5305	
	8,0	0,012	153	3183	0,030	382	3183	0,160	2546	3979	
	10,0	0,015	153	2546	0,040	407	2546	0,190	2419	3183	
	12,0	0,020	170	2122	0,050	424	2122	0,220	2334	2653	
	16,0	0,030	191	1592	0,060	382	1592	0,250	1989	1989	
	20,0	0,040	204	1273	0,075	382	1273	0,300	1910	1592	
25,0	0,050	204	1019	0,090	367	1019	0,350	1783	1273		
Acciaio < 800 N/mm <sup>2</sup> Steel < 800 N/mm <sup>2</sup>	m/min	Vc=195				Vc=210			Vc=220		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	
	6,0	0,020	828	10345	0,020	891	11141	0,130	6069	11671	
	8,0	0,030	931	7759	0,030	1003	8356	0,160	5602	8754	
	10,0	0,040	993	6207	0,040	1070	6685	0,190	5322	7003	
	12,0	0,050	1035	5173	0,050	1114	5570	0,220	5135	5836	
	16,0	0,060	931	3879	0,060	1003	4178	0,250	4377	4377	
	20,0	0,070	869	3104	0,070	936	3342	0,300	4202	3501	
25,0	0,080	795	2483	0,080	856	2674	0,350	3922	2801		
Acciaio < 1000 N/mm <sup>2</sup> - Ghisa Steel < 1000 N/mm <sup>2</sup> - Cast iron	m/min	Vc=140				Vc=150			Vc=180		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	
	6,0	0,020	594	7427	0,020	637	7958	0,130	4966	9549	
	8,0	0,030	668	5570	0,030	716	5968	0,160	4584	7162	
	10,0	0,040	713	4456	0,040	764	4775	0,190	4354	5730	
	12,0	0,050	743	3714	0,050	796	3979	0,220	4202	4775	
	16,0	0,060	668	2785	0,060	716	2984	0,250	3581	3581	
	20,0	0,070	624	2228	0,070	668	2387	0,300	3438	2865	
25,0	0,080	570	1783	0,080	611	1910	0,350	3209	2292		

Notes



# 284

Fresa 4 taglienti per lavorazioni ad elevate asportazioni con fori di lubrificazione  
4 flute end mill for high chip removal with internal coolant



45°

D h10	d h6	L	l ap	l1	a	45°	Z	Balinit® Latuma
6,0	6	57	13,0	20,0	0,15	0,10	4	HMC284060
8,0	8	63	19,0	25,0	0,15	0,15	4	HMC284080
10,0	10	72	22,0	30,0	0,15	0,15	4	HMC284100
12,0	12	83	26,0	36,0	0,20	0,15	4	HMC284120
16,0	16	92	32,0	42,0	0,20	0,20	4	HMC284160
20,0	20	104	38,0	52,0	0,20	0,20	4	HMC284200
25,0	25	124	45,0	65,0	0,25	0,20	4	HMC284250

Cr

D h10	d h6	L	l ap	l1	a	Cr	Z	Balinit® Latuma
6,0	6	63	13,0	20,0	0,15	0,50	4	HMC284060CR05
6,0	6	63	13,0	20,0	0,15	1,00	4	HMC284060CR10
8,0	8	63	19,0	25,0	0,15	0,50	4	HMC284080CR05
8,0	8	63	19,0	25,0	0,15	1,00	4	HMC284080CR10
8,0	8	63	19,0	25,0	0,15	2,00	4	HMC284080CR20
10,0	10	72	22,0	30,0	0,15	0,50	4	HMC284100CR05
10,0	10	72	22,0	30,0	0,15	1,00	4	HMC284100CR10
10,0	10	72	22,0	30,0	0,15	2,00	4	HMC284100CR20
12,0	12	83	26,0	36,0	0,20	0,50	4	HMC284120CR05
12,0	12	83	26,0	36,0	0,20	1,00	4	HMC284120CR10
12,0	12	83	26,0	36,0	0,20	2,00	4	HMC284120CR20
12,0	12	83	26,0	36,0	0,20	3,00	4	HMC284120CR30
16,0	16	92	32,0	42,0	0,20	1,00	4	HMC284160CR10
16,0	16	92	32,0	42,0	0,20	2,00	4	HMC284160CR20
16,0	16	92	32,0	42,0	0,20	3,00	4	HMC284160CR30
16,0	16	92	32,0	42,0	0,20	4,00	4	HMC284160CR40
20,0	20	104	38,0	52,0	0,20	2,00	4	HMC284200CR20
20,0	20	104	38,0	52,0	0,20	3,00	4	HMC284200CR30
20,0	20	104	38,0	52,0	0,20	4,00	4	HMC284200CR40
25,0	25	124	45,0	65,0	0,25	2,00	4	HMC284250CR20
25,0	25	124	45,0	65,0	0,25	3,00	4	HMC284250CR30
25,0	25	124	45,0	65,0	0,25	4,00	4	HMC284250CR40

90°

D h10	d h6	L	l ap	l1	a	90°	Z	Balinit® Latuma
6,0	6	57	13,0	20,0	0,15	-	4	HMC284060X
8,0	8	63	19,0	25,0	0,15	-	4	HMC284080X
10,0	10	72	22,0	30,0	0,15	-	4	HMC284100X
12,0	12	83	26,0	36,0	0,20	-	4	HMC284120X
16,0	16	92	32,0	42,0	0,20	-	4	HMC284160X
20,0	20	104	38,0	52,0	0,20	-	4	HMC284200X
25,0	25	124	45,0	65,0	0,25	-	4	HMC284250X

