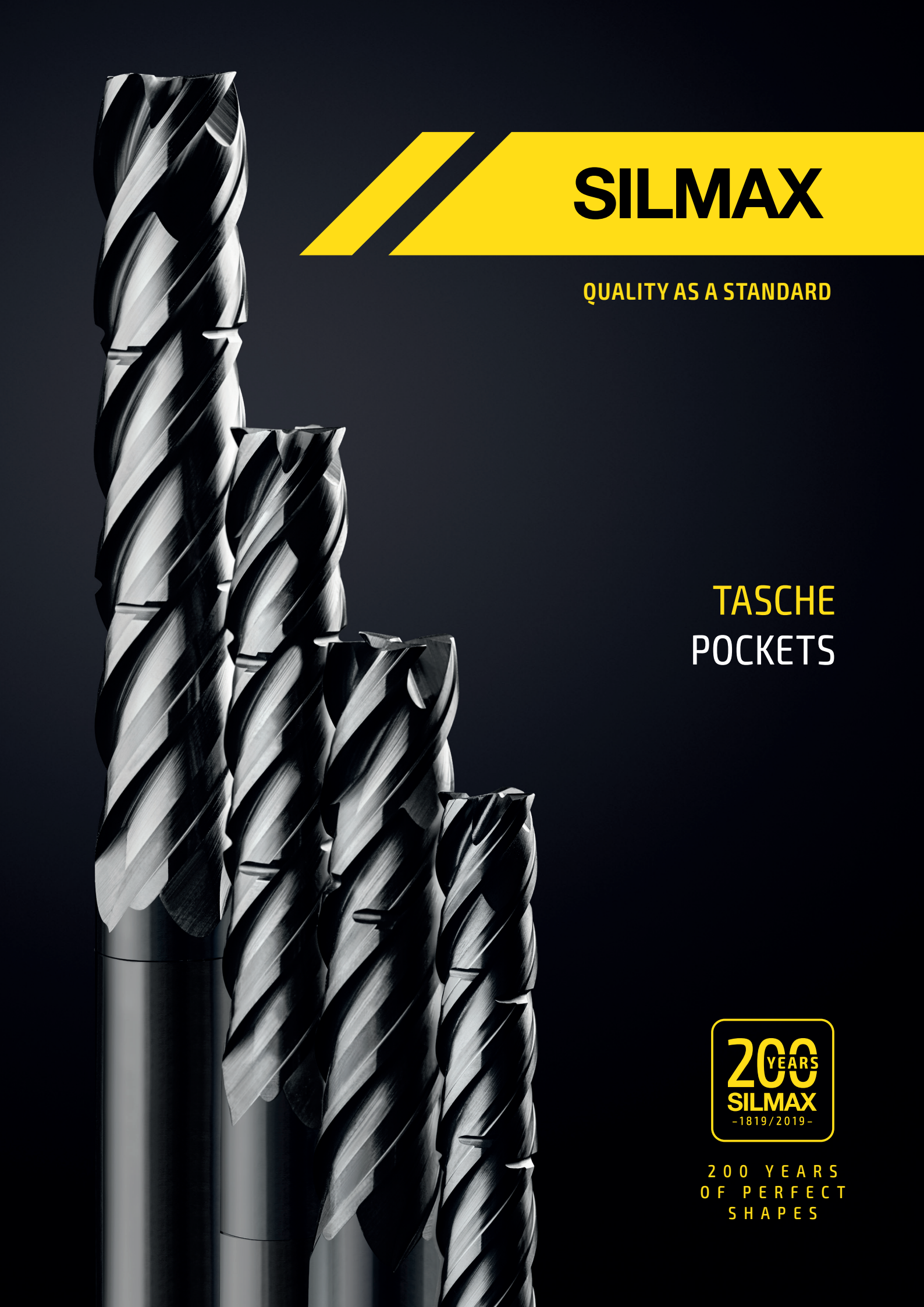


SILMAX

QUALITY AS A STANDARD

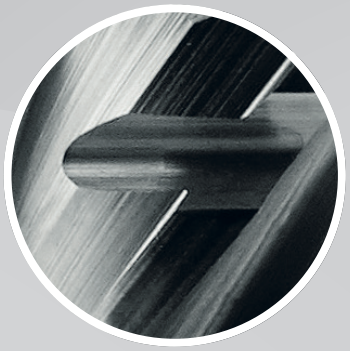
TASCHE
POCKETS

200 YEARS SILMAX -1819/2019-

200 YEARS
OF PERFECT
SHAPES

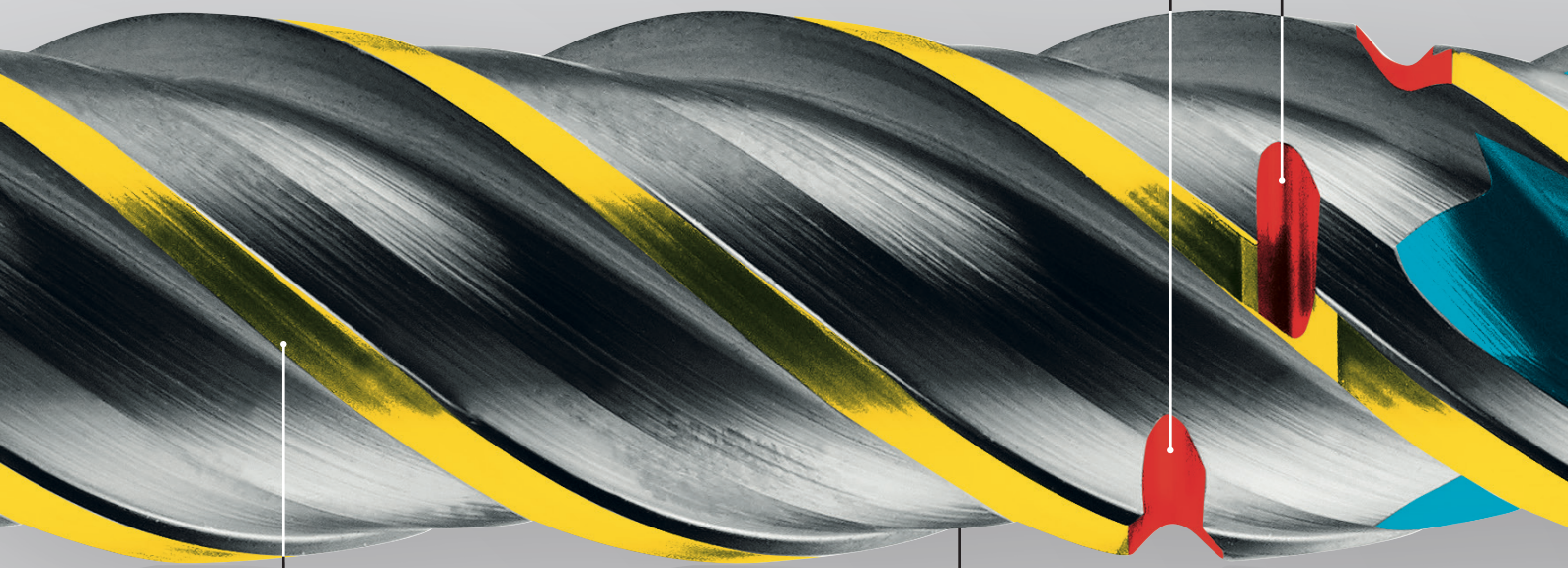
Nuove frese 188 - 189 specifiche per lo svuotamento di tasche con strategie di lavoro ad elevata dinamica

New 188 - 189 pocketing tools for dynamic milling



Rompitruciolo
Tacca per una migliore gestione del truciolo.

