STOCK

PRECISIONE

La fabbrica delle idee

Catalogo Generale

STOCK

Da più di 125 anni Robert Stock AG fornisce un'ampia gamma di utensili da taglio, tant'è vero che vanta una storia immersa nella tradizione.

Nel 1891 Stock produsse la prima punta elicoidale in Germania, ponendo così le fondamenta della manufattura utensile tedesca.

Tutt'oggi, Stock offre un' ampia gamma di utensili da taglio per uso industriale nel campo della foratura, della filettatura, alesatura e fresatura , sia come standard sia come speciale, in base alle richieste del cliente, sono fatti di metallo duro, HSS, HSS-E, HSS-E-PM, Cermet o PCB con un'opzione di altri rivestimenti più duri in concordanza con le ultime tecnologie.
Portautensili, sistemi di distribuzione utensili così come il servizio attorno agli stessi, come la riaffilatura e il rivestimento, completano la nostra gamma di servizi.

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R.STOCK&Co
WERKZEUGE
SPIRALBOHRER

Utensili di precisione da più di 125 anni. Made in Germany.

1901 1908 1921 1953 1954

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UTENSILI DI PRECISIONE

Printed in Germany

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UTENSILI A FRESARE SUPER F-UT

Frese ad alto rendimento in MD

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PUNTE ELICOIDALI

HSS, HSS-Co, M42 e HSS-E-PM

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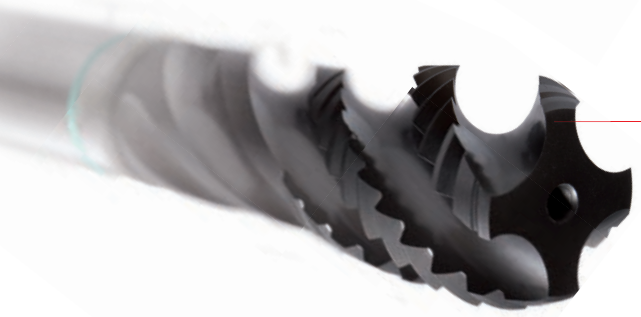

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51122	238	DIN 338	TiAlN nano	Punte elicoidali, corte	HSS-Co	V66 Ti
51132	261	Norma di fab.	TiAlN nano	Punte con codolo rinforzato	HSS-E-PM	V-PM
51158	251	DIN 338	TiAlN nano	Punte elicoidali, corte	HSS-Co	V97
51159	204	DIN 1897	TiAlN nano	Punte elicoidali, extra corte	HSS-Co	V97
51184	134	DIN 6539	TiAlN nano	Punte elicoidali, extra corte	Metallo duro	N
51720	108	Norma di fab.	AlTiN	Micropunte universale SuperV-M VHM	Metallo duro	SuperV-M
51764	97	Norma di fab.	AlTiN	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-T
51765	98	Norma di fab.	AlTiN	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-T
51766	99	Norma di fab.	AlTiN	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-T
51767	100	Norma di fab.	AlTiN	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-T
51768	101	Norma di fab.	AlTiN	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-T
51770	76	DIN 6537K	AlTiN nano	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-VA
51771	78	DIN 6537K	AlTiN nano	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-VA
51772	87	DIN 6537L	AlTiN nano	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-VA
51773	89	DIN 6537L	AlTiN nano	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-VA
51776	72	DIN 6537K	TiAlN nano	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-IK-U
51781	83	DIN 6537L	TiAlN nano	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-IK-U
51787	68	DIN 6537L	TiAlN nano	Punte SuperV senza fori di refrigerazione	Metallo duro	SuperV-U
51789	91	Norma di fab.	TiAlN nano	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-IK-U
51871	66	DIN 6537K	TiAlN nano	Punte SuperV senza fori di refrigerazione	Metallo duro	SuperV-U
51873	64	DIN 6537K	TiAlN nano	Punte SuperV senza fori di refrigerazione	Metallo duro	SuperV-U
51876	74	DIN 6537K	TiAlN nano	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-IK-U
51881	85	DIN 6537L	TiAlN nano	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-IK-U
51887	70	DIN 6537L	TiAlN nano	Punte SuperV senza fori di refrigerazione	Metallo duro	SuperV-U
51889	92	Norma di fab.	TiAlN nano	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-IK-U
51893	95	Norma di fab.	TiAlN nano	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-IK-U
51997	105	Norma di fab.	AlTiN	Micropunte ad alto rendimento in MD SuperV-NX con fori interni	Metallo duro	SuperV-IK-NX
51998	106	Norma di fab.	AlTiN	Micropunte ad alto rendimento in MD SuperV-NX con fori interni	Metallo duro	SuperV-IK-NX
51999	107	Norma di fab.	AlTiN	Micropunte ad alto rendimento in MD SuperV-NX con fori interni	Metallo duro	SuperV-IK-NX
52360	743	Norma di fab.	lucido	Utensili sbavatori	Metallo duro	SuperE-U
52365	651, 742	Norma di fab.	AlTiN nano	Sbavatori a 90° ad avanzamento ed estrazione	Metallo duro	SuperAD-90
53050	368	DIN 371	TiCN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Intensiv Synchro
53051	369	DIN 376	TiCN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Intensiv Synchro
53052	438	DIN 374	TiCN	Maschi a macchina per fil. metr. ISO passo fine	HSS-E-PM	Intensiv Synchro
53053	362	DIN 371	TiCN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Produktiv Synchro
53054	363	DIN 376	TiCN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Produktiv Synchro
53055	437	DIN 374	TiCN	Maschi a macchina per fil. metr. ISO passo fine	HSS-E-PM	Produktiv Synchro
53393	645, 736	Norma di fab.	AlTiN	Fresa frontali a 60° per sbavatura	Metallo duro	SuperAF-60
53394	646, 737	Norma di fab.	AlTiN	Fresa frontali a 60° per sbavatura	Metallo duro	SuperAF-60
53395	647, 738	Norma di fab.	AlTiN	Fresa frontali a 90°per sbavatura	Metallo duro	SuperAF-90
53396	648, 739	Norma di fab.	AlTiN	Fresa frontali a 90°per sbavatura	Metallo duro	SuperAF-90
53397	649, 740	Norma di fab.	AlTiN	Fresa frontali a 120°per sbavatura	Metallo duro	SuperAF-120
53398	650, 741	Norma di fab.	AlTiN	Fresa frontali a 120°per sbavatura	Metallo duro	SuperAF-120
53620	478	~DIN 371	AlCrN	Maschi a macchina a rullare con canalini di lubr. per fil. metrica ISO	HSS-E-PM	Durativ
53621	479	~DIN 371	AlCrN	Maschi a macchina a rullare con canalini di lubr. per fil. metrica ISO	HSS-E-PM	Durativ
53622	480	~DIN 376	AlCrN	Maschi a macchina a rullare con canalini di lubr. per fil. metrica ISO	HSS-E-PM	Durativ
53640	397	DIN 371	TiCN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Produktiv H
53641	412	DIN 371	TiCN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Produktiv HD
53642	398	DIN 371	TiCN	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv H
53643	416	DIN 376	TiCN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Produktiv HD
53661	404	DIN 371	TiCN	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv H
53662	420	DIN 371	TiCN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Intensiv HD
53665	424	DIN 376	TiCN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Intensiv HD
53666	382	DIN 371/DIN 376	TiCN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Intensiv HDX
53667	377	DIN 371/DIN 376	TiCN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Produktiv HDX
53668	381	DIN 371/DIN 376	AlTiN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Intensiv HX
53669	376	DIN 371/DIN 376	AlTiN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Produktiv HX
53670	383	DIN 371	TiCN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	HCX
53733	364	~DIN 371/~DIN 376	AlTiZrN	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv N-X
53746	370	~DIN 371/~DIN 376	TiAlN	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv N-X
53778	436	DIN 374	AlTiZrN	Maschi a macchina per fil. metr. ISO passo fine	HSS-E	Produktiv N-X
53780	435	DIN 374	TiAlN	Maschi a macchina per fil. metr. ISO passo fine	HSS-E	Intensiv N-X
53787	471	DIN 5156	AlTiZrN	Maschi a macchina per filettatura Whitworth BSP	HSS-E	Produktiv N-X
53788	466	DIN 5156	TiAlN	Maschi a macchina per filettatura Whitworth BSP	HSS-E	Intensiv N-X
53810	486	Norma di fab.	TiCN	Frese a filettare con fase di svasatura per filettatura metrica ISO	Metallo duro	TMC SP
53820	487	Norma di fab.	TiCN	Frese a filettare con fase di svasatura per fil. metr. ISO passo fine	Metallo duro	TMC SP
53830	490	Norma di fab.	TiCN	Frese a filettare senza fase di svasatura per filettatura metrica ISO	Metallo duro	TM SP
54080	664	Norma di fab.	TiAlN	Mini frese frontali (a 3 taglienti)	M42	N
54180	665	Norma di fab.	TiAlN	Mini frese frontali (a 3 taglienti)	M42	N
54201	616	Norma di fab.	TiAlN	Frese frontali per finitura, taglienti multipli	Metallo duro	NH
54205	615	Norma di fab.	TiAlN	Frese frontali per finitura, taglienti multipli	Metallo duro	NH
54206	614	DIN 6527L	TiAlN	Frese frontali con spigolo raggiato	Metallo duro	NH