- 1  
Acciaio  
Steel
- 2  
Ghise  
Cast  
Iron
- 3  
Acciai  
Temprati  
Hardened  
Steel
- 4  
Acciaio  
Inox  
Stainless  
Steel
- 5  
Titanio  
Titanium
- 6  
Leghe  
Leggere  
Light  
Alloys
- 7  
PH  
Duplex
- 8  
Superleghe  
Superalloys
- 9  
Compositi  
Composite  
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- 16  
Guida alla  
lettura  
Reading  
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- 18  
Legenda  
Legend

31  
UNV  
Universali  
Universal Line

53  
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Alto Rendimento  
High Performance

75  
HRC  
Stampi  
Molds

113  
TIS  
Titainox e Superleghe  
Titainox & Superalloys

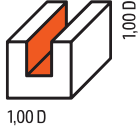
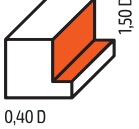
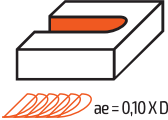
137  
ALU  
Leghe Leggere  
Light Alloys

155  
CMP  
Materiali Compositi  
Composite Materials

## Titainox

185

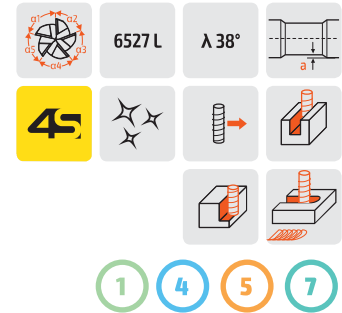
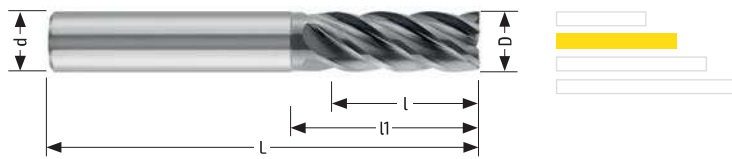
Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter									
		1,00 D			0,40 D			ae = 0,10 X D		
Inox ferritico Ferritic stainless steel	m/min	Vc=130			Vc=130			Vc=170		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,015	517	6897	0,030	1035	6897	0,130	5862	9019
	8,0	0,025	647	5173	0,040	1035	5173	0,160	5411	6764
	10,0	0,035	724	4138	0,050	1035	4138	0,190	5141	5411
	12,0	0,045	776	3448	0,060	1035	3448	0,220	4960	4509
	16,0	0,055	711	2586	0,070	905	2586	0,250	4228	3382
20,0	0,060	621	2069	0,080	828	2069	0,300	4058	2706	
Inox austenitico Austenitic stainless steel	m/min	Vc=110			Vc=110			Vc=150		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,015	438	5836	0,030	875	5836	0,130	5173	7958
	8,0	0,025	547	4377	0,040	875	4377	0,160	4775	5968
	10,0	0,035	613	3501	0,050	875	3501	0,190	4536	4775
	12,0	0,045	657	2918	0,060	875	2918	0,220	4277	3979
	16,0	0,055	602	2188	0,070	766	2188	0,250	3730	2984
20,0	0,060	525	1751	0,080	700	1751	0,300	3581	2387	
Titanio Titanium	m/min	Vc=80			Vc=80			Vc=80		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,006	127	4244	0,023	477	4244	0,130	2759	4244
	8,0	0,008	127	3183	0,030	477	3183	0,160	2546	3183
	10,0	0,010	127	2546	0,040	509	2546	0,190	2419	2546
	12,0	0,012	127	2122	0,050	531	2122	0,220	2334	2122
	16,0	0,016	127	1592	0,060	477	1592	0,250	1989	1592
20,0	0,024	153	1273	0,070	446	1273	0,300	1910	1273	
Acciaio < 800 N/mm <sup>2</sup> Steel < 800 N/mm <sup>2</sup>	m/min	Vc=170			Vc=195			Vc=220		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,020	902	9019	0,030	1552	10345	0,130	7586	11671
	8,0	0,030	1051	6764	0,040	1552	7759	0,160	7003	8754
	10,0	0,040	1082	5411	0,050	1552	6207	0,190	6653	7003
	12,0	0,045	1015	4509	0,060	1552	5173	0,220	6419	5836
	16,0	0,055	930	3382	0,068	1319	3879	0,250	5471	4377
20,0	0,065	879	2706	0,075	1164	3104	0,300	5252	3501	
Acciaio < 1000 N/mm <sup>2</sup> - Ghisa Steel < 1000 N/mm <sup>2</sup> - Cast iron	m/min	Vc=130			Vc=150			Vc=180		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,020	690	6897	0,030	1194	7958	0,130	6207	9549
	8,0	0,030	776	5173	0,040	1194	5968	0,160	5730	7162
	10,0	0,040	828	4138	0,050	1194	4775	0,190	5443	5730
	12,0	0,045	776	3448	0,060	1194	3979	0,220	5252	4775
	16,0	0,055	711	2586	0,068	1015	2984	0,250	4476	3581
20,0	0,065	621	2069	0,075	895	2387	0,300	4297	2865	

Notes

# 185

Fresa 5 taglienti per lavorazioni ad elevate asportazioni  
5 flute end mill for high chip removal



45°

D h10	d h6	L	l ap	l1	a	45°	Z	Balinit® Latuma
6,0	6	57	13,0	20,0	0,15	0,10	5	HMC185060
8,0	8	63	19,0	25,0	0,15	0,15	5	HMC185080
10,0	10	72	22,0	30,0	0,15	0,15	5	HMC185100
12,0	12	83	26,0	36,0	0,20	0,15	5	HMC185120
16,0	16	92	32,0	42,0	0,20	0,20	5	HMC185160
20,0	20	104	38,0	52,0	0,20	0,20	5	HMC185200