Chip Breaker
Chip breaker notch for a better chip control.



4S

Trattamenti per Superfici
Trattamento 4S del filo tagliente. Balinit® Alcrona Pro.

Surfaces Treatments
4S edge treatment. Balinit® Alcrona Pro.

Multimateriale
Acciai al carbonio, Acciai legati, Inox.

(*) Per Titanio e Superleghe, consultare tecnici Silmax.

Multimaterial
Carbon Steels, Alloyed Steels, Stainless Steel.

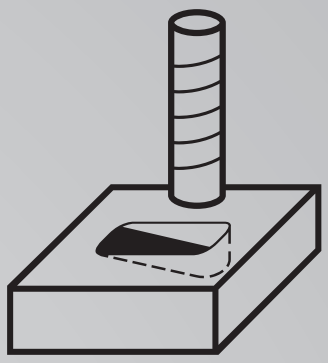
(*)For Titanium and Superalloys, please contact Silmax technicians.

Spigolo rinforzato

Spigolo rinforzato con Cr0,2.

Reinforced corner

Reinforced corner with Cr0,2.

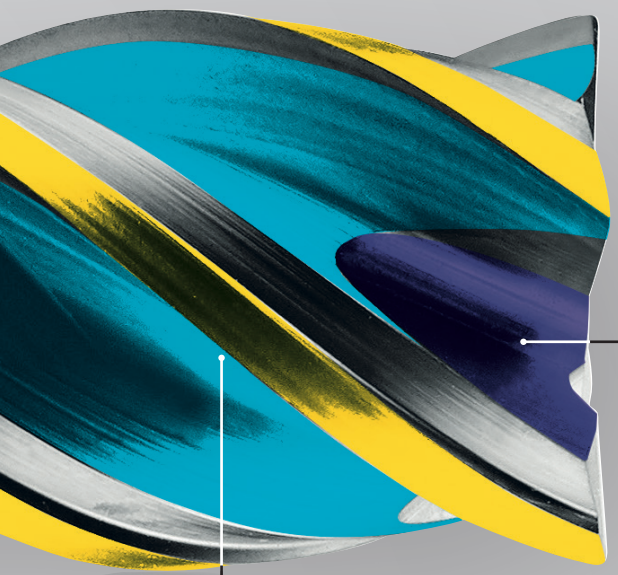


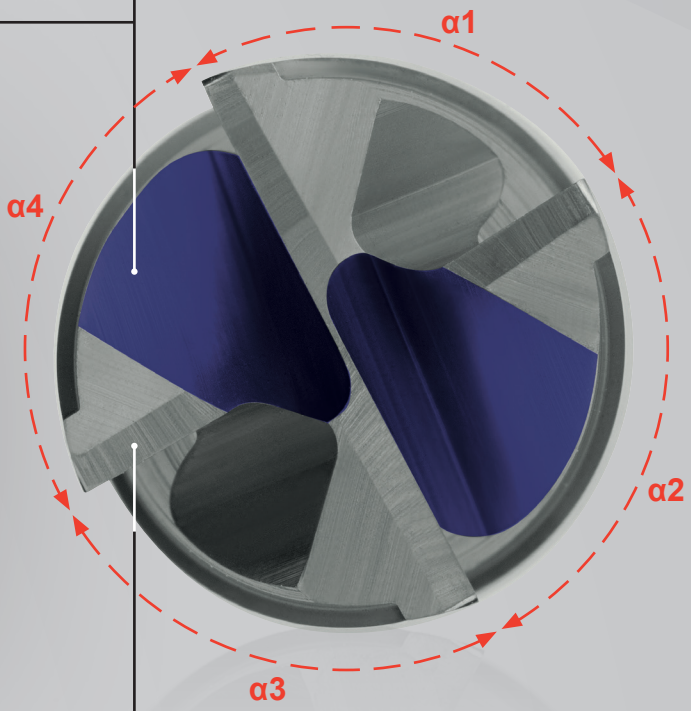
Lavorazioni in rampa

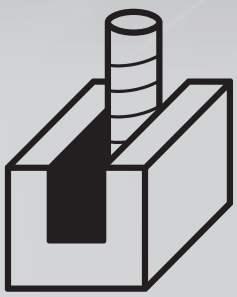
Geometria frontale
per ingresso in rampa.

Ramping

Face geometry for steep ramping.







Lavorazioni in cava

Vano gola aumentato
per lavorazioni in cava.

Slotting

Deeper flutes on
the front for slotting.

Divisione irregolare

Diminuzione delle
vibrazioni.

Unequal flute spacing

Vibrations reduction.

188/189

Nuove frese specifiche, progettate da R&D di **Silmax** per le lavorazioni di tasche chiuse e aperte

Strategie evolute

L'utilizzo nelle operazioni con le nuove strategie evolute ad **elevata dinamica**, consente **performance eccellenti con profondità di 4xD e 5xD** in singola passata su un'ampia gamma di materiali.

Ingresso in rampa

La nuova **esecuzione di affilatura** permette un ingresso dal pieno in rampa elicoidale o diritta con **elevato angolo di pendenza/ penetrazione**.

Riduzione tempi

Le nuove frese **Silmax riducono sensibilmente i tempi ciclo** rispetto alle tradizionali strategie.

Rendimento

Il rompitruciolo creato sull'elica **facilita la lavorazione incrementando il rendimento dell'utensile** ed **eliminando** la possibilità di **microscheggiature** sul filo tagliente.

Performance eccellenti

La combinazione tra **divisione irregolare**, superfinitura (4S di **Silmax**) del filo tagliente e la **conicità progressiva del nucleo**, contribuisce ad avere **massime prestazioni, massima efficienza ed eliminazione delle vibrazioni**.

New specific cutters designed by **Silmax** R&D for machining closed and open pockets

Advanced strategies

Advanced **high dynamics milling** strategies allow to work at **4XD or 5XD depths** on a wide range of materials with **superior performances**.

Ramping

The **new front geometry solution** allows to start the operation from solid by helical or straight ramp milling with **high angle of slope**.

Time reduction

The new **Silmax** end mills **reduce significantly the cycle time** compared to the traditional strategies.

Efficiency

The new profile of the **chip breaker notches improves the tools efficiency avoiding micro-chipping on the cutting edge**.