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54207	619	Norma di fab.	TiAlSiN	Frese per materiali duri, taglienti multipli	Metallo duro	H
54221	618	Norma di fab.	TiAlN	Frese frontali per finitura, taglienti multipli	Metallo duro	NH
54225	617	Norma di fab.	TiAlN	Frese frontali per finitura, taglienti multipli	Metallo duro	NH
54227	620	Norma di fab.	TiAlSiN	Frese per materiali duri, taglienti multipli	Metallo duro	H
54275	680	DIN 327	TiAlN	Frese a raggio	M42	N
54276	681	Norma di fab.	TiAlN	Frese a raggio	M42	N
54294	662	DIN 844L	TiAlN	Frese frontali (a 3 taglienti)	M42	N
54300	642	Norma di fab.	TiAlSiN	Frese a raggio per copiatori	Metallo duro	N
54301	643	Norma di fab.	TiAlSiN	Frese a raggio per copiatori	Metallo duro	N
54302	638	Norma di fab.	TiAlSiN	Frese per copiatori con affilatura torica	Metallo duro	N
54303	639	Norma di fab.	TiAlSiN	Frese per copiatori con affilatura torica	Metallo duro	N
54304	636	Norma di fab.	TiAlSiN	Frese per copiatori con affilatura torica	Metallo duro	H
54305	637	Norma di fab.	TiAlSiN	Frese per copiatori con affilatura torica	Metallo duro	H
54306	640	Norma di fab.	TiAlSiN	Frese a raggio per copiatori	Metallo duro	H
54307	641	Norma di fab.	TiAlSiN	Frese a raggio per copiatori	Metallo duro	H
54404	594	Norma di fab.	TiAlN	Frese frontali (a 2 taglienti)	Metallo duro	N
54424	603	Norma di fab.	TiAlN	Frese frontali (a 3 taglienti)	Metallo duro	N
54444	611	Norma di fab.	TiAlN	Frese frontali (a 4 taglienti)	Metallo duro	N
54496	621	DIN 6527L	TiAlN	Frese a sgrossare	Metallo duro	NF
54497	622	DIN 6527L	TiAlN	Frese a sgrossare	Metallo duro	NF
54519	590	DIN 6527L	TiAlN	Frese frontali (a 2 taglienti)	Metallo duro	N
54520	589	DIN 6527K	TiAlN	Frese frontali (a 2 taglienti)	Metallo duro	N
54521	592	DIN 6527L	TiAlN	Frese frontali (a 2 taglienti)	Metallo duro	N
54522	612	DIN 6527L	TiAlN	Frese frontali con spigolo raggiato	Metallo duro	N
54523	599	DIN 6527L	TiAlN	Frese frontali (a 3 taglienti)	Metallo duro	N
54524	608	DIN 6527L	TiAlN	Frese frontali (a 4 taglienti)	Metallo duro	N
54526	613	DIN 6527L	TiAlN	Frese frontali con spigolo raggiato	Metallo duro	N
54531	633	DIN 6528	TiAlN	Frese a raggio	Metallo duro	N
54541	628	DIN 6527L	TiAlN	Frese a raggio	Metallo duro	N
54551	521	DIN 6527L	TiAlN	Frese SuperF-UT N	Metallo duro	SuperF-UT N
54552	525	Norma di fab.	TiAlN	Frese SuperF-UT N	Metallo duro	SuperF-UT N
54556	541	DIN 6527L	TiAlN	Frese SuperF-UT VA	Metallo duro	SuperF-UT VA
54558	535	DIN 6527L	AlTiN nano	Frese VA-X Super-UT	Metallo duro	SuperF-UT VA-X
54559	536	DIN 6527L	AlTiN nano	Frese VA-X Super-UT	Metallo duro	SuperF-UT VA-X
54560	532	DIN 6527L	AlTiN+	Frese SuperF-UT Ti	Metallo duro	SuperF-UT Ti
54561	533	DIN 6527L	AlTiN+	Frese SuperF-UT Ti	Metallo duro	SuperF-UT Ti
54562	523	Norma di fab.	TiAlN	Frese SuperF-UT N	Metallo duro	SuperF-UT N
54563	524	Norma di fab.	TiAlN	Frese SuperF-UT N	Metallo duro	SuperF-UT N
54564	528	Norma di fab.	TiAlN	Frese SuperF-UT N-3	Metallo duro	SuperF-UT N-3
54565	529	Norma di fab.	TiAlN	Frese SuperF-UT N-3	Metallo duro	SuperF-UT N-3
54566	526	DIN 6527L	TiAlN	Frese SuperF-UT N-F	Metallo duro	SuperF-UT N-F
54567	527	DIN 6527L	TiAlN	Frese SuperF-UT N-F	Metallo duro	SuperF-UT N-F
54568	539	DIN 6527L	AlTiN nano	Frese SuperF-UT VA-XF	Metallo duro	SuperF-UT VA-XF
54569	540	DIN 6527L	AlTiN nano	Frese SuperF-UT VA-XF	Metallo duro	SuperF-UT VA-XF
54570	546	Norma di fab.	lucido	Frese SuperF-UT Al-F	Metallo duro	SuperF-UT Al-F
54571	547	Norma di fab.	lucido	Frese SuperF-UT Al-F	Metallo duro	SuperF-UT Al-F
54572	550	DIN 6527L	TiAlSiN	Frese SuperF-UT H	Metallo duro	SuperF-UT H
54573	551	DIN 6527L	TiAlSiN	Frese SuperF-UT H	Metallo duro	SuperF-UT H
54574	537	DIN 6527L	AlTiN nano	Frese SuperF-UT VA-X IK	Metallo duro	SuperF-UT VA-X IK
54575	538	DIN 6527L	AlTiN nano	Frese SuperF-UT VA-X IK	Metallo duro	SuperF-UT VA-X IK
54576	534	DIN 6527K	AlTiN nano	Frese VA-X Super-UT	Metallo duro	SuperF-UT VA-X
54579	530	Norma di fab.	TiAlN	Frese SuperF-UT N-5	Metallo duro	SuperF-UT N-5
54580	531	Norma di fab.	TiAlN	Frese SuperF-UT N-5	Metallo duro	SuperF-UT N-5
54590	518	DIN 6527L	TiAlSiN	Frese SuperF-UT NX	Metallo duro	SuperF-UT NX
54591	519	DIN 6527L	TiAlSiN	Frese SuperF-UT NX	Metallo duro	SuperF-UT NX
54700	644	DIN 6527L	AlTiN+	Fresa pilota	Metallo duro	N
54815	671	DIN 844K	TiAlN	Frese di semifinitura	M42	NF
54816	675	DIN 844K	TiAlN	Frese a sgrossare (4 taglienti)	M42	NR
54825	673	DIN 844K	TiAlN	Frese a sgrossare (3 taglienti)	HSS-E-PM	NRf
54836	679	DIN 844L	TiAlN	Frese a sgrossare (4 taglienti)	M42	NR
54845	677	DIN 844K	TiAlN	Frese a sgrossare (4 taglienti)	HSS-E-PM	NRf
54847	669	DIN 844L	TiAlN	Frese universali, taglienti multipli	M42	N
55017	151	Norma di fab.	TiCN	Punte a cannone ad 1 tagliente SuperT-NX	Metallo duro	SuperT-NX
55018	150	Norma di fab.	TiCN	Punte a cannone ad 1 tagliente SuperT-NX	Metallo duro	SuperT-NX
55020	157	Norma di fab.	AlTiN+	Punte a cannone ad 1 tagliente TBE-VHM	Metallo duro	TBE-VHM
55021	161	Norma di fab.	AlTiN+	Punte a cannone ad 1 tagliente TBE-VHM	Metallo duro	TBE-VHM
55022	152	Norma di fab.	TiCN	Punte a cannone ad 1 tagliente SuperT-NX	Metallo duro	SuperT-NX
55023	153	Norma di fab.	TiCN	Punte a cannone ad 1 tagliente SuperT-NX	Metallo duro	SuperT-NX
55024	155	Norma di fab.	AlTiN+	Punte a cannone ad 1 tagliente TBE-VHM	Metallo duro	TBE-VHM
55026	159	Norma di fab.	AlTiN+	Punte a cannone ad 1 tagliente TBE-VHM	Metallo duro	TBE-VHM
55027	143	Norma di fab.	AlTiN nano	Punte a cannone ad 1 tagliente SuperT-AL	Metallo duro	SuperT-AL
55028	144	Norma di fab.	AlTiN nano	Punte a cannone ad 1 tagliente SuperT-AL	Metallo duro	SuperT-AL