Cr

D h10	d h6	L	l ap	l1	a	Cr	Z	Balinit® Latuma
6,0	6	57	13,0	20,0	0,15	0,50	5	HMC185060CR05
6,0	6	57	13,0	20,0	0,15	1,00	5	HMC185060CR10
8,0	8	63	19,0	25,0	0,15	0,50	5	HMC185080CR05
8,0	8	63	19,0	25,0	0,15	1,00	5	HMC185080CR10
8,0	8	63	19,0	25,0	0,15	2,00	5	HMC185080CR20
10,0	10	72	22,0	30,0	0,15	0,50	5	HMC185100CR05
10,0	10	72	22,0	30,0	0,15	1,00	5	HMC185100CR10
10,0	10	72	22,0	30,0	0,15	2,00	5	HMC185100CR20
12,0	12	83	26,0	36,0	0,20	0,50	5	HMC185120CR05
12,0	12	83	26,0	36,0	0,20	1,00	5	HMC185120CR10
12,0	12	83	26,0	36,0	0,20	2,00	5	HMC185120CR20
12,0	12	83	26,0	36,0	0,20	3,00	5	HMC185120CR30
16,0	16	92	32,0	42,0	0,20	1,00	5	HMC185160CR10
16,0	16	92	32,0	42,0	0,20	2,00	5	HMC185160CR20
16,0	16	92	32,0	42,0	0,20	3,00	5	HMC185160CR30
16,0	16	92	32,0	42,0	0,20	4,00	5	HMC185160CR40
20,0	20	104	38,0	52,0	0,20	2,00	5	HMC185200CR20
20,0	20	104	38,0	52,0	0,20	3,00	5	HMC185200CR30
20,0	20	104	38,0	52,0	0,20	4,00	5	HMC185200CR40

90°

D h10	d h6	L	l ap	l1	a	90°	Z	Balinit® Latuma
6,0	6	57	13,0	20,0	0,15	-	5	HMC185060X
8,0	6	63	19,0	25,0	0,15	-	5	HMC185080X
10,0	10	72	22,0	30,0	0,20	-	5	HMC185100X
12,0	12	83	26,0	36,0	0,20	-	5	HMC185120X
16,0	16	92	32,0	42,0	0,20	-	5	HMC185160X
20,0	20	104	38,0	52,0	0,20	-	5	HMC185200X

- 1  
Acciaio  
Steel
- 2  
Ghise  
Cast  
Iron
- 3  
Acciai  
Temprati  
Hardened  
Steel
- 4  
Acciaio  
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Stainless  
Steel
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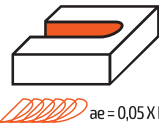
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Leghe Leggere  
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Materiali Compositi  
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## Titainox

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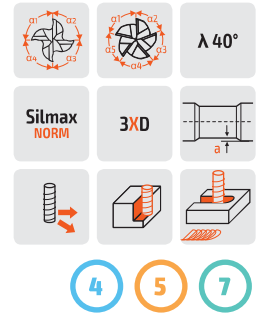
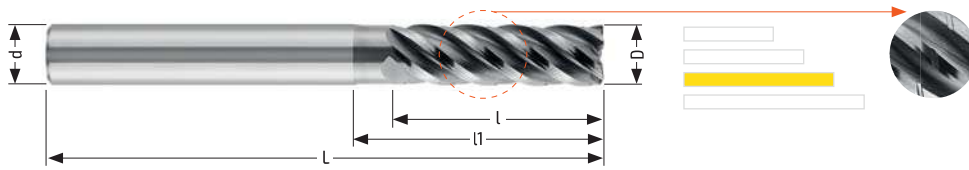
Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter	 FULL I 0,02 D			 ae = 0,05 XD		
		Vc=130			Vc=220		
Inox ferritico Ferritic stainless steel	m/min	Vc=130			Vc=220		
	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	4,0	0,018	745	10345	0,050	3501	17507
	6,0	0,026	897	6897	0,080	4669	11671
	8,0	0,034	879	5173	0,130	5690	8754
	10,0	0,043	890	4138	0,160	5602	7003
	12,0	0,055	948	3448	0,190	5544	5836
16,0	0,070	905	2586	0,220	4814	4377	
20,0	0,080	1159	2069	0,280	6863	3501	
Inox austenitico Austenitic stainless steel	m/min	Vc=120			Vc=190		
	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	4,0	0,018	688	9549	0,050	3024	15120
	6,0	0,026	828	6366	0,080	4032	10080
	8,0	0,034	812	4775	0,130	4914	7560
	10,0	0,043	821	3820	0,160	4838	6048
	12,0	0,055	875	3183	0,190	4788	5040
16,0	0,070	836	2387	0,220	4158	3780	
20,0	0,080	1070	1910	0,280	5927	3024	
Titanio Titanium	m/min	Vc=65			Vc=160		
	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	4,0	0,018	372	5173	0,050	2546	12732
	6,0	0,026	448	3448	0,080	3395	8488
	8,0	0,034	440	2586	0,130	4138	6366
	10,0	0,043	445	2069	0,160	4074	5093
	12,0	0,055	474	1724	0,190	4032	4244
16,0	0,070	453	1293	0,220	3501	3183	
20,0	0,080	579	1035	0,280	4991	2546	
Acciaio < 800 N/mm <sup>2</sup> Steel < 800 N/mm <sup>2</sup>	m/min	Vc=180			Vc=250		
	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	4,0	0,018	1031	14324	0,050	3979	19894
	6,0	0,026	1241	9549	0,080	5305	13263
	8,0	0,034	1218	7162	0,130	6466	9947
	10,0	0,043	1232	5730	0,160	6366	7958
	12,0	0,055	1313	4775	0,190	6300	6631
16,0	0,070	1253	3581	0,220	5471	4974	
20,0	0,080	1604	2865	0,280	7799	3979	
Acciaio < 1000 N/mm <sup>2</sup> - Ghisa Steel < 1000 N/mm <sup>2</sup> - Cast iron	m/min	Vc=140			Vc=220		
	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	4,0	0,018	802	11141	0,050	3501	17507
	6,0	0,026	966	7427	0,080	4669	11671
	8,0	0,034	947	5570	0,130	5690	8754
	10,0	0,043	958	4456	0,160	5602	7003
	12,0	0,055	1021	3714	0,190	5544	5836
16,0	0,070	975	2785	0,220	4814	4377	
20,0	0,080	1248	2228	0,280	6863	3501	