Excellent performances

The combination of the **unequal tooth spacing, the tapered core** and the edge superfinishing treatment (**Silmax** 4S) **grant superior performances with no vibrations**.

158

Nuova fresa per contornature di semifinitura e finitura ad alta dinamica

Nucleo rinforzato

Il nucleo rinforzato garantisce **un'ottima stabilità nelle operazioni di contornatura** ad alta velocità e un'eccezionale **qualità delle superfici**.

Elevata rigidità

L'elevata rigidità dell'utensile permette di ottenere un **ottimo parallelismo delle pareti**, evitando ripassature.

New high dynamics semifinishing and finishing tool

Reinforced core

The reinforced core ensures **great stability in high speed side milling operations with high quality surface finish**.

High rigidity

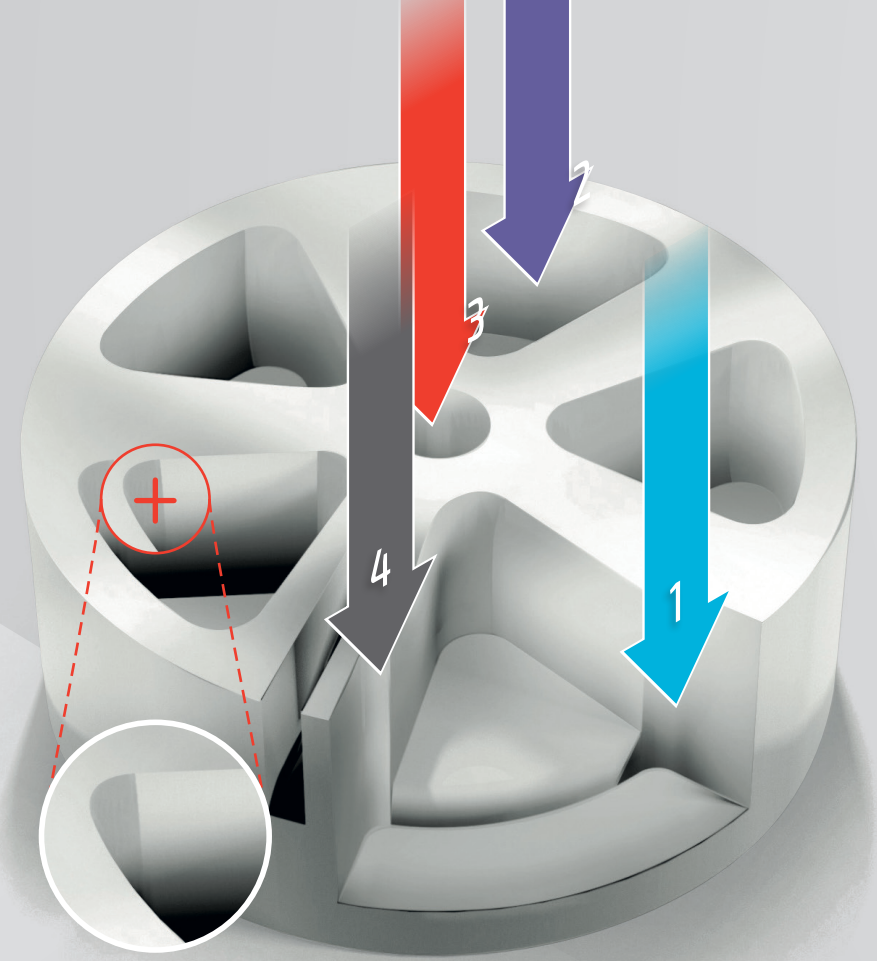
The **outstanding tool rigidity** keeps the machined wall straight, avoiding corrections.

Confronto produttività/strategie

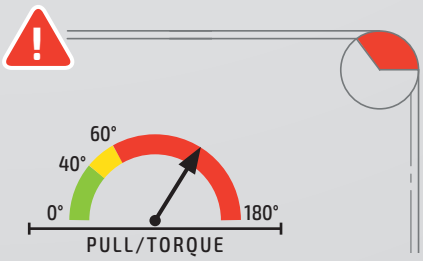
Productivity / strategy comparison

Utensile Tool	D	Z	Vc m/min	F mm/min	Ap mm	Ae mm	Volume cm3/min	Plus	Minus
High Feed Insert	63	6	150	4500	1,5	44	300	• Elevata produttività	• Raccordi e dettagli da riprendere con altri utensili • Tempi di lavorazione aggiuntivi • Solo per grandi superfici
								• High productivity	• Fillets and details to be rewarded with other tools • Extra time needed • Only for large surfaces
Silmax HM Dynamic	12	4	160	2200	48	1,2	118	• Alta Produttività • Lunga Durata	• Skill di utilizzo necessarie
								• High Productivity • Extra tool life	• Usage skills needed
HM HPC	12	4	100	640	18	6	68	• Fresa universale	• Forze di taglio elevate • Profondità limitata
								• Universal end mill	• High cutting forces • Limited depth
High Feed Insert	32	4	150	3000	0,7	20	42	• Economico	• Raccordi e dettagli da riprendere con altri utensili • Tempi di lavorazione aggiuntivi • Bassa produttività
								• Saving	• Fillets and details to be rewarded with other tools • Extra time needed • Low productivity
HM Torica HM Bull nose	16	6	180	3200	0,4	12	16	• Non richiesta potenza/ rigidità • Disponibili diametri piccoli, ampia gamma di lunghezze e CR	• Usura localizzata • Bassa produttività
								• Power / rigidity not required • Availability of small diameters and wide range of lenghts and CR	• Localized wear • Low productivity

Raccomandazioni di utilizzo
Recommendations for use



1. Tasca aperta / Open Pocket
2. Tasca chiusa / Closed Pocket
3. Foro / Hole
4. Cava profonda / Deep slotting

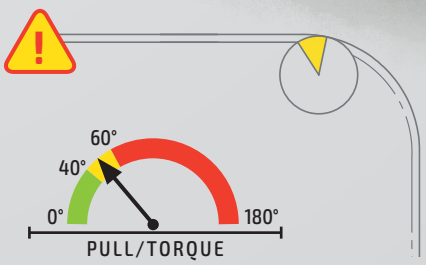


Lavorazione senza interpolazioni

La fresa produce un raggio di raccordo uguale al proprio raggio (es. fresa D12 produce sul pezzo un raggio di raccordo R6). L'angolo di ingaggio passa rapidamente da 36° sulle pareti a 126° in corrispondenza del cambio di direzione.
Si genera un picco di assorbimento di potenza al mandrino che può tradursi in rottura dell'utensile.
Nel caso riportato, con asportazione radiale ae=1.2mm, l'angolo di ingaggio è di 127°.

No interpolation strategies

The fillet radius obtained is the radius of the tool (i.e. D12 produces a R6 radius on the pocket). The engagement angle moves sharply from 36° up to 126° where there is a direction change. The spindle load rises abruptly causing a potential tool breakage. In the example, with a radial removal ae=1.2mm, the engagment angle is 127°.