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Catalogo n°	Pagina	Norma	Superficie	Descrizione	Materiale tagliente	Tipo
55029	145	Norma di fab.	AlTiN nano	Punte a cannone ad 1 tagliente SuperT-AL	Metallo duro	SuperT-AL
56011	129	Norma di fab.	TiAlN	Inserti intercambiabili per SuperV-AP maxi	Metallo duro	SuperV-AP maxi
61112	207	DIN 1897	TiN	Punte elicoidali, extra corte	HSS-Co	VX
61115	220	DIN 338	TiN - testa	Punte elicoidali, corte	HSS	N
61116	218	DIN 338	TiN	Punte elicoidali, corte	HSS	N
61118	197	DIN 1897	TiN	Punte elicoidali, extra corte	HSS	N
61120	257	Norma di fab.	TiN	Punte con codolo rinforzato	HSS-Co	NX
61121	259	Norma di fab.	TiN	Punte con codolo rinforzato	HSS-Co	NX
61124	243	DIN 338	TiN	Punte elicoidali, corte	HSS	V70
61131	205	DIN 1897	TiN	Punte elicoidali, extra corte	HSS-E-PM	V-PM
61136	268	DIN 340	TiN	Punte elicoidali, lunghe	HSS	N
61150	277	DIN 340	TiN	Punte elicoidali, lunghe	HSS	V70
61158	247	DIN 338	TiN	Punte elicoidali, corte	HSS-Co	V70
61175	294	Norma di fab.	TiN	Punte cilindriche per centri CN	HSS	N
61220	202	DIN 1897	TiN	Punte elicoidali, extra corte	HSS-Co	NX
61221	230	DIN 338	TiN	Punte elicoidali, corte	HSS-Co	NX
61222	272	DIN 340	TiN	Punte elicoidali, lunghe	HSS-Co	NX
61223	236	DIN 338	TiN	Punte elicoidali, corte	HSS-Co	V66 Ti
61232	253	DIN 338	TiN	Punte elicoidali, corte	HSS-E-PM	V-PM
61602	325	DIN 333	TiN	Punte a centrare senza piano	HSS	N
61880	82	DIN 6537L	TiN	Punte con refrigerazione interna SuperV	Metallo duro	SuperV-IK-F
61888	63	DIN 6539	TiN	Punte SuperV senza fori di refrigerazione	Metallo duro	SuperV-F
62327	727	DIN 334	TiN	Svasatori 60°	HSS	
62347	729	DIN 335	TiN	Svasatori 90°	HSS	
62399	733	DIN 335	TiN	Assortimenti di svasatori cilindrici a 90°	HSS	
63010	411	~DIN 371	TiCN	Maschi a macchina per filettatura metrica ISO	Metallo duro	H
63013	481	~DIN 371	TiCN	Maschi a rullare forati e c.canalini di lubr. per fil. metrica ISO	Metallo duro	Durativ
63033	365	DIN 371	TiN	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv N
63046	371	DIN 371	TiN	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv N
63048	373	DIN 376	TiN	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv N
63119	476	~DIN 371	TiN	Maschi a macchina a rullare con canalini di lubr. per fil. metrica ISO	HSS-E	Durativ
63120	475	~DIN 371	TiN	Maschi a macchina a rullare con canalini di lubr. per fil. metrica ISO	HSS-E	Durativ
63121	483	DIN 371	TiN	Maschi a macchina a rullare senza canalini di lub. per fil. metrica ISO	HSS-E	Durativ
63122	477	~DIN 376	TiN	Maschi a macchina a rullare con canalini di lubr. per fil. metrica ISO	HSS-E	Durativ
63123	484	~DIN 376	TiN	Maschi a macchina a rullare senza canalini di lub. per fil. metrica ISO	HSS-E	Durativ
63133	385	DIN 371	TiN	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv N
63138	388	DIN 376	TiN	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv N
63146	390	DIN 371	TiN	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv N
63148	394	DIN 376	TiN	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv N
63173	444	DIN 374	TiN	Maschi a macchina per fil. metr. ISO passo fine	HSS-E	Intensiv N
63176	413	DIN 371	TiN	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv HD
63177	417	DIN 376	TiN	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv HD
63201	428	DIN 371	AlTiN	Maschi a macchina per filettatura metrica ISO	HSS-E	GG
63641	399	DIN 371	TiN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Produktiv H
63643	402	DIN 376	TiN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Produktiv H
63662	421	DIN 371	TiN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Intensiv HD
63665	425	DIN 376	TiN	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Intensiv HD
63674	405	DIN 371	TiN	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv H
63675	408	DIN 376	TiN	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv H
64080	595	Norma di fab.	TiAlN	Mini frese frontali (a 3 taglienti)	Metallo duro	N
64180	596	Norma di fab.	TiAlN	Mini frese frontali (a 3 taglienti)	Metallo duro	NH
64478	606	DIN 6527L	TiAlN	Frese frontali (a 3 taglienti) NH	Metallo duro	NH
64495	625	DIN 6527L	TiAlN	Frese a sgrossare	Metallo duro	NRf
64497	626	DIN 6527L	TiAlSiN	Frese a sgrossare	Metallo duro	HR
64522	598	DIN 6527K	TiAlN	Frese frontali (a 3 taglienti)	Metallo duro	N
64523	601	DIN 6527L	TiAlN	Frese frontali (a 3 taglienti)	Metallo duro	N
64525	610	DIN 6527L	TiAlN	Frese frontali (a 4 taglienti)	Metallo duro	N
64532	634	DIN 6527L	TiAlN	Frese a raggio	Metallo duro	N
64535	635	Norma di fab.	TiAlN	Frese a raggio	Metallo duro	N
64542	629	DIN 6527L	TiAlN	Frese a raggio	Metallo duro	N
64545	631	Norma di fab.	TiAlN	Frese a raggio	Metallo duro	N
64550	520	DIN 6527K	TiAlN	Frese SuperF-UT N	Metallo duro	SuperF-UT N
64551	522	DIN 6527L	TiAlN	Frese SuperF-UT N	Metallo duro	SuperF-UT N
64557	542	DIN 6527L	TiAlN	Frese SuperF-UT VA	Metallo duro	SuperF-UT VA
64558	552	Norma di fab.	TiAlN	Frese SuperF-UT FS	Metallo duro	SuperF-UT FS
64559	553	Norma di fab.	TiAlN	Frese SuperF-UT FS	Metallo duro	SuperF-UT FS
64567	543	DIN 6527L	TiAlN	Frese SuperF-UT VA-IK	Metallo duro	SuperF-UT VA-IK
64570	604	DIN 6527K	TiAlN	Frese frontali (a 3 taglienti) NH	Metallo duro	NH
64571	607	DIN 6527L	TiAlN	Frese frontali (a 3 taglienti) NH	Metallo duro	NH
64604	659	DIN 327	TiAlN	Frese frontali (a 3 taglienti)	M42	N
64640	653	DIN 327	TiAlN	Frese frontali (a 2 taglienti)	M42	N
64641	661	DIN 844K	TiAlN	Frese frontali (a 3 taglienti)	M42	N