Notes

# 195

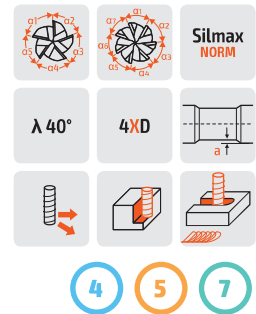
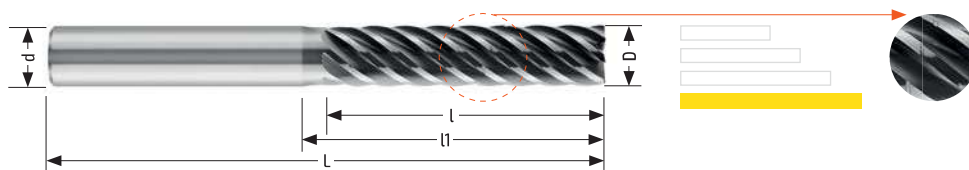
Fresa 5 taglienti con divisione irregolare e tagliente lungo  
5 flute end mill with unequal flute spacing, long version



Cr	D h10	d h6	L	l ap	l1	a	Cr	Z	Balinit® Latuma
	4,0	6	57	12,0	16,0	0,25	0,20	4	HMC195040
	6,0	6	63	18,0	24,0	0,25	0,30	5	HMC195060
	8,0	8	70	24,0	31,0	0,25	0,50	5	HMC195080
	10,0	10	78	30,0	37,0	0,25	0,50	5	HMC195100
	12,0	12	92	36,0	46,0	0,25	0,50	5	HMC195120
	16,0	16	110	48,0	60,0	0,25	0,50	5	HMC195160
	20,0	20	134	60,0	80,0	0,25	0,50	5	HMC195200

# 197

Fresa 5/7 taglienti con divisione irregolare e tagliente extra lungo  
5/7 flute end mill with unequal flute spacing, extra long version



Cr	D h10	d h6	L	l ap	l1	a	Cr	Z	Balinit® Latuma
	4,0	6	57	16,0	20,0	0,25	0,20	4	HMC197040
	6,0	6	70	24,0	30,0	0,25	0,30	5	HMC197060
	8,0	8	80	32,0	40,0	0,25	0,50	5	HMC197080
	8,0	8	80	32,0	40,0	0,25	0,50	7	HMC197080Z7
	10,0	10	87	40,0	46,0	0,25	0,50	5	HMC197100
	10,0	10	87	40,0	46,0	0,25	0,50	7	HMC197100Z7
	12,0	12	108	48,0	58,0	0,25	0,50	5	HMC197120
	12,0	12	108	48,0	58,0	0,25	0,50	7	HMC197120Z7
	16,0	16	120	64,0	68,0	0,25	0,50	7	HMC197160Z7
	20,0	20	134	80,0	-	-	0,50	7	HMC197200Z7

1 Acciaio  
Steel

2 Ghise  
Cast Iron

3 Acciai  
Temprati  
Hardened Steel

4 Acciaio  
Inox  
Stainless Steel

5 Titanio  
Titanium

6 Leghe  
Leggere  
Light Alloys

7 PH  
Duplex

8 Superleghe  
Superalloys

9 Compositi  
Composite Materials

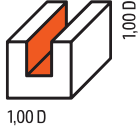
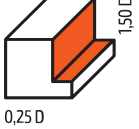

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lettura  
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→ 18 Legenda  
Legend

## Superleghe / Superalloys




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Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter									
		Vc=27			Vc=28			Vc=30		
Superleghe Superalloys	m/min	Vc=27			Vc=28			Vc=30		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	4,0	0,010	86	2150	0,012	107	2229	0,014	134	2389
	6,0	0,018	103	1433	0,020	116	1486	0,023	143	1592
	8,0	0,026	110	1075	0,027	120	1115	0,032	150	1194
	10,0	0,035	119	860	0,038	134	892	0,044	166	955
	12,0	0,045	129	717	0,050	147	743	0,057	182	796
	16,0	0,054	116	537	0,060	134	557	0,068	161	597
20,0	0,060	103	430	0,066	118	446	0,075	143	478	
Superleghe difficili da lavorare Hard Machinable Superalloys	m/min	Vc=24			Vc=28			Vc=30		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	4,0	0,010	86	2150	0,012	107	2229	0,014	134	2389
	6,0	0,012	61	1274	0,013	77	1486	0,015	96	1592
	8,0	0,017	65	955	0,018	80	1115	0,021	100	1194
	10,0	0,023	70	764	0,025	89	892	0,029	111	955
	12,0	0,030	76	637	0,033	98	743	0,038	121	796
	16,0	0,036	69	478	0,040	89	557	0,045	107	597
20,0	0,040	61	382	0,044	78	446	0,050	96	478	
Superleghe molto difficili Very Hard Machinable Superalloys	m/min	Vc=20			Vc=22			Vc=22		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	4,0	0,010	86	2150	0,012	107	2229	0,014	134	2389
	6,0	0,012	51	1062	0,013	61	1168	0,015	70	1168
	8,0	0,017	54	796	0,018	63	876	0,021	74	876
	10,0	0,023	59	637	0,025	70	701	0,029	81	701
	12,0	0,030	64	531	0,033	77	584	0,038	89	584
	16,0	0,036	57	398	0,040	70	438	0,045	79	438
20,0	0,040	51	318	0,044	62	350	0,050	70	350	