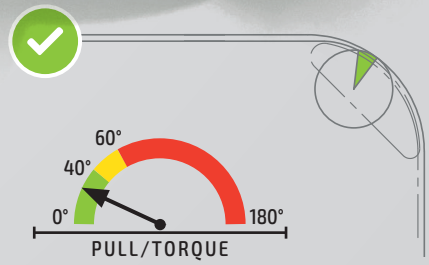


Lavorazione con interpolazione semplice

Si realizza un raggio di raccordo maggiore di 1/2D.
Nell'esempio si realizza R18 con fresa D12, l'angolo di ingaggio è di 44° con l'asportazione radiale raccomandata di 0.1D.
Valutare attentamente le proporzioni tra raggio di raccordo e diametro fresa, rispettando indicativamente R>3/2D.

Simple radius interpolation strategies

The fillet radius produced is bigger than 1/2D. For example with a D12 tool and a R18 radius, the engagement angle is 44° with the recommended ae=0.1D. Note to keep the ratio between the fillet radius and the tool diameter as R>3/2D.



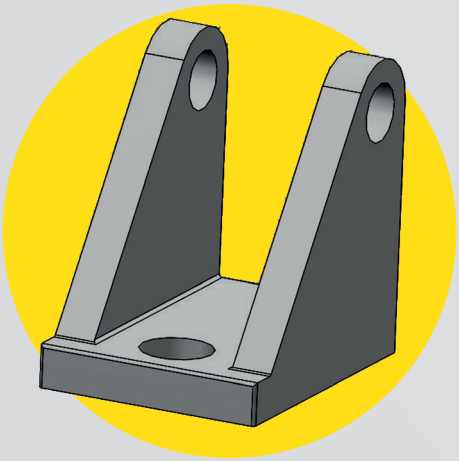
Lavorazione ottimizzata con percorsi utensile evoluti

Il software CAM controlla l'angolo di ingaggio riducendo dinamicamente l'asportazione radiale ae e intervenendo anche sull'avanzamento F, evitando picchi di assorbimento di potenza.

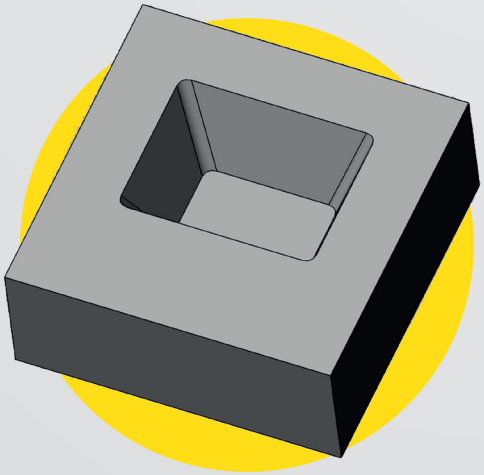
Optimized working condition with evoluted tool paths

The CAM software controls the engagement angle all the time, reducing the radial step ae and affecting the feed F, avoiding peaks of power absorption.

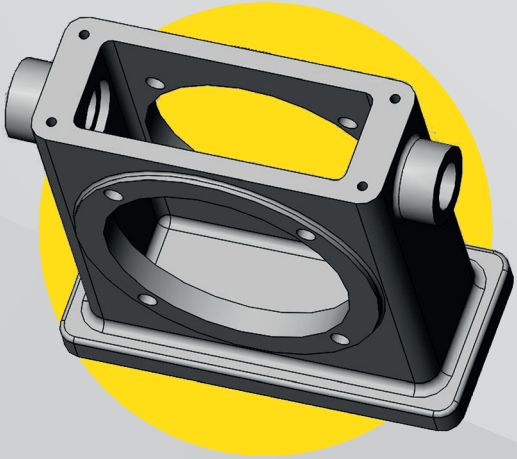
Esempi di tasche aperte/chiuse
Examples of open/close pockets



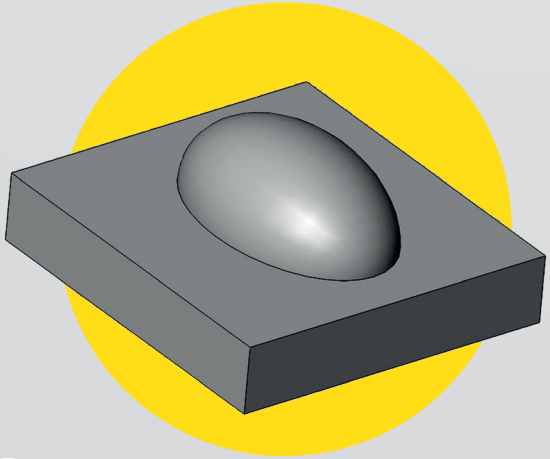
Tasca aperta, sgrossatura vano centrale
Open pocket, central compartment roughing



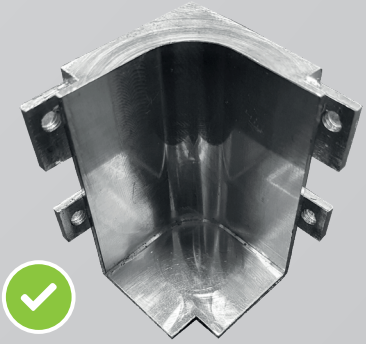
Tasca con pareti sformate
Pocket with deformed walls



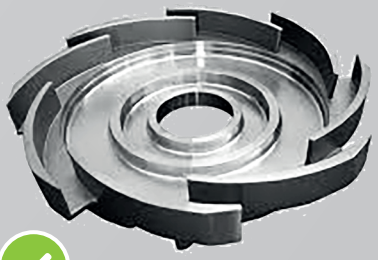
Tasche chiuse
Close pockets



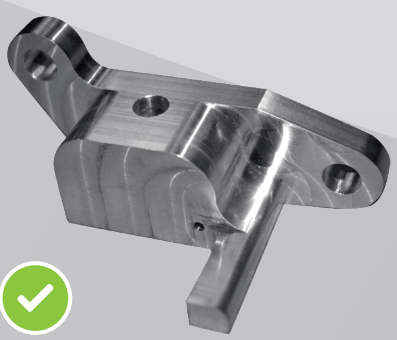
Superficie con sviluppo 3D
Surface with 3D development



Tasca aperta
Open pocket



Elemento realizzabile sia
con approccio di tasca aperta
che di tasca chiusa
This item can be made with either
an open or closed pocket approach



Elemento realizzabile come
insieme di tasche aperte
This item can be created
as a set of open pockets

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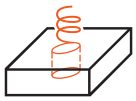
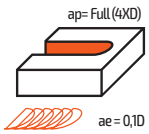
Parametri di lavoro / Working Parameters