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64667	667	DIN 844K	TiAlN	Frese universali, taglienti multipli	M42	N
64670	655	DIN 844K	TiAlN	Frese frontali (a 2 taglienti)	M42	N
64671	657	DIN 844L	TiAlN	Frese frontali (a 2 taglienti)	M42	N
67011	114	Norma di fab.	TiAlN nano	Inserti intercambiabili per SuperV-AP mini	Metallo duro	SuperV-AP mini U
67012	117	Norma di fab.	AlTiN nano	Inserti intercambiabili per SuperV-AP mini	Metallo duro	SuperV-AP mini VA
71106	199	DIN 1897	lucido	Punte elicoidali, extra corte	M42	N
71108	194	DIN 1897	trattati a vapore	Punte elicoidali, extra corte	HSS	N
71109	196	DIN 1897	trattati a vapore	Punte elicoidali, extra corte	HSS	N
71110	190	DIN 1897	lucido	Punte elicoidali, extra corte	HSS	N
71111	192	DIN 1897	lucido	Punte elicoidali, extra corte	HSS	N
71112	206	DIN 1897	trattati a vapore	Punte elicoidali, extra corte	HSS-Co	VX
71113	210	Norma di fab.	lucido	Punte elicoidali, extra corte	HSS	V72
71114	209	Norma di fab.	lucido	Punte elicoidali, extra corte	HSS	V72
71115	215	DIN 338	trattati a vapore	Punte elicoidali, corte	HSS	N
71116	212	DIN 338	lucido	Punte elicoidali, corte	HSS	N
71117	226	DIN 338	lucido	Punte elicoidali, corte	HSS	H
71119	214	DIN 338	lucido	Punte elicoidali, corte	HSS	N
71122	234	DIN 338	lucido	Punte elicoidali, corte	HSS-Co	V66 Ti
71123	232	DIN 338	fasi nitrurate	Punte elicoidali, corte	HSS-Co	V66
71124	239	DIN 338	lucido	Punte elicoidali, corte	HSS	V70
71126	241	DIN 338	lucido	Punte elicoidali, corte	HSS	V70
71128	248	DIN 338	lucido	Punte elicoidali, corte	HSS	V72
71129	250	DIN 338	lucido	Punte elicoidali, corte	HSS	V72
71130	264	DIN 339	trattati a vapore	Punte per foratura con bussola di guida	HSS	N
71135	266	DIN 340	trattati a vapore	Punte elicoidali, lunghe	HSS	N
71136	265	DIN 340	lucido	Punte elicoidali, lunghe	HSS	N
71145	282	DIN 1869	fasi nitrurate	Punte elicoidali in lunghezze speciali, grandezza 1	HSS	V63
71146	285	DIN 1869	fasi nitrurate	Punte elicoidali in lunghezze speciali, grandezza 2	HSS	V63
71147	287	DIN 1869	fasi nitrurate	Punte elicoidali in lunghezze speciali, grandezza 3	HSS	V63
71148	224	DIN 338	lucido	Punte elicoidali, corte	M42	N
71149	222	DIN 338	trattati a vapore	Punte elicoidali, corte	HSS-Co	N
71150	275	DIN 340	lucido	Punte elicoidali, lunghe	HSS	V70
71152	276	DIN 340	lucido	Punte elicoidali, lunghe	HSS	V70
71154	278	DIN 340	fasi nitrurate	Punte elicoidali, lunghe	HSS	V73
71156	280	DIN 340	fasi nitrurate	Punte elicoidali, lunghe	HSS-Co	V73
71158	245	DIN 338	fasi nitrurate	Punte elicoidali, corte	HSS-Co	V70
71168	262	Norma di fab.	lucido	Punte corte, con codolo cil. Ø 16,0 mm	HSS-Co	V72
71169	263	Norma di fab.	lucido	Punte corte, con codolo cil. Ø 25,4 mm	HSS-Co	V72
71175	293	Norma di fab.	lucido	Punte cilindriche per centri CN	HSS	N
71176	295	Norma di fab.	lucido	Punte cilindriche per centri CN	HSS	N
71180	140	DIN 8037	lucido	Punte speciali, con taglienti in MD	Metallo duro	N
71184	132	DIN 6539	lucido	Punte elicoidali, extra corte	Metallo duro	N
71187	291	DIN 1899	lucido	Micropunte	HSS-E-PM	N
71189	139	Norma di fab.	lucido	Punte cilindriche per centri CN	Metallo duro	N
71190	137	Norma di fab.	lucido	Punte cilindriche per centri CN	Metallo duro	N
71191	138	Norma di fab.	lucido	Punte cilindriche per centri CN	Metallo duro	N
71192	284	DIN 1869	fasi nitrurate	Punte elicoidali in lunghezze speciali, grandezza 1	HSS-Co	V63
71193	286	DIN 1869	fasi nitrurate	Punte elicoidali in lunghezze speciali, grandezza 2	HSS-Co	V63
71195	288	Norma di fab.	fasi nitrurate	Punte elicoidali, extra lunghe	HSS	V63
71196	289	Norma di fab.	lucido	Punte elicoidali, extra lunghe	HSS	V63
71220	200	DIN 1897	lucido	Punte elicoidali, extra corte	HSS-Co	NX
71221	228	DIN 338	lucido	Punte elicoidali, corte	HSS-Co	NX
71222	270	DIN 340	lucido	Punte elicoidali, lunghe	HSS-Co	NX
71225	274	DIN 340	lucido	Punte elicoidali, lunghe	HSS-Co	V66
71290	135	Norma di fab.	lucido	Punte elicoidali, corte	Metallo duro	N
71300	298	DIN 345	trattati a vapore	Punte elicoidali	HSS	N
71303	296	Norma di fab.	lucido	Punte elicoidali, corte	HSS-Co8	N
71304	297	Norma di fab.	lucido	Punte elicoidali, corte	HSS-Co8	N
71305	302	DIN 345	lucido	Punte elicoidali	HSS	V70
71312	303	DIN 345	lucido	Punte elicoidali	HSS-Co	V66 Ti
71313	304	DIN 346	lucido	Punte elicoidali	HSS-Co	V66 Ti
71320	305	DIN 341	trattati a vapore	Punte per foratura con bussola di guida	HSS	N
71322	306	DIN 341	lucido	Punte per foratura con bussola di guida	HSS	V70
71325	307	DIN 1870	fasi nitrurate	Punte elicoidali in lunghezze speciali, grandezza 1	HSS	V63
71326	308	DIN 1870	fasi nitrurate	Punte elicoidali in lunghezze speciali, grandezza 2	HSS	V63
71380	141	DIN 8041	lucido	Punte speciali, con taglienti in MD	Metallo duro	N
71416	301	DIN 345	trattati a vapore	Punte elicoidali	HSS-Co	N
71500	319	DIN 8376	trattati a vapore	Punte a gradino ad eliche indipendenti, cil.	HSS	N
71501	317	DIN 8374	trattati a vapore	Punte a gradino ad eliche indipendenti, cil.	HSS	N
71503	318	DIN 8378	trattati a vapore	Punte a gradino ad eliche indipendenti, cil.	HSS	N
71520	321	DIN 8377	trattati a vapore	Punte a gradino ad eliche indipendenti, CM	HSS	N
71523	320	DIN 8379	trattati a vapore	Punte a gradino ad eliche indipendenti, CM	HSS	N