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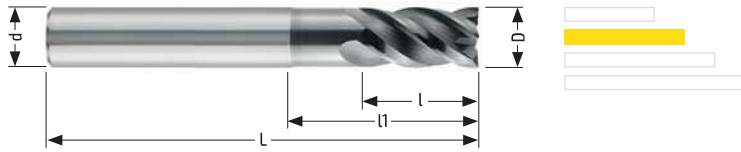
Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter									
		Vc=60			Vc=60			Vc=60		
Ph/Duplex	m/min	Vc=60			Vc=60			Vc=60		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	4,0	0,009	172	4775	0,009	172	4775	0,012	229	4775
	6,0	0,016	205	3180	0,015	190	3180	0,020	255	3180
	8,0	0,022	210	2390	0,022	210	2390	0,030	285	2390
	10,0	0,030	230	1910	0,029	220	1910	0,040	305	1910
	12,0	0,040	255	1590	0,038	240	1590	0,050	320	1590
	16,0	0,047	225	1190	0,045	215	1190	0,060	285	1190
20,0	0,052	200	960	0,050	190	950	0,065	250	950	

Notes

# 118

Fresa 4 taglienti per lavorazioni di superleghe  
4 flute end mill for the machining of superalloys



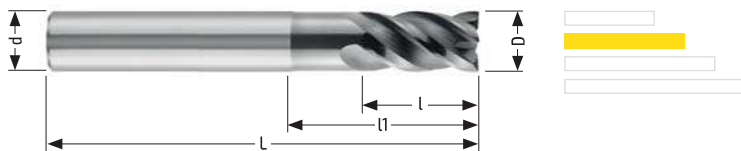
D <sub>e8</sub>	d <sub>h6</sub>	L	l <sub>ap</sub>	l1	a	45°	Z	Balinit® Latuma	Balinit® Alnova
4,0	6	57	6,0	-	-	0,05	4	HMC118040	HMY118040
5,0	6	57	7,5	-	-	0,05	4	HMC118050	HMY118050
6,0	6	57	9,0	18,0	0,15	0,05	4	HMC118060	HMY118060
8,0	8	63	12,0	24,0	0,15	0,05	4	HMC118080	HMY118080
10,0	10	72	15,0	30,0	0,15	0,05	4	HMC118100	HMY118100
12,0	12	83	18,0	36,0	0,20	0,05	4	HMC118120	HMY118120
16,0	16	92	24,0	42,0	0,20	0,05	4	HMC118160	HMY118160
20,0	20	104	30,0	52,0	0,20	0,05	4	HMC118200	HMY118200



D <sub>e8</sub>	d <sub>h6</sub>	L	l <sub>ap</sub>	l1	a	Cr	Z	Balinit® Latuma	Balinit® Alnova
6,0	6	57	9,0	18,0	0,15	0,50	4	HMC118060CR05	HMY118060CR05
8,0	8	63	12,0	24,0	0,15	0,50	4	HMC118080CR05	HMY118080CR05
10,0	10	72	15,0	30,0	0,15	1,00	4	HMC118100CR10	HMY118100CR10
12,0	12	83	18,0	36,0	0,20	1,00	4	HMC118120CR10	HMY118120CR10
16,0	16	92	24,0	42,0	0,20	1,00	4	HMC118160CR10	HMY118160CR10
20,0	20	104	30,0	52,0	0,20	1,00	4	HMC118200CR10	HMY118200CR10

# 119

Fresa 4 taglienti per lavorazioni di duplex  
4 flute end mill for the machining of duplex



D <sub>e8</sub>	d <sub>h6</sub>	L	l <sub>ap</sub>	l1	a	45°	Z	Balinit® Latuma
4,0	6	57	6,0	-	-	0,05	4	HMC119040
5,0	6	57	7,5	-	-	0,05	4	HMC119050
6,0	6	57	9,0	18,0	0,15	0,05	4	HMC119060
8,0	8	63	12,0	24,0	0,15	0,05	4	HMC119080
10,0	10	72	15,0	30,0	0,15	0,05	4	HMC119100
12,0	12	83	18,0	36,0	0,20	0,05	4	HMC119120
16,0	16	92	24,0	42,0	0,20	0,05	4	HMC119160
20,0	20	104	30,0	52,0	0,20	0,05	4	HMC119200

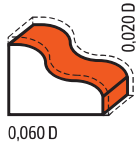


D <sub>e8</sub>	d <sub>h6</sub>	L	l <sub>ap</sub>	l1	a	Cr	Z	Balinit® Latuma
6,0	6	57	9,0	18,0	0,15	0,50	4	HMC119060CR05
8,0	8	63	12,0	24,0	0,15	0,50	4	HMC119080CR05
10,0	10	72	15,0	30,0	0,15	1,00	4	HMC119100CR10
12,0	12	83	18,0	36,0	0,20	1,00	4	HMC119120CR10
16,0	16	92	24,0	42,0	0,20	1,00	4	HMC119160CR10
20,0	20	104	30,0	52,0	0,20	1,00	4	HMC119200CR10