Materiale Material	Diametro Diameter									
Acciaio <800 N/mm² Steel <800 N/mm²	m/min	Vc=105			Vc=190			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
	6,0	0,019	424	5573	0,070	2824	10085	0,016	442	6900
	8,0	0,026	426	4180	0,100	3025	7564	0,021	435	5175
	10,0	0,032	428	3344	0,130	3146	6051	0,025	414	4140
	12,0	0,038	418	2787	0,150	3025	5042	0,030	414	3450
	16,0	0,040	334	2090	0,180	2723	3782	0,040	414	2588
	20,0	0,045	301	1672	0,220	2662	3025	0,050	414	2070
Acciaio <1000 N/mm² Steel <1000 N/mm²	m/min	Vc=105			Vc=180			Vc=115		
	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	0,019	424	5573	0,070	2675	9554	0,016	391	6104
	8,0	0,026	426	4180	0,100	2866	7166	0,021	385	4578
	10,0	0,032	428	3344	0,130	2981	5732	0,025	366	3662
	12,0	0,038	418	2787	0,150	2866	4777	0,030	366	3052
	16,0	0,040	334	2090	0,180	2580	3583	0,040	366	2289
	20,0	0,045	301	1672	0,220	2522	2866	0,050	366	1831
Acciaio <1300 N/mm² Steel <1300 N/mm²	m/min	Vc=90			Vc=160			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	0,019	363	4777	0,060	2038	8493	0,016	340	5308
	8,0	0,026	365	3583	0,088	2242	6369	0,021	334	3981
	10,0	0,032	367	2866	0,110	2242	5096	0,025	318	3185
	12,0	0,038	358	2389	0,130	2208	4246	0,030	318	2654
	16,0	0,040	287	1791	0,160	2038	3185	0,040	318	1990
	20,0	0,045	258	1433	0,200	2038	2548	0,050	318	1592
Acciai altolegati High alloyed steel	m/min	Vc=60			Vc=100			Vc=70		
	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	0,019	242	3185	0,060	1274	5308	0,016	238	3715
	8,0	0,026	244	2389	0,088	1401	3981	0,021	234	2787
	10,0	0,032	245	1911	0,110	1401	3185	0,025	223	2229
	12,0	0,038	239	1592	0,130	1380	2654	0,030	223	1858
	16,0	0,040	191	1194	0,160	1274	1990	0,040	223	1393
	20,0	0,045	172	955	0,200	1274	1592	0,050	223	1115
Inox Stainless steel	m/min	Vc=70			Vc=130			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	0,019	282	3715	0,060	1656	6900	0,016	272	4246
	8,0	0,026	284	2787	0,088	1822	5175	0,021	268	3185
	10,0	0,032	285	2229	0,110	1822	4140	0,025	255	2548
	12,0	0,038	279	1858	0,130	1794	3450	0,030	255	2123
	16,0	0,040	223	1393	0,160	1656	2588	0,040	255	1592
	20,0	0,045	201	1115	0,200	1656	2070	0,050	255	1274

Scheda del prodotto
su silmax.it

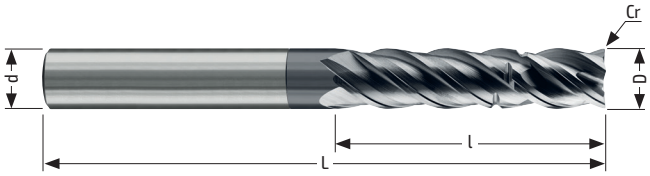
Product sheet
on silmax.it

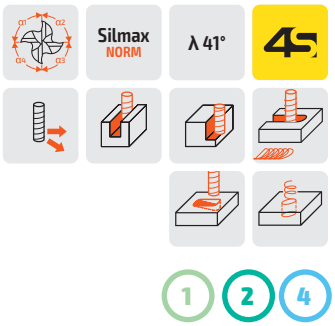
NEW

188

Fresa Z4 per tasche profonde 4XD

Solid carbide end mill Z4 for deep pockets 4XD





1 2 4

Cr

D h10	d h6	L	l ap	Cr	Z	Balinit® Alcrona
6,0	6	64	24,0	0,20	4	HMG188060
8,0	8	74	32,0	0,20	4	HMG188080
10,0	10	89	40,0	0,20	4	HMG188100
12,0	12	105	48,0	0,20	4	HMG188120
16,0	16	125	64,0	0,20	4	HMG188160
20,0	20	145	80,0	0,20	4	HMG188200

1 Acciaio / Steel

2 Ghise / Cast Iron

4 Acciaio Inox / Stainless Steel

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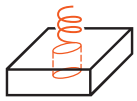
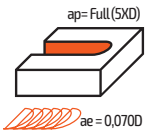
Parametri di lavoro / Working Parameters





Materiale Material	Diametro Diameter									
Acciaio <800 N/mm² Steel <800 N/mm²	m/min	Vc=95			Vc=190			Vc=120		
	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	0,017	343	5042	0,060	2420	10085	0,012	306	6369
	8,0	0,024	363	3782	0,090	2723	7564	0,017	325	4777
	10,0	0,030	363	3025	0,120	2904	6051	0,021	321	3822
	12,0	0,036	363	2521	0,140	2824	5042	0,026	331	3185
	16,0	0,038	287	1891	0,170	2572	3782	0,035	330	2389
	20,0	0,043	260	1513	0,210	2541	3025	0,043	330	1911
Acciaio <1000 N/mm² Steel <1000 N/mm²	m/min	Vc=95			Vc=180			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
	6,0	0,017	343	5042	0,060	2293	9554	0,012	280	5839
	8,0	0,024	363	3782	0,090	2580	7166	0,017	298	4379
	10,0	0,030	363	3025	0,120	2752	5732	0,021	294	3503
	12,0	0,036	363	2521	0,140	2675	4777	0,026	304	2919
	16,0	0,038	287	1891	0,170	2436	3583	0,035	302	2189
	20,0	0,043	260	1513	0,210	2408	2866	0,043	303	1752
Acciaio <1300 N/mm² Steel <1300 N/mm²	m/min	Vc=90			Vc=160			Vc=95		
	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	0,019	363	4777	0,050	1699	8493	0,012	242	5042
	8,0	0,026	365	3583	0,078	1987	6369	0,017	257	3782
	10,0	0,032	367	2866	0,100	2038	5096	0,021	254	3025
	12,0	0,038	358	2389	0,120	2038	4246	0,026	262	2521
	16,0	0,040	287	1791	0,150	1911	3185	0,035	261	1891
	20,0	0,045	258	1433	0,190	1936	2548	0,043	261	1513
Acciai altolegati High alloyed steel	m/min	Vc=60			Vc=100			Vc=65		
	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	0,019	242	3185	0,050	1062	5308	0,012	166	3450
	8,0	0,026	244	2389	0,078	1242	3981	0,017	176	2588
	10,0	0,032	245	1911	0,100	1274	3185	0,021	174	2070
	12,0	0,038	239	1592	0,120	1274	2654	0,026	179	1725
	16,0	0,040	191	1194	0,150	1194	1990	0,035	179	1294
	20,0	0,045	172	955	0,190	1210	1592	0,043	179	1035
Inox Stainless steel	m/min	Vc=70			Vc=120			Vc=70		
	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	0,019	282	3715	0,050	1274	6369	0,012	178	3715
	8,0	0,026	284	2787	0,078	1490	4777	0,017	189	2787
	10,0	0,032	285	2229	0,100	1529	3822	0,021	187	2229
	12,0	0,038	279	1858	0,120	1529	3185	0,026	193	1858
	16,0	0,040	223	1393	0,150	1433	2389	0,035	192	1393
	20,0	0,045	201	1115	0,190	1452	1911	0,043	193	1115