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71550	310	Norma di fab.	trattati a vapore	Punte elicoidali lunghe con refrigerazione interna	HSS-Co	V70-IK
71553	311	Norma di fab.	trattati a vapore	Punte elicoidali lunghe con refrigerazione interna	HSS-Co	V70-IK
71554	309	Norma di fab.	trattati a vapore	Punte con fori di refrigerazione	HSS	N-IK
71560	316	Norma di fab.		Alimentatori per punte con fori di refrigerazione		
71565	312	Norma di fab.	trattati a vapore	Punta per fori prof. con tagl. a spirale extra lungo con raffr. int.	HSS-Co	V63-IK
71566	314	Norma di fab.	trattati a vapore	Punta per fori prof. con tagl. a spirale extra lungo con raffr. int.	HSS-Co	V63-IK
71567	313	Norma di fab.	trattati a vapore	Punta per fori prof. con tagl. a spirale extra lungo con raffr. int.	HSS-Co	V63-IK
71568	315	Norma di fab.	trattati a vapore	Punta per fori prof. con tagl. a spirale extra lungo con raffr. int.	HSS-Co	V63-IK
71584	290	Norma di fab.	lucido	Punte con fori di refrigerazione	HSS	V73-IK
71600	322	DIN 333	lucido	Punte a centrare senza piano	HSS	N
71601	323	DIN 333	lucido	Punte a centrare senza piano	HSS	N
71602	324	DIN 333	lucido	Punte a centrare senza piano	HSS	N
71604	327	DIN 333	lucido	Punte a centrare senza piano	HSS	N
71605	326	Norma di fab.	lucido	Punte a centrare senza piano	HSS	N
71607	328	Norma di fab.	lucido	Punte a centrare con piano	HSS	N
71609	329	Norma di fab.	lucido	Punte a centrare con piano	HSS	N
71616	142	Norma di fab.	lucido	Punte a centrare senza piano	Metallo duro	N
71862	102	DIN 6537L	lucido	Punte SuperV, 3 taglienti	Metallo duro	SuperV83-GAL
71994	93	Norma di fab.	lucido	Punte con refrigerazione interna SuperV	Metallo duro	SuperV95-GG
71995	80	Norma di fab.	lucido	Punte con refrigerazione interna SuperV	Metallo duro	SuperV95-GG
71996	94	Norma di fab.	lucido	Punte con refrigerazione interna SuperV	Metallo duro	SuperV95-GG
71997	96	Norma di fab.	lucido	Punte con refrigerazione interna SuperV	Metallo duro	SuperV95-GN
71998	103	Norma di fab.	AlTiN+	Micropunte ad alto rendimento in MD SuperV-NX senza fori interni	Metallo duro	SuperV-NX
71999	104	Norma di fab.	AlTiN+	Micropunte ad alto rendimento in MD SuperV-NX senza fori interni	Metallo duro	SuperV-NX
72200	330	DIN 344	trattati a vapore	Allargatori cilindrici	HSS	N
72210	331	DIN 343	trattati a vapore	Allargatori con attacco cono morse	HSS	N
72304	734	DIN 373	lucido	Frese per sedi viti con guide, esecuzione fine	HSS	
72305	735	DIN 373	lucido	Frese per sedi viti con guide, esecuzione media	HSS	
72326	726	DIN 334	lucido	Svasatori 60°	HSS	
72345	731	DIN 335	trattati a vapore	Svasatori 90°	HSS	
72346	728	DIN 335	lucido	Svasatori 90°	HSS	
72356	730	DIN 335	lucido	Svasatori 90°	HSS	
72399	732	DIN 335	lucido	Assortimenti di svasatori cilindrici a 90°	HSS	
72600	724	DIN 206	lucido	Alesatori a mano	HSS	
72610	725	DIN 206	lucido	Alesatori a mano	HSS	
72640	716	DIN 212-2	lucido	Alesatori a macchina	HSS-E	
72650	717	DIN 212-2	lucido	Alesatori a macchina	HSS-E	
72654	714	DIN 212-2	lucido	Alesatori a macchina	HSS-E	
72660	718	DIN 208	lucido	Alesatori a macchina	HSS-E	
72670	719	DIN 208	lucido	Alesatori a macchina	HSS-E	
72680	721	DIN 311	nitrurato	Alesatori a macchina per chiodi	HSS	
72690	720	DIN 212-2	lucido	Alesatori a macchina a forte torsione	HSS-E	
72730	723	DIN 9	lucido	Alesatori a mano cilindrici, per spine coniche	HSS	
72741	722	DIN 2179	lucido	Alesatori a macchina per spine coniche	HSS-E	
72859	709	~DIN 8051	lucido	Alesatori a macchina in MD	Metallo duro	
72860	708	~DIN 8051	lucido	Alesatori a macchina in MD	Metallo duro	
72867	705	~DIN 8050	lucido	Alesatori a macchina in MD	Metallo duro	
72868	704	~DIN 8050	lucido	Alesatori a macchina in MD	Metallo duro	
72870	694	Norma di fab.	AlTiN nano	Alesatori ad alto rendimento VHM	Metallo duro	SuperR-HS-S
72871	695	Norma di fab.	AlTiN nano	Alesatori ad alto rendimento VHM	Metallo duro	SuperR-HS-D
72872	696	Norma di fab.	AlTiN nano	Alesatori ad alto rendimento VHM	Metallo duro	SuperR-HS-S
72873	698	Norma di fab.	AlTiN nano	Alesatori ad alto rendimento VHM	Metallo duro	SuperR-HS-D
72880	706	~DIN 8093	lucido	Alesatori a macchina in MD	Metallo duro	
72881	707	~DIN 8093	lucido	Alesatori a macchina in MD	Metallo duro	
72900	710	DIN 212-3	lucido	Alesatori a macchina NC	HSS-E	
72910	712	DIN 212-3	lucido	Alesatori a macchina NC	HSS-E	
72920	700	Norma di fab.	lucido	Alesatori a macchina NC	Metallo duro	
72930	702	Norma di fab.	lucido	Alesatori a macchina NC	Metallo duro	
73011	384	DIN 371	lucido	Maschi a macchina per filettatura metrica ISO	Metallo duro	H
73033	366	DIN 371	trattati a vapore	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv N
73038	367	DIN 376	trattati a vapore	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv N
73046	372	DIN 371	trattati a vapore	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv N
73047	375	DIN 371	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv N
73048	374	DIN 376	trattati a vapore	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv N
73120	474	~DIN 371	lucido	Maschi a macchina a rullare con canalini di lubr. per fil. metrica ISO	HSS-E	Durativ
73121	482	DIN 371	lucido	Maschi a macchina a rullare senza canalini di lub. per fil. metrica ISO	HSS-E	Durativ
73126	380	DIN 371	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	Massiv N
73131	431	DIN 371	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv W
73132	386	DIN 371	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv N
73133	387	DIN 371	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv N
73136	434	DIN 376	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv W
73138	389	DIN 376	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv N

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73145	391	DIN 371	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv N
73146	392	DIN 371	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv N
73148	395	DIN 376	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv N
73156	433	DIN 371	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv W
73173	443	DIN 374	lucido	Maschi a macchina per fil. metr. ISO passo fine	HSS-E	Intensiv N
73176	414	DIN 371	trattati a vapore	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv HD
73177	418	DIN 376	trattati a vapore	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv HD
73178	446	DIN 374	trattati a vapore	Maschi a macchina per fil. metr. ISO passo fine	HSS-E	Produktiv HD
73180	447	DIN 374	trattati a vapore	Maschi a macchina per fil. metr. ISO passo fine	HSS-E	Intensiv HD
73183	439	DIN 374	trattati a vapore	Maschi a macchina per fil. metr. ISO passo fine	HSS-E	Produktiv N
73185	378	DIN 371	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	N
73187	440	DIN 374	trattati a vapore	Maschi a macchina per fil. metr. ISO passo fine	HSS-E	Intensiv N
73189	432	DIN 376	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv W
73191	379	DIN 376	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	N
73194	448	DIN 374	nitrurato	Maschi a macchina per fil. metr. ISO passo fine	HSS-E	GG
73201	429	DIN 371	nitrurato	Maschi a macchina per filettatura metrica ISO	HSS-E	GG
73211	430	DIN 376	nitrurato	Maschi a macchina per filettatura metrica ISO	HSS-E	GG
73221	393	DIN 371	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv N
73227	396	DIN 376	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv N
73237	441	DIN 374	lucido	Maschi a macchina per fil. metr. ISO passo fine	HSS-E	N
73243	498	DIN 357	lucido	Maschi a macchina per dadi per fil. metrica ISO	HSS-E	N
73248	497	Norma di fab.	lucido	Utensili combinati per fil. metrica ISO	HSS-E	N
73250	442	DIN 374	lucido	Maschi a macchina per fil. metr. ISO passo fine	HSS-E	Produktiv N
73286	467	DIN 5156	lucido	Maschi a macchina per filettatura Whitworth BSP	HSS-E	Intensiv N
73288	469	DIN 5156	trattati a vapore	Maschi a macchina per filettatura Whitworth BSP	HSS-E	Intensiv HD
73293	463	Norma di fab.	trattati a vapore	Maschi a macchina per filettatura NPT	HSS-E	VA
73295	473	Norma di fab.	lucido	Maschi corti per filettatura NPT	HSS-E	N
73296	472	DIN 40432	lucido	Maschi a macchina per filettatura Pg	HSS-E	N
73297	453	~DIN 371	trattati a vapore	Maschi a macchina per filettatura UNC	HSS-E	Produktiv HD
73298	454	~DIN 376	trattati a vapore	Maschi a macchina per filettatura UNC	HSS-E	Produktiv HD
73299	461	~DIN 374	trattati a vapore	Maschi a macchina per filettatura UNF	HSS-E	Produktiv HD
73300	468	DIN 5156	trattati a vapore	Maschi a macchina per filettatura Whitworth BSP	HSS-E	Produktiv HD
73304	455	~DIN 371	trattati a vapore	Maschi a macchina per filettatura UNC	HSS-E	Intensiv HD
73305	456	~DIN 376	trattati a vapore	Maschi a macchina per filettatura UNC	HSS-E	Intensiv HD
73306	462	~DIN 374	trattati a vapore	Maschi a macchina per filettatura UNF	HSS-E	Intensiv HD
73308	449	~DIN 371	trattati a vapore	Maschi a macchina per filettatura UNC	HSS-E	Produktiv N
73309	450	~DIN 376	trattati a vapore	Maschi a macchina per filettatura UNC	HSS-E	Produktiv N
73310	459	~DIN 374	trattati a vapore	Maschi a macchina per filettatura UNF	HSS-E	Produktiv N
73321	464	DIN 5156	trattati a vapore	Maschi a macchina per filettatura Whitworth BSP	HSS-E	Produktiv N
73322	451	~DIN 371	trattati a vapore	Maschi a macchina per filettatura UNC	HSS-E	Intensiv N
73323	452	~DIN 376	trattati a vapore	Maschi a macchina per filettatura UNC	HSS-E	Intensiv N
73324	460	~DIN 374	trattati a vapore	Maschi a macchina per filettatura UNF	HSS-E	Intensiv N
73325	465	DIN 5156	trattati a vapore	Maschi a macchina per filettatura Whitworth BSP	HSS-E	Intensiv N
73326	457	~DIN 371	nitrurato	Maschi a macchina per filettatura UNC	HSS-E	GG
73327	458	~DIN 376	nitrurato	Maschi a macchina per filettatura UNC	HSS-E	GG
73345	470	DIN 5156	nitrurato	Maschi a macchina per filettatura Whitworth BSP	HSS-E	GG
73400	499	DIN EN 22568	lucido	Filiere per filettatura metrica ISO	HSS	
73410	500	DIN EN 22568	lucido	Filiere per filettatura metrica ISO	HSS	
73413	501	DIN EN 22568	nitrurato	Filiere per filettatura metrica ISO	HSS-E	
73521	493	DIN 2181	lucido	Maschio a mano per filettatura metrica fine ISO, kit	HSS	N
73522	496	DIN 5157	lucido	Maschio a mano per filettatura gas, kit	HSS	N
73531	491	DIN 352	lucido	Serie du maschi a mano per filettature metriche ISO destri	HSS	N
73532	492	DIN 352	lucido	Serie di maschi a mano per filettature metriche ISO sinistri	HSS	N
73534	495	~DIN 352	lucido	Maschio a macchina per filettatura BSW, kit	HSS	N
73535	494	~DIN 352	lucido	Maschio a macchina per filettatura UNC, kit	HSS	N
73619	406	DIN 371	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	H R15
73640	400	DIN 371	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Produktiv H
73641	415	DIN 371	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Produktiv HD
73642	401	DIN 371	nitrurato	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv H
73643	419	DIN 376	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Produktiv HD
73645	403	DIN 376	nitrurato	Maschi a macchina per filettatura metrica ISO	HSS-E	Produktiv H
73646	445	DIN 374	nitrurato	Maschi a macchina per fil. metr. ISO passo fine	HSS-E	Produktiv H
73659	426	DIN 376	trattati a vapore	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv HD
73660	422	DIN 371	trattati a vapore	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv HD
73661	407	DIN 371	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv H
73662	423	DIN 371	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Intensiv HD
73664	409	DIN 376	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E	Intensiv H
73665	427	DIN 376	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	Intensiv HD
73666	410	DIN 376	lucido	Maschi a macchina per filettatura metrica ISO	HSS-E-PM	H R15
73810	485	Norma di fab.	lucido	Frese a filettare con fase di svasatura per filettatura metrica ISO	Metallo duro	TMC SP
73820	488	Norma di fab.	lucido	Frese a filettare con fase di svasatura per fil. metr. ISO passo fine	Metallo duro	TMC SP
73830	489	Norma di fab.	lucido	Frese a filettare senza fase di svasatura per filettatura metrica ISO	Metallo duro	TM SP