## Superleghe / Superalloys

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Parametri di lavoro / Working Parameters

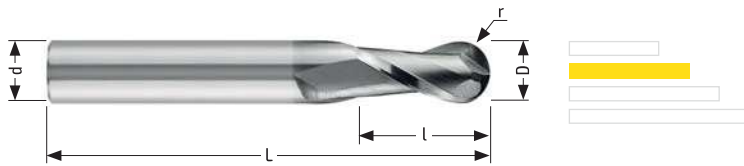
Materiale Material	Diametro Diameter			
Phi/Duplex	m/min	Vc=60		
	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	3,0	0,116	1477	6366
	4,0	0,149	1420	4775
	6,0	0,191	1218	3183
	8,0	0,234	1116	2387
	10,0	0,268	1023	1910
	12,0	0,310	988	1592
Leghe di titanio Titanium Alloys	m/min	Vc=55		
	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	3,0	0,116	1354	5836
	4,0	0,149	1302	4377
	6,0	0,191	1116	2918
	8,0	0,234	1023	2188
	10,0	0,268	938	1751
	12,0	0,310	905	1459
Inox martensitici Ferritic/Martensitic Inox	m/min	Vc=120		
	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	3,0	0,160	4074	12732
	4,0	0,200	3822	9554
	6,0	0,250	3185	6369
	8,0	0,300	2866	4777
	10,0	0,340	2599	3822
	12,0	0,390	2484	3185
Inox austenitici Austenitic Inox	m/min	Vc=90		
	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	3,0	0,140	2674	9550
	4,0	0,175	2508	7166
	6,0	0,225	2150	4777
	8,0	0,275	1971	3583
	10,0	0,315	1806	2866
	12,0	0,365	1744	2389
Superleghe Superalloys	m/min	Vc=35		
	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	3,0	0,085	654	3714
	4,0	0,110	613	2787
	6,0	0,150	557	1858
	8,0	0,180	501	1393
	10,0	0,210	468	1115
	12,0	0,240	446	929
16,0	0,280	390	697	

Notes



# 737

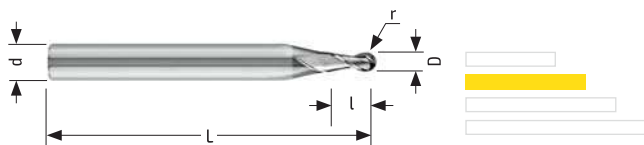
Fresa 2 taglienti semisferica serie normale  
2 flute ball nose end mill, regular version



D h10	d h6	L	l ap	r	Z	Balinit® Latuma	Balinit® Alnova
3,0	3	38	7,0	1,50	2	HMC737030	HMY737030
4,0	4	50	8,0	2,00	2	HMC737040	HMY737040
5,0	5	50	10,0	2,50	2	HMC737050	HMY737050
6,0	6	57	10,0	3,00	2	HMC737060	HMY737060
8,0	8	63	16,0	4,00	2	HMC737080	HMY737080
10,0	10	72	19,0	5,00	2	HMC737100	HMY737100
12,0	12	83	22,0	6,00	2	HMC737120	HMY737120
16,0	16	92	26,0	8,00	2	HMC737160	HMY737160

# 737R

Fresa 2 taglienti serie normale semisferica con gambo rinforzato  
2 flute ball nose end mill regular version with reinforced shank



D h10	d h6	L	l ap	r	Z	Balinit® Latuma	Balinit® Alnova
1,0	6	53	3,0	0,50	2	HMC737010R	HMY737010R
1,5	6	53	4,0	0,75	2	HMC737015R	HMY737015R
2,0	6	53	5,0	1,00	2	HMC737020R	HMY737020R
2,5	6	53	7,0	1,25	2	HMC737025R	HMY737025R
3,0	6	53	7,0	1,50	2	HMC737030R	HMY737030R

1 Acciaio  
Steel

2 Ghise  
Cast Iron

3 Acciai  
Temprati  
Hardened Steel

4 Acciaio  
Inox  
Stainless Steel

5 Titanio  
Titanium

6 Leghe  
Leggere  
Light Alloys

7 PH  
Duplex

8 Superleghe  
Superalloys

9 Compositi  
Composite Materials

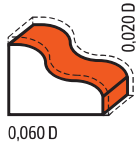
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## Superleghe / Superalloys

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Parametri di lavoro / Working Parameters