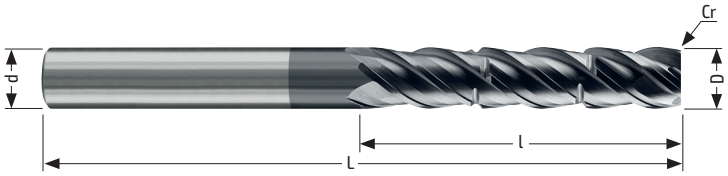
Scheda del prodotto
su silmax.it

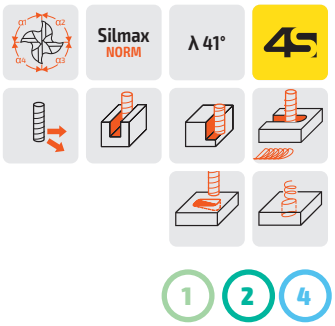
Product sheet
on silmax.it

NEW

189

Fresa Z4 per tasche profonde 5XD
Solid carbide end mill Z4 for deep pockets 5XD





1 2 4

Cr

D h10	d h6	L	l ap	Cr	Z	Balinit® Alcrona
6,0	6	74	30,0	0,20	4	HMG189060
8,0	8	84	40,0	0,20	4	HMG189080
10,0	10	100	50,0	0,20	4	HMG189100
12,0	12	115	60,0	0,20	4	HMG189120
16,0	16	142	80,0	0,20	4	HMG189160
20,0	20	165	100,0	0,20	4	HMG189200

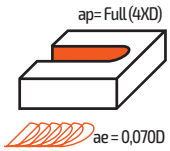
1 Acciaio / Steel

2 Ghise / Cast Iron

4 Acciaio Inox / Stainless Steel

158

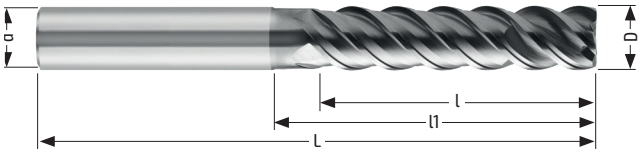
Parametri di lavoro / Working Parameters

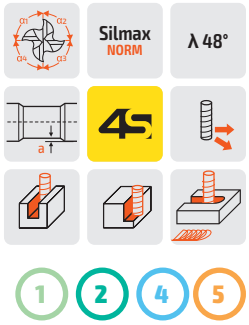


Materiale / Material	Diametro / Diameter	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
Acciaio <800 N/mm² Steel <800 N/mm²	m/min	Vc=190			Vc=120		
	D mm						
	3,0	0,020	1614	20170	0,005	255	12739
	4,0	0,035	2118	15127	0,008	306	9554
	5,0	0,045	2178	12102	0,010	306	7643
	6,0	0,060	2420	10085	0,012	306	6369
	8,0	0,090	2723	7564	0,017	325	4777
	10,0	0,120	2904	6051	0,021	321	3822
	12,0	0,140	2824	5042	0,026	331	3185
	16,0	0,170	2572	3782	0,035	330	2389
Acciaio <1000 N/mm² - Ghisa Steel <1000 N/mm² - Cast iron	m/min	Vc=180			Vc=110		
	D mm						
	3,0	0,020	1529	19108	0,005	234	11677
	4,0	0,035	2006	14331	0,008	280	8758
	5,0	0,045	2064	11465	0,010	280	7006
	6,0	0,060	2293	9554	0,012	280	5839
	8,0	0,090	2580	7166	0,017	298	4379
	10,0	0,120	2752	5732	0,021	294	3503
	12,0	0,140	2675	4777	0,026	304	2919
	16,0	0,170	2436	3583	0,035	302	2189
Acciaio <1300 N/mm² Steel <1300 N/mm²	m/min	Vc=160			Vc=95		
	D mm						
	3,0	0,018	1223	16985	0,004	161	10085
	4,0	0,030	1529	12739	0,006	182	7564
	5,0	0,040	1631	10191	0,008	194	6051
	6,0	0,050	1699	8493	0,012	242	5042
	8,0	0,078	1987	6369	0,017	257	3782
	10,0	0,100	2038	5096	0,021	254	3025
	12,0	0,120	2038	4246	0,026	262	2521
	16,0	0,150	1911	3185	0,035	261	1891
Acciai inossidabili Stainless Steels	m/min	Vc=120			Vc=70		
	D mm						
	3,0	0,018	917	12739	0,004	119	7431
	4,0	0,030	1146	9554	0,006	134	5573
	5,0	0,040	1223	7643	0,008	143	4459
	6,0	0,050	1274	6369	0,012	178	3715
	8,0	0,078	1490	4777	0,017	189	2787
	10,0	0,100	1529	3822	0,021	187	2229
	12,0	0,120	1529	3185	0,026	193	1858
	16,0	0,150	1433	2389	0,035	192	1393
Titanio Titanium	m/min	Vc=80			Vc=50		
	D mm						
	3,0	0,018	917	12739	0,004	119	7431
	4,0	0,030	1146	9554	0,006	134	5573
	5,0	0,040	1223	7643	0,008	143	4459
	6,0	0,050	1274	6369	0,012	178	3715
	8,0	0,078	1490	4777	0,017	189	2787
	10,0	0,100	1529	3822	0,021	187	2229
	12,0	0,120	1529	3185	0,026	193	1858
	16,0	0,150	1433	2389	0,035	192	1393

158

Fresa 4 taglienti con divisione irregolare e tagliente extra lungo indicata per lavorazioni in trocoidale / 4 flute end mill with unequal flute spacing extra long version suitable for trochoidal machining





45°

D e8	d h6	L	l ap	l1	a	45°	Z	Balinit® Alcrona
3,0	6	57	12,0	15,0	0,10	0,05	4	HMG158030
4,0	6	63	16,0	20,0	0,10	0,05	4	HMG158040
5,0	6	70	20,0	25,0	0,10	0,05	4	HMG158050
6,0	6	70	24,0	30,0	0,15	0,05	4	HMG158060
8,0	8	80	32,0	40,0	0,15	0,10	4	HMG158080
10,0	10	87	40,0	46,0	0,15	0,15	4	HMG158100
12,0	12	108	48,0	58,0	0,20	0,15	4	HMG158120
16,0	16	120	64,0	68,0	0,20	0,20	4	HMG158160

Scheda del prodotto su silmax.it

Product sheet on silmax.it

1 Acciaio Steel | 2 Ghise Cast Iron | 4 Acciaio Inox Stainless Steel | 5 Titanio Titanium

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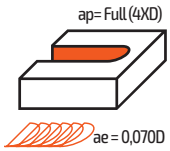
Parametri di lavoro / Working Parameters