Indice per catalogo no.

Indice per catalogo no.

MD

UTENSILI A FORARE

CODICI ISO

P	acciaio, acciaio legato in alta percentuale
M	acciaio inossidabile
K	ghisa grigia, ghisa sferoidale e ghisa malleabile
N	alluminio ed altri metalli non ferrosi
S	leghe speciali, superleghe e leghe di titanio
H	acciaio temprato e ghisa temprata

Nelle pagine successive, contenenti programma trovate per ciascun utensile consigli sull'idoneità in base ai seguenti gruppi di impiego:

● Idoneità ottima

○ Idoneità limitata

LEGENDA DEI PITTOGRAMMI

MATERIALE TAGLIENTE

VHM — Int. in metallo duro

HM — Metallo duro

TRATT. DI SUPERFICIE

lucido | nichelato | TiN | TiAlN nano | AlTiN nano | Al-TiN | TiAlN | TiCN | Al-TiN+

TOLLERANZA SUL Ø

h5 | h6 | h7 | h8 | m7

PROFONDITÀ DI FORO

1,5xD | 3xD | 4xD | 5xD | 7xD | 8xD | 10xD | 12xD | 15xD

20xD | 25xD | 30xD | 40xD | 50xD | 75xD | 80xD | ~3xD | ~5xD

DIREZIONE DI TAGLIO

R — a destra

FORMA DEL CODOLO

Cyl | HA | HE | MK

Conico Morse

ANGOLI DI AFFILATURA

90° | 118° | 120° | 130° | 135° | 140° | 142° | 145°

NORMA

DIN 6539 | DIN 6537 K | DIN 6537 L | DIN 8037 | DIN 8041 | WN

Norma di fabricca

TIPO

SuperV-F | SuperV-U | SuperV-IK-U | SuperV-VA | SuperV-95-GG | SuperV-IK-F | SuperV-95-GN | SuperV-T | SuperV-83-GAL | N | TBE-VHM

SuperV-NX | SuperV-IK-NX | SuperV-M | SuperV-AP mini | SuperV-AP mini U | SuperV-AP mini VA | SuperV-AP mini AL | SuperV-AP mini NC | SuperV-APmaxi | SuperT-AL | SuperT-N | SuperT-NX

P	M	K	N	S	H	Tipo	Forma dell'attac-co	Profondità di foro	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Punte SuperV senza fori di refrigerazione

○	●	○	○	●	●	SuperV-F	cil.	3xD	**Metallo duro**	TiN	DIN 6539	3,000 - 12,000	**61888**	63

●		●	○	○	○	SuperV-U	HA	3xD	**Metallo duro**	TiAlN-nano	DIN 6537K	3,000 - 20,000	**51873**	64

●		●	○	○	○	SuperV-U	HE	3xD	**Metallo duro**	TiAlN-nano	DIN 6537K	3,000 - 20,000	**51871**	66

●		●	○	○	○	SuperV-U	HA	5xD	**Metallo duro**	TiAlN-nano	DIN 6537L	3,000 - 20,000	**51787**	68

●		●	○	○	○	SuperV-U	HE	5xD	**Metallo duro**	TiAlN-nano	DIN 6537L	3,000 - 20,000	**51887**	70

Punte con refrigerazione interna SuperV

●	○	●	○	○	○	SuperV-IK-U	HA	3xD	**Metallo duro**	TiAlN-nano	DIN 6537K	3,000 - 20,000	**51776**	72

●	○	●	○	○	○	SuperV-IK-U	HE	3xD	**Metallo duro**	TiAlN-nano	DIN 6537K	3,000 - 20,000	**51876**	74

	●			○		SuperV-VA	HA	3xD	**Metallo duro**	AlTiN nano	DIN 6537K	3,000 - 20,000	**51770**	76

	●			○		SuperV-VA	HE	3xD	**Metallo duro**	AlTiN nano	DIN 6537K	3,000 - 20,000	**51771**	78

		●	○			SuperV95-GG	HA	4xD	**Metallo duro**	lucido	Norma di fab.	3,000 - 21,500	**71995**	80

○	●	○	○	●	●	SuperV-IK-F	HE	5xD	**Metallo duro**	TiN	DIN 6537L	4,000 - 25,000	**61880**	82

●	○	●	○	○	○	SuperV-IK-U	HA	5xD	**Metallo duro**	TiAlN-nano	DIN 6537L	3,000 - 20,000	**51781**	83

●	○	●	○	○	○	SuperV-IK-U	HE	5xD	**Metallo duro**	TiAlN-nano	DIN 6537L	3,000 - 20,000	**51881**	85

	●			○		SuperV-VA	HA	5xD	**Metallo duro**	AlTiN nano	DIN 6537L	3,000 - 20,000	**51772**	87

	●			○		SuperV-VA	HE	5xD	**Metallo duro**	AlTiN nano	DIN 6537L	3,000 - 20,000	**51773**	89

P	M	K	N	S	H	Tipo	Forma dell'attacco	Profondità di foro	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Punte con refrigerazione interna SuperV

●	○	●	○	○	○	SuperV-IK-U	HA	7xD	**Metallo duro**	TiAlN-nano	Norma di fab.	3,000 - 20,000	**51789**	91

●	○	●	○	○	○	SuperV-IK-U	HE	7xD	**Metallo duro**	TiAlN-nano	Norma di fab.	3,000 - 20,000	**51889**	92

		●	○			SuperV95-GG	HA	7xD	**Metallo duro**	lucido	Norma di fab.	3,000 - 20,000	**71994**	93

		●	○			SuperV95-GG	HA	10xD	**Metallo duro**	lucido	Norma di fab.	3,000 - 20,000	**71996**	94

●	○	●	○	○		SuperV-IK-U	HA	12xD	**Metallo duro**	TiAlN-nano	Norma di fab.	3,000 - 20,000	**51893**	95

		●	○			SuperV95-GN	HA	15xD	**Metallo duro**	lucido	Norma di fab.	5,000 - 14,000	**71997**	96

●	●	●	○	○		SuperV-T	HA	15xD	**Metallo duro**	AlTiN	Norma di fab.	3,000 - 14,000	**51764**	97

●	●	●	○	○		SuperV-T	HA	20xD	**Metallo duro**	AlTiN	Norma di fab.	3,000 - 14,000	**51765**	98

●	●	●	○	○		SuperV-T	HA	25xD	**Metallo duro**	AlTiN	Norma di fab.	3,000 - 12,000	**51766**	99

●	●	●	○	○		SuperV-T	HA	30xD	**Metallo duro**	AlTiN	Norma di fab.	3,000 - 10,000	**51767**	100

●	●	●	○	○		SuperV-T	HA	40xD	**Metallo duro**	AlTiN	Norma di fab.	3,000 - 8,000	**51768**	101

Punte SuperV, 3 taglienti

		●	●			SuperV83-GAL	HA	5xD	**Metallo duro**	lucido	DIN 6537L	3,000 - 20,000	**71862**	102

Micropunte ad alto rendimento in MD SuperV-NX senza fori interni

●	○	●	○	○		SuperV-NX	cil.	4xD	**Metallo duro**	AlTiN+	Norma di fab.	0,500 - 3,000	**71998**	103