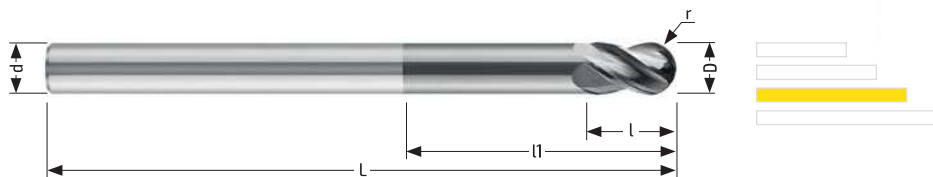
Materiale Material	Diametro Diameter			
Ph/Duplex	m/min	Vc=60		
	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	3,0	0,075	1910	6366
	4,0	0,100	1910	4775
	6,0	0,127	1617	3183
	8,0	0,155	1480	2387
	10,0	0,178	1360	1910
12,0	0,205	1305	1592	
Titanio Titanium	m/min	Vc=55		
	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	3,0	0,075	1751	5836
	4,0	0,100	1751	4377
	6,0	0,127	1482	2918
	8,0	0,155	1357	2188
	10,0	0,178	1247	1751
12,0	0,205	1196	1459	
Inox martensitici Ferritic/Martensitic Inox	m/min	Vc=120		
	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	3,0	0,105	5348	12732
	4,0	0,133	5083	9554
	6,0	0,166	4229	6369
	8,0	0,200	3822	4777
	10,0	0,225	3440	3822
12,0	0,260	3312	3185	
Inox austenitici Austenitic Stainless Steel	m/min	Vc=90		
	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	3,0	0,080	3056	9550
	4,0	0,116	3325	7166
	6,0	0,150	2866	4777
	8,0	0,183	2623	3583
	10,0	0,210	2407	2866
12,0	0,243	2322	2389	
Superleghe Superalloys	m/min	Vc=35		
	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	3,0	0,050	743	3714
	4,0	0,070	780	2787
	6,0	0,100	743	1858
	8,0	0,120	669	1393
	10,0	0,140	624	1115
12,0	0,160	595	929	

Notes

NEW

133

Fresa 4 taglienti semisferica serie lunga  
4 flute ball nose end mill, long version



Silmax  
NORM

$\lambda$  35°  
 $\gamma$  38°



D +0/-0,03	d h6	L	l ap	l1	a	r	Z	Balinit® Latuma	Balinit® Alnova
3,0	6	78	7,0	16,0	0,10	1,50	4,00	HMC133030	HMY133030
4,0	6	78	8,0	21,0	0,10	2,00	4,00	HMC133040	HMY133040
5,0	6	105	10,0	26,0	0,10	2,50	4,00	HMC133050	HMY133050
6,0	6	105	10,0	31,0	0,15	3,00	4,00	HMC133060	HMY133060
8,0	8	105	16,0	41,0	0,15	4,00	4,00	HMC133080	HMY133080
10,0	10	120	19,0	52,0	0,15	5,00	4,00	HMC133100	HMY133100
12,0	12	125	22,0	62,0	0,20	6,00	4,00	HMC133120	HMY133120

31  
UNV  
Universali  
Universal Line

53  
HPC

Alto Rendimento  
High Performance

75  
HRC

Stampi  
Molds

113  
TIS

Titainox e Superleghe  
Titainox & Superalloys

137  
ALU

Leghe Leggere  
Light Alloys

155  
CMP

Materiali Compositi  
Composite Materials

1 Acciaio  
Steel

2 Ghise  
Cast Iron

3 Acciai  
Temprati  
Hardened  
Steel

4 Acciaio  
Inox  
Stainless  
Steel

5 Titanio  
Titanium

6 Leghe  
Leggere  
Light  
Alloys

7 PH  
Duplex

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Superalloys

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## Superleghe / Superalloys

154

Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter	 0,25 D			 0,10 D			 0,05 D			
		Vc=28			Vc=30			Vc=60			
Superleghe Superalloys	m/min	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	6,0	0,020	149	1486	0,023	183	1592	0,046	732	3185	
	8,0	0,027	151	1115	0,032	191	1194	0,064	764	2389	
	10,0	0,038	169	892	0,044	210	955	0,088	841	1911	
	12,0	0,050	186	743	0,057	227	796	0,114	908	1592	
	16,0	0,060	167	557	0,068	203	597	0,136	812	1194	
Superleghe difficili da lavorare Hard Machinable Superalloys	m/min	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	6,0	0,013	97	1486	0,015	119	1592	0,030	478	3185	
	8,0	0,018	100	1115	0,021	125	1194	0,042	502	2389	
	10,0	0,025	112	892	0,029	138	955	0,058	554	1911	
	12,0	0,033	123	743	0,038	151	796	0,076	605	1592	
	16,0	0,040	111	557	0,045	134	597	0,090	537	1194	
Superleghe molto difficili Very Hard/Machinable Superalloys	m/min	<b>D</b> mm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm	<b>fz</b> mm/z	<b>F</b> mm/min	<b>n</b> rpm
	6,0	0,013	76	1168	0,015	88	1168	0,030	358	2389	
	8,0	0,018	79	876	0,021	92	876	0,042	376	1791	
	10,0	0,025	88	701	0,029	102	701	0,058	416	1433	
	12,0	0,033	96	584	0,038	111	584	0,076	454	1194	
	16,0	0,040	88	438	0,045	99	438	0,090	403	896	

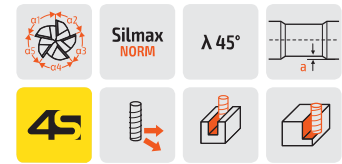
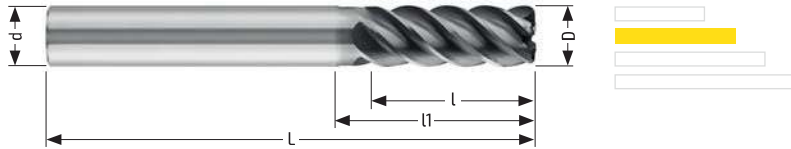
Parametri validi per componenti ricavati dal pieno in condizioni di rigidità elevata  
Cutting parameters for components made from solid with high rigidity

Notes

NEW

154

Fresa a 5 taglienti serie normale per lavorazioni di superleghe  
5 flute end mill, regular version for the machining of superalloys