Materiale / Material	Diametro / Diameter						
Acciaio <800 N/mm² / Steel <800 N/mm²	m/min	Vc=180			Vc=110		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	5,0	0,045	2064	11465	0,009	252	7006
	6,0	0,060	2293	9554	0,012	280	5839
	8,0	0,090	2580	7166	0,017	298	4379
	10,0	0,120	2752	5732	0,021	294	3503
	12,0	0,140	2675	4777	0,026	304	2919
	14,0	0,150	2457	4095	0,030	300	2502
	16,0	0,170	2436	3583	0,035	302	2189
	20,0	0,210	2408	2866	0,043	303	1752
Inox / Stainless steel	m/min	Vc=110			Vc=70		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	5,0	0,038	1065	7006	0,009	161	4459
	6,0	0,050	1168	5839	0,012	178	3715
	8,0	0,078	1366	4379	0,017	189	2787
	10,0	0,100	1401	3503	0,021	187	2229
	12,0	0,120	1401	2919	0,026	193	1858
	14,0	0,132	1321	2502	0,030	191	1592
	16,0	0,150	1314	2189	0,035	192	1393
	20,0	0,190	1331	1752	0,043	193	1115
Titanio / Titanium	m/min	Vc=90			Vc=60		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	5,0	0,038	871	5732	0,009	138	3822
	6,0	0,050	955	4777	0,012	153	3185
	8,0	0,078	1118	3583	0,017	162	2389
	10,0	0,100	1146	2866	0,021	161	1911
	12,0	0,120	1146	2389	0,026	166	1592
	14,0	0,132	1081	2047	0,030	164	1365
	16,0	0,150	1075	1791	0,035	165	1194
	20,0	0,190	1089	1433	0,043	165	955

Scheda del prodotto
su silmax.it

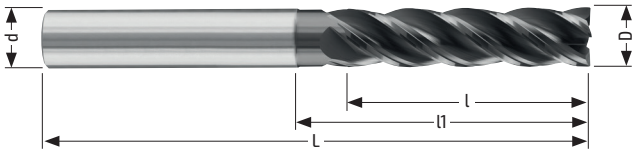
Product sheet
on silmax.it

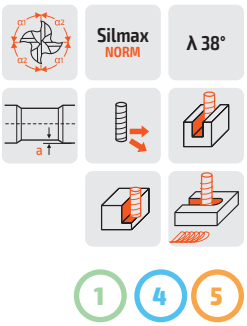
NEW

187

Fresa 4 taglienti serie lunga per inox e acciai dolci

4 flute end mill long version for stainless steel and mild steel





45°

D e8	d h6	L	l	l1	a	45° +0,05/+0	Z	Balinit® Alcrona
5,0	6	74	20	25	0,10	0,10	4	HMG187050
6,0	6	74	24	30	0,15	0,10	4	HMG187060
8,0	8	80	32	40	0,15	0,15	4	HMG187080
10,0	10	87	40	46	0,15	0,15	4	HMG187100
12,0	12	105	48	58	0,20	0,15	4	HMG187120
14,0	14	105	48	58	0,20	0,15	4	HMG187140
16,0	16	125	64	68	0,20	0,20	4	HMG187160
20,0	20	160	70	80	0,20	0,20	4	HMG187200

1 4 5

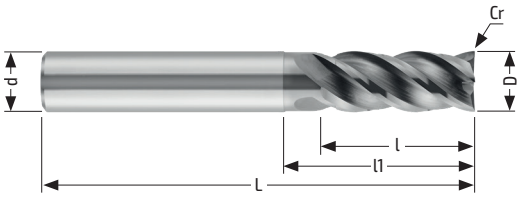
1 Acciaio Steel

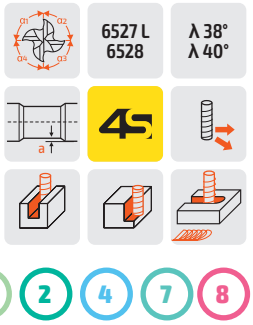
4 Acciaio Inox Stainless Steel

5 Titanio Titanium

113EV

Fresa 4 taglienti con eliche differenziate e divisione irregolare
4 flute end mill with variable helix and unequal flute spacing





45°
Cr

D h10	d h6	L	l ap	l1	a	45° +0,05/+0	Z	Balinit® Alcrona
3,0	6	57	8,0	-	-	0,05	4	HMG113030REV
4,0	4	50	11,0	16,0	0,10	0,05	4	HMG113040EV
4,0	6	57	11,0	-	-	0,05	4	HMG113040REV
5,0	5	50	13,0	18,0	0,10	0,05	4	HMG113050EV
5,0	6	57	13,0	-	-	0,05	4	HMG113050REV
6,0	6	57	13,0	20,0	0,15	0,05	4	HMG113060EV
7,0	7	60	16,0	22,0	0,15	0,05	4	HMG113070EV
8,0	8	63	19,0	25,0	0,15	0,05	4	HMG113080EV
9,0	9	67	19,0	28,0	0,15	0,05	4	HMG113090EV
10,0	10	72	22,0	30,0	0,15	0,05	4	HMG113100EV
12,0	12	83	26,0	36,0	0,20	0,05	4	HMG113120EV
14,0	14	83	26,0	36,0	0,20	0,05	4	HMG113140EV
16,0	16	92	32,0	42,0	0,20	0,05	4	HMG113160EV
20,0	20	104	38,0	52,0	0,20	0,05	4	HMG113200EV

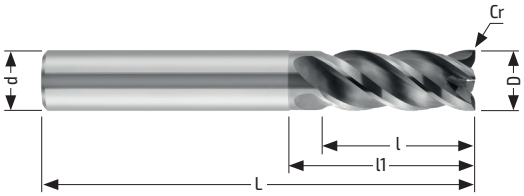
Parametri di lavoro
Working parameters

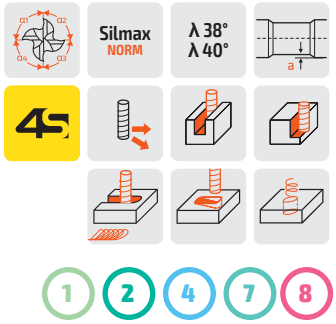
Scheda del prodotto su silmax.it
Products sheet on silmax.it

Per la gamma completa (versioni con smusso 45° e corner radius), consultare il nostro Catalogo Generale, pag. 56.
Please go to page 56 Silmax Catalogue for the complete range (45°chamfer and corner radius versions).