●	○	●	○	○		SuperV-NX	HA	7xD	**Metallo duro**	AlTiN+	Norma di fab.	0,500 - 3,000	**71999**	104

P	M	K	N	S	H	Tipo	Forma dell'attac-co	Profondità di foro	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Micropunte ad alto rendimento in MD SuperV-NX con fori interni

●	●	●	○	○		SuperV-IK-NX	HA	5xD	**Metallo duro**	AlTiN	Norma di fab.	1,400 - 3,000	**51997**	105

●	●	●	○	○		SuperV-IK-NX	HA	8xD	**Metallo duro**	AlTiN	Norma di fab.	1,400 - 3,000	**51998**	106

●	●	●	○	○		SuperV-IK-NX	HA	15xD	**Metallo duro**	AlTiN	Norma di fab.	1,400 - 3,000	**51999**	107

Micropunte universale SuperV-M VHM

●		●				SuperV-M	HA		**Metallo duro**	AlTiN	Norma di fab.	0,100 - 3,000	**51720**	108

Porta utensili SuperV-AP mini

						SuperV-AP mini	HE	1,5xD		nichelato	Norma di fab.		**77007**	109

						SuperV-AP mini	HE	3xD		nichelato	Norma di fab.		**77000**	110

						SuperV-AP mini	HE	5xD		nichelato	Norma di fab.		**77001**	111

						SuperV-AP mini	HE	7xD		nichelato	Norma di fab.		**77003**	112

						SuperV-AP mini	HE	10xD		nichelato	Norma di fab.		**77004**	113

Inserti intercambiabili per SuperV-AP mini

●		○				SuperV-AP mini U			**Metallo duro**	TiAlN-nano	Norma di fab.	11,000 - 40,000	**67011**	114

	●	○		○		SuperV-AP mini VA			**Metallo duro**	AlTiN nano	Norma di fab.	11,000 - 40,000	**67012**	117

			●			SuperV-AP mini AL			**Metallo duro**	lucido	Norma di fab.	11,000 - 40,000	**77012**	120

P	M	K	N	S	H	Tipo	Forma dell'attac-co	Profondità di foro	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Inserti intercambiabili per SuperV-AP mini

•	•	•	•	○		SuperV-AP mini NC			**Metallo duro**	AlTiN nano	Norma di fab.	11,000 - 40,000	**77011**	123

Porta utensili SuperV-AP maxi

						SuperV-AP maxi	HE	3xD		nichelato	Norma di fab.		**76000**	125

						SuperV-AP maxi	HE	5xD		nichelato	Norma di fab.		**76001**	126

						SuperV-AP maxi	HE	7xD		nichelato	Norma di fab.		**76003**	127

Inserti intercambiabili per SuperV-AP maxi

•		•	○			SuperV-AP maxi			**Metallo duro**	TiN	Norma di fab.	16,000 - 40,500	**76011**	128

•		•	○			SuperV-AP maxi			**Metallo duro**	TiAlN	Norma di fab.	16,000 - 40,500	**56011**	129

Accessori

											Norma di fab.		**76020**	130

											Norma di fab.		**77020**	130

											Norma di fab.		**77022**	131

											Norma di fab.		**77021**	131

											Norma di fab.		**76021**	131

P	M	K	N	S	H	Tipo	Forma dell'attac-co	Profondità di foro	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina
Punte elicoidali, extra corte														
														
●	●	●	●			N	cil.	~3xD	**Metallo duro**	lucido	DIN 6539	1,000 - 15,000	**71184**	132
														
●	●	●	●			N	cil.	~3xD	**Metallo duro**	TiAlN-nano	DIN 6539	1,000 - 12,000	**51184**	134
Punte elicoidali, corte														
														
●	●	●	●			N	cil.	~5xD	**Metallo duro**	lucido	Norma di fab.	1,000 - 12,000	**71290**	135
Punte cilindriche per centri CN														
														
●	●	●	●	●		N	HA		**Metallo duro**	lucido	Norma di fab.	5,000 - 20,000	**71190**	137
														
●	●	●	●	●		N	HA		**Metallo duro**	lucido	Norma di fab.	5,000 - 20,000	**71191**	138
														
●	●	●	●	●		N	HB		**Metallo duro**	lucido	Norma di fab.	4,000 - 20,000	**71189**	139
Punte speciali, con taglienti in MD														
														
○		○	○			N	cil.		**Metallo duro**	lucido	DIN 8037	3,000 - 20,000	**71180**	140
														
○		●	○	○	○	N	CM		**Metallo duro**	lucido	DIN 8041	11,000 - 33,000	**71380**	141
Punte a centrare senza piano														
														
●	○	●	●	○		N			**Metallo duro**	lucido	Norma di fab.	1,000 - 6,300	**71616**	142

P	M	K	N	S	H	Tipo	Forma dell'attac-co	Profondità di foro	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Punte a cannone ad 1 tagliente SuperT-AL

●	●	●	●	●		SuperT-AL	HA	25xD	**Metallo duro**	AlTiN nano	Norma di fab.	2,380 - 12,000	**55027**	143

●	●	●	●	●		SuperT-AL	HA	50xD	**Metallo duro**	AlTiN nano	Norma di fab.	2,380 - 8,000	**55028**	144

●	●	●	●	●		SuperT-AL	HA	75xD	**Metallo duro**	AlTiN nano	Norma di fab.	2,380 - 6,000	**55029**	145

Punte a cannone ad 1 tagliente SuperT-N

●	●	●	●			SuperT-N	HA	20xD	**Metallo duro**	TiN	Norma di fab.	4,000 - 12,000	**75018**	146

●	●	●	●			SuperT-N	HA	30xD	**Metallo duro**	TiN	Norma di fab.	4,000 - 12,000	**75017**	147

●	●	●	●			SuperT-N	HA	40xD	**Metallo duro**	TiN	Norma di fab.	4,000 - 12,000	**75022**	148

●	●	●	●			SuperT-N	HA	80xD	**Metallo duro**	TiN	Norma di fab.	4,950 - 11,950	**75023**	149

Punte a cannone ad 1 tagliente SuperT-NX

●	●	●	○	○		SuperT-NX	HA	20xD	**Metallo duro**	TiCN	Norma di fab.	3,970 - 12,700	**55018**	150

●	●	●	○	○		SuperT-NX	HA	30xD	**Metallo duro**	TiCN	Norma di fab.	3,970 - 12,700	**55017**	151

●	●	●	○	○		SuperT-NX	HA	40xD	**Metallo duro**	TiCN	Norma di fab.	3,970 - 12,700	**55022**	152

●	●	●	○	○		SuperT-NX	HA	80xD	**Metallo duro**	TiCN	Norma di fab.	4,950 - 12,650	**55023**	153

Punte a cannone ad 1 tagliente TBE-VHM

●	●	●	●	○		TBE-VHM	HA	45.000	**Metallo duro**	lucido	Norma di fab.	1,200 - 3,200	**75024**	154

●	●	●	●	○		TBE-VHM	HA	45.000	**Metallo duro**	AlTiN+	Norma di fab.	2,000 - 3,200	**55024**	155

Punte a cannone ad 1 tagliente TBE-VHM

P	M	K	N	S	H	Tipo	Forma dell'attac-co	Profondità di foro	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina
●	●	○	○	○		TBE-VHM	HA	80.000	**Metallo duro**	lucido	Norma di fab.	1,200 - 5,000	**75020**	156
●	●	●	○	○		TBE-VHM	HA	80.000	**Metallo duro**	AlTiN+	Norma di fab.	2,000 - 5,000	**55020**	157
●	●	○	●	○		TBE-VHM	HA	120.000	**Metallo duro**	lucido	Norma di fab.	1,500 - 5,000	**75026**	158
●	●	●	○	○		TBE-VHM	HA	120.000	**Metallo duro**	AlTiN+	Norma di fab.	2,000 - 5,000	**55026**	159
●	●	○	●	○		TBE-VHM	HA	160.000	**Metallo duro**	lucido	Norma di fab.	1,500 - 8,000	**75021**	160
●	●	●	○	○		TBE-VHM	HA	160.000	**Metallo duro**	AlTiN+	Norma di fab.	2,000 - 8,000	**55021**	161

Applicazione

Per materiale

Tipo	Tipo di catalogo		metalli non ferrosi, alluminiumio	acciaio	ghisa	acciaio inossidabile resistente e acido	nichel, leghe di titanio	acciai temprati
	senza refr.	con refrig.						
SuperV-U	51873	51776		■	■			
	51871	51876		■	■			
	51787	51781		■	■			
	51887	51881		■	■			
		51789		■	■			
		51889		■	■			
		51893		■	■			
SuperV-VA		51770		■		■	▒	
		51771		■		■	▒	
		51772		■		■	▒	
		51773		■		■	▒	
SuperV-F	61888	61880		▒	▒	▒	▒	■
SuperV-NX		51997	■	■	■	■	■	■
	71998	51998	■	■	■	■	■	■
	71999	51999	■	■	■	■	■	■
SuperV-M	51720			■	■			
SuperV-T		51764		■	■	■	■	
		51765		■	■	■	■	
		51766		■	■	■	■	
		51767		■	■	■	■	
		51768		■	■	■	■	
SuperV95-GG		71995	■		■			
		71994	■		■			
		71996	■		■			
SuperV95-GN		71997	■		■			
SuperV83-GAL	71862		■	■				
SuperV-AP mini		67011		■	▒			
		77012	■					
		67012	▒			■	■	
		77011	inserti NC per foro pilota/svasatura					
SuperV-AP maxi		76011		▒				
		56011		■	■			

■ ottimale ▒ adatto bene

Per resistenza alla trazione

Parametri di lavoro indicativi per punte SuperV

Serie d'avanzamento

Avanzamenti f (mm/giri)

Diametro utensile mm	Lettera d'identi. A	B	C	D	E	F	G	H	I
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Con le lettere d'identificazione d'avanzamento stampate in grassetto, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

K, P, K/P
l'impiego universale delle nuove qualita' in metallo duro K consente tra l'altro, di definire i gruppi di utilizzo del metallo duro con K e K/P.