8

45°

D <sub>e8</sub>	d <sub>h6</sub>	L	l <sub>ap</sub>	l1	a	45° +0,05/+0	Z	Balinit® Latuma	Balinit® Alnova
6,0	6	57	13,0	20,0	0,15	0,10	5	HMC154060	HMY154060
8,0	8	63	19,0	25,0	0,15	0,15	5	HMC154080	HMY154080
10,0	10	72	22,0	30,0	0,15	0,15	5	HMC154100	HMY154100
12,0	12	83	26,0	36,0	0,20	0,15	5	HMC154120	HMY154120
16,0	16	92	32,0	42,0	0,20	0,20	5	HMC154160	HMY154160

Cr

D <sub>e8</sub>	d <sub>h6</sub>	L	l <sub>ap</sub>	l1	a	Cr	Z	Balinit® Latuma	Balinit® Alnova
6,0	6	57	13,0	20,0	0,15	0,50	5	HMC154060CR05	HMY154060CR05
6,0	6	57	13,0	20,0	0,15	1,00	5	HMC154060CR10	HMY154060CR10
8,0	8	63	19,0	25,0	0,15	0,50	5	HMC154080CR05	HMY154080CR05
8,0	8	63	19,0	25,0	0,15	1,00	5	HMC154080CR10	HMY154080CR10
8,0	8	63	19,0	25,0	0,15	2,00	5	HMC154080CR20	HMY154080CR20
10,0	10	72	22,0	30,0	0,15	0,50	5	HMC154100CR05	HMY154100CR05
10,0	10	72	22,0	30,0	0,15	1,00	5	HMC154100CR10	HMY154100CR10
10,0	10	72	22,0	30,0	0,15	2,00	5	HMC154100CR20	HMY154100CR20
12,0	12	83	26,0	36,0	0,20	0,50	5	HMC154120CR05	HMY154120CR05
12,0	12	83	26,0	36,0	0,20	1,00	5	HMC154120CR10	HMY154120CR10
12,0	12	83	26,0	36,0	0,20	2,00	5	HMC154120CR20	HMY154120CR20
12,0	12	83	26,0	36,0	0,20	3,00	5	HMC154120CR30	HMY154120CR30
16,0	16	92	32,0	42,0	0,20	1,00	5	HMC154160CR10	HMY154160CR10
16,0	16	92	32,0	42,0	0,20	2,00	5	HMC154160CR20	HMY154160CR20
16,0	16	92	32,0	42,0	0,20	3,00	5	HMC154160CR30	HMY154160CR30
16,0	16	92	32,0	42,0	0,20	4,00	5	HMC154160CR40	HMY154160CR40

1  
Acciaio  
Steel

2  
Ghise  
Cast  
Iron

3  
Acciai  
Temprati  
Hardened  
Steel

4  
Acciaio  
Inox  
Stainless  
Steel

5  
Titanio  
Titanium

6  
Leghe  
Leggere  
Light  
Alloys

7  
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8  
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# Superleghe / Superalloys

157

Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter	 0,15 D			 0,05 D		
		Vc=80			Vc=80		
Titanio Titanium	m/min						
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	12,0	0,055	817	2122	0,065	966	2122
16,0	0,072	802	1592	0,085	947	1592	

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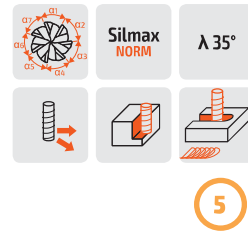
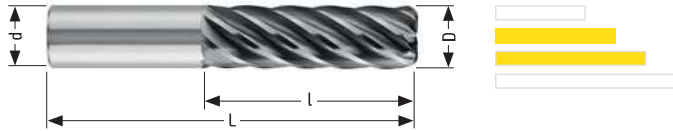
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Notes \_\_\_\_\_

NEW

157

Fresa a 7 taglienti serie lunga per lavorazioni di titanio  
7 flute end mill for the machining of Titanium, long version



45°

D h10	d h6	L	l ap	45°	Z	Balinit® Latuma
12,0	12	83	32	0,25	7	HMC157120M
16,0	16	82	40	0,30	7	HMC157160S
16,0	16	92	50	0,30	7	HMC157160M
16,0	16	104	60	0,30	7	HMC157160L

Cr

D h10	d h6	L	l ap	Cr	Z	Balinit® Latuma
12,0	12	83	32	1,00	7	HMC157120MCR10
12,0	12	83	32	2,00	7	HMC157120MCR20
12,0	12	83	32	3,00	7	HMC157120MCR30
12,0	12	83	32	4,00	7	HMC157120MCR40
16,0	16	82	40	1,00	7	HMC157160SCR10
16,0	16	82	40	2,00	7	HMC157160SCR20
16,0	16	82	40	3,00	7	HMC157160SCR30
16,0	16	82	40	4,00	7	HMC157160SCR40
16,0	16	82	40	5,00	7	HMC157160SCR50
16,0	16	92	50	1,00	7	HMC157160MCR10
16,0	16	92	50	2,00	7	HMC157160MCR20
16,0	16	92	50	3,00	7	HMC157160MCR30
16,0	16	92	50	4,00	7	HMC157160MCR40
16,0	16	92	50	5,00	7	HMC157160MCR50
16,0	16	104	60	1,00	7	HMC157160LCR10
16,0	16	104	60	2,00	7	HMC157160LCR20
16,0	16	104	60	3,00	7	HMC157160LCR30
16,0	16	104	60	4,00	7	HMC157160LCR40
16,0	16	104	60	5,00	7	HMC157160LCR50

1  
Acciaio  
Steel

2  
Ghise  
Cast  
Iron

3  
Acciai  
Temprati  
Hardened  
Steel

4  
Acciaio  
Inox  
Stainless  
Steel

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Titanio  
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