113EVR

Fresa 4 taglienti con eliche differenziate e divisione irregolare per lavorazioni in rampa / 4 flute finishing end mill with variable helix and unequal flute spacing for ramp milling





Cr

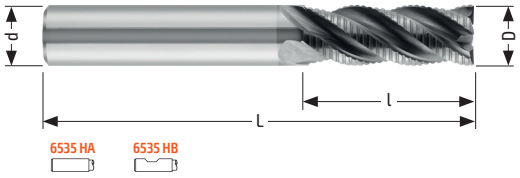
D h10	d h6	L	l ap	l1	a	Cr	Z	Balinit® Alcrona
4,0	6	57	11,0	16,0	0,15	0,10	4	HMG113040EVR
6,0	6	57	13,0	20,0	0,15	0,10	4	HMG113060EVR
8,0	8	63	19,0	25,0	0,15	0,15	4	HMG113080EVR
10,0	10	72	22,0	30,0	0,15	0,20	4	HMG113100EVR
12,0	12	83	26,0	36,0	0,20	0,20	4	HMG113120EVR
16,0	16	92	32,0	42,0	0,20	0,20	4	HMG113160EVR

Parametri di lavoro
Working parameters

Scheda del prodotto su silmax.it
Products sheet on silmax.it

013EV

Fresa 4 taglienti a rompitruciolo con eliche differenziate e divisione irregolare
4 flute roughing end mill with chip breaker, variable helix and unequal flute spacing



Silmax NORM
λ 38°
λ 40°

1 2 4 5 7

45°

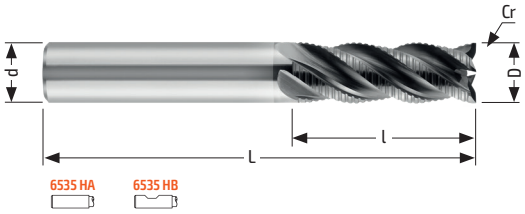
D h10	d h6	L	l ap	45°	6535	Z	Balinit® Alcrona
3,0	6	57	6,0	0,15	HA	3	HMG013F03EV
4,0	6	57	8,0	0,15	HA	3	HMG013F04EV
5,0	6	57	10,0	0,15	HA	3	HMG013F05EV
6,0	6	57	15,0	0,15	HA	4	HMG013F06EV
8,0	8	63	20,0	0,20	HA	4	HMG013F08EV
10,0	10	72	25,0	0,30	HA	4	HMG013F10EV
12,0	12	83	30,0	0,40	HB	4	HMG013F12EV
14,0	14	92	35,0	0,45	HB	4	HMG013F14EV
16,0	16	104	40,0	0,50	HB	4	HMG013F16EV
20,0	20	104	40,0	0,60	HB	4	HMG013F20EV
16,0	16	104	48,0	0,50	HA	6	HMG013F16EVZ6
20,0	20	134	60,0	0,60	HA	6	HMG013F20EVZ6

Parametri di lavoro
Working parameters

Scheda del prodotto su silmax.it
Products sheet on silmax.it

013EVR

Fresa 4 taglienti a rompitruciolo con eliche differenziate e divisione irregolare per lavorazioni in rampa / 4 flute roughing end mill with chip breaker, variable helix and unequal flute spacing for ramp milling



Silmax NORM
λ 38°
λ 40°

1 2 4 5 7

Cr

D h10	d h6	L	l ap	Cr	6535	Z	Balinit® Alcrona
6,0	6	57	15,0	0,10	HA	4	HMG013F06EVR
8,0	8	63	20,0	0,15	HA	4	HMG013F08EVR
10,0	10	72	25,0	0,20	HA	4	HMG013F10EVR
12,0	12	83	30,0	0,20	HB	4	HMG013F12EVR
16,0	16	104	40,0	0,20	HB	4	HMG013F16EVR

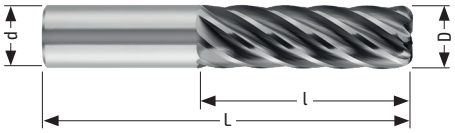
Parametri di lavoro
Working parameters

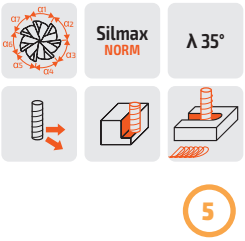
Scheda del prodotto su silmax.it
Products sheet on silmax.it

1 Acciaio Steel
2 Ghise Cast Iron
4 Acciaio Inox Stainless Steel
5 Titanio Titanium
7 PH Duplex
8 Superleghe Superalloys

157

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





45°
Cr

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

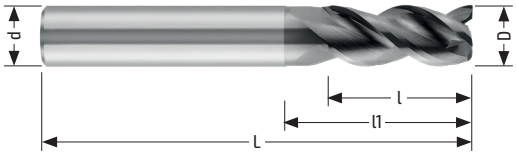
Parametri di lavoro
Working parameters

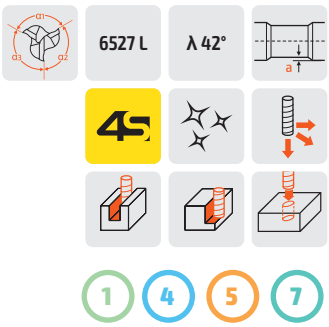
Scheda del prodotto su silmax.it
Products sheet on silmax.it

Per la gamma completa (versioni con smusso 45° e corner radius), consultare il nostro Catalogo Generale, pag. 135.
Please go to page 135 Silmax Catalogue for the complete range (45°chamfer and corner radius versions).

183

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





45°
90°

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

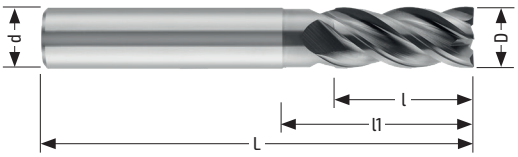
Parametri di lavoro
Working parameters

Scheda del prodotto su silmax.it
Products sheet on silmax.it

Per la gamma completa (versioni con smusso 45° e spigolo vivo), consultare il nostro Catalogo Generale, pag. 117.
Please go to page 117 Silmax Catalogue for the complete range (45°chamfer and square profile versions).

184

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



6527 L | λ 38°

1 4 5 7

45° Cr 90°

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

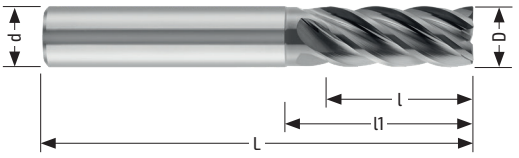
Parametri di lavoro
Working parameters

Scheda del prodotto su silmax.it
Products sheet on silmax.it

Per la gamma completa (versioni con smusso 45°, corner radius e spigolo vivo), consultare il nostro Catalogo Generale, pag. 119.
Please go to page 119 Silmax Catalogue for the complete range (45°chamfer, corner radius and square profile versions).

185

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



6527 L | λ 38°

1 4 5 7

45° Cr 90°

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

Parametri di lavoro
Working parameters

Scheda del prodotto su silmax.it
Products sheet on silmax.it

Per la gamma completa (versioni con smusso 45°, corner radius e spigolo vivo), consultare il nostro Catalogo Generale, pag. 123.
Please go to page 123 Silmax Catalogue, for the complete range (45°chamfer, corner radius and square profile versions).

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