Impiego del refrigerante:
Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria [!]

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitici	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lav. plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

≤3×D Profondità

≤4×D

Catalogo n°	61888	51873	51871	51770	51771	51776	51876	71995
Mat. da taglio	M.D.I.	M.D.I.	M.D.I.	M.D.I.	M.D.I.	M.D.I.	M.D.I.	M.D.I.
Gruppo impiego	K/P	K/P	K/P	K/P	K/P	K/P	K/P	K
Superficie	TiN	TiAlN nano	TiAlN nano	AlTiN nano	AlTiN nano	TiAlN nano	TiAlN nano	lucide
DIN/Forma	6539	6537K	6537K	6537K	6537K	6537K	6537K	Stock std
Tipo	F	U	U	VA	VA	U	U	GG
Refrig. interna				axial	axial	axial	axial	axial
Pagina	63	64	66	76	78	72	74	80





v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.		v_c m/min	Codice d'avanz.		v_c m/min	Codice d'avanz.		v_c m/min	Codice d'avanz.	
100	F	130	G	G				145	G	G			
85	E	110	F	F				120	F	F			
110	G	145	H	H				170	H	H			
85	F	110	G	G				145	H	H			
90	F	120	G	G				130	H	H			
85	F	110	G	G				125	G	G			
80	F	105	G	G				120	G	G			
80	F	105	G	G				120	G	G			
75	E	100	F	F				105	G	G			
100	G	130	H	H				145	H	H			
90	F	120	G	G				120	G	G			
65	D	85	E	E				85	E	E			
75	E	100	F	F				110	G	G			
70	D	90	E	E				105	E	E			
50	E	65	F	F				80	F	F			
40	D	55	E	E				65	E	E			
40	C							60	D	D			
45	B	45	C	C				60	C	C			
35	B	40	A	A				55	C	C			
20	A	20	A	A				35	B	B			
40	C	40	B	B	80	E	E	60	E	E			
35	C	15	A	A	60	B-C	B-C	55	B	B			
35	B	35	B	B	80	E	E	45	E	E			
160	G	210	H	H				210	I	I	120	G	
120	G	155	H	H				160	I	I	100	G	
120	G	155	G	G				140	I	I	90	G	
95	G	125	G	G				130	H	H	80	G	
25	B	35	C	C				40	C	C	40	B	
20	C	25	D	D	30	D	D	30	D	D			
30	B	15	A	A	45	D	D	45	D	D			
25	B	15	A	A	40	C	C	40	C	C			
200	H	260	I	I				310	I	I	410	I	
200	H	260	I	I				310	I	I	410	I	
170	H	220	H	H				260	I	I	380	I	
140	G	180	H	H				220	I	I	330	I	
200	G	260	H	H				280	H	H			
80	F	105	G	G				125	G	G			
210	G	270	H	H				325	H	H	280	I	
140	F	180	G	G				220	G	G			
80	E	105	F	F				125	G	G	110	F	
65	E	85	F	F				105	F	F	80	E	
60	D	80	E	E				90	F	F			
45	D	60	E	E				80	F	F			

Parametri di lavoro indicativi per punte SuperV

Serie d'avanzamento

Avanzamenti f (mm/giri)

Diametro utensile mm	Lettera d'identi. A	B	C	D	E	F	G	H	I
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Con le lettere d'identificazione d'avanzamento stampate in grassetto, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

K, P, K/P
l'impiego universale delle nuove qualita' in metallo duro K consente tra l'altro, di definire i gruppi di utilizzo del metallo duro con K e K/P.

Impiego del refrigerante:
Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria [!]

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitici	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lav. plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

≤5×D Profondità

Catalogo n°	51887	51787	51781	51881	71862	51772	51773	61880
Mat. da taglio	M.D.I.	M.D.I.	M.D.I.	M.D.I.	M.D.I.	M.D.I.	M.D.I.	M.D.I.
Gruppo impiego	K/P	K/P	K/P	K/P	K	K/P	K/P	K/P
Superficie	TiAlN nano	TiAlN nano	TiAlN nano	TiAlN nano	blank	AlTiN nano	AlTiN nano	TiN
DIN/Forma	6537L	6537L	6537L	6537L	6537L	6537L	6537L	6537L
Tipo	U	U	U	U	GAL	VA	VA	F
Refrig. interna			axial	axial		axial	axial	axial
Pagina	70	68	83	85	102	87	89	82

v_c m/min	Codice d'avanzamento		v_c m/min	Codice d'avanzamento		v_c m/min	Codice d'avanz.		v_c m/min	Codice d'avanzamento		v_c m/min	Codice d'avanz.
130	G	G	145	G	G							110	F
110	F	F	120	F	F							90	E
145	H	H	170	H	H							130	G
110	G	G	145	H	H							110	G
120	G	G	130	H	H							100	G
110	G	G	125	G	G							95	F
105	G	G	120	G	G							90	F
105	G	G	120	G	G							90	F
100	F	F	105	G	G							80	F
130	H	H	145	H	H							110	G
120	G	G	120	G	G							90	F
85	E	E	85	E	E							65	D
100	F	F	105	G	G							85	F
90	E	E	100	E	E							80	E
65	F	F	70	F	F							60	E
55	E	E	55	E	E							50	D
			60	E	E							45	D
45	C	C	60	C	C							45	B
35	A	A	55	C	C							40	B
20	A	A	35	B	B							25	A
40	B	B	60	E	E				80	E	E	45	D
15	A	A	55	B	B				60	B-C	B-C	40	B
35	B	B	50	E	E				80	E	E	35	D
210	H	H	195	I	I	100	F					160	H
155	H	H	160	I	I	80	F					120	H
145	G	G	140	I	I	80	F					100	H
125	G	G	130	H	H	70	F					95	G
35	C	C	40	C	C							30	B
25	D	D	35	D	D				30	D	D	25	C
15	A	A	45	D	D				45	D	D	35	C
15	A	C	40	C	C				40	C	C	30	B
260	I	I	310	I	I	180	G					240	H
260	I	I	310	I	I	160	G					240	H
235	I	I	260	I	I	150	G					200	H
170	H	H	220	I	I	120	F					170	H
260	H	H	280	H	H	180	F					230	G
105	G	G	125	G	G							95	F
270	H	H	325	H	H	180	F					250	G
180	G	G	220	G	G							170	F
105	F	F	125	G	G							95	F
85	F	F	105	F	F							80	E
80	E	E	90	F	F							70	E
60	E	E	80	F	F							60	E

Parametri di lavoro indicativi per punte SuperV

Serie d'avanzamento

Diametro utensile mm	Lettera d'identi. A	B	C	D	E	F	G	H	I
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Avanzamenti f (mm/giri)

Con le lettere d'identificazione d'avanzamento stampate in grassetto, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

K, P, K/P
l'impiego universale delle nuove qualita' in metallo duro K consente tra l'altro, di definire i gruppi di utilizzo del metallo duro con K e K/P.

Impiego del refrigerante:
Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria [!]

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitici	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lav. plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

≤7×D Profondità ≤10×D ≤12×D ≤15×D

	≤7×D	≤7×D	≤7×D	≤10×D	≤12×D	≤15×D
Catalogo n°	51789	51889	71994	71996	51893	71997
Mat. da taglio	M.D.	M.D.I.	M.D.I.	M.D.I.	M.D.I.	M.D.I.
Gruppo impiego	K/P	K/P	K	K	K/P	K
Superficie	TiAlN nano	TiAlN nano	blank	blank	TiAlN nano	blank
DIN/Forma	Stock std	Stock std	Stock std	Stock std	Stock std	Stock std
Tipo	U	U	GG	GG	U	GN
Refrig. interna	axial	axial	axial	axial	axial	axial
Pagina	91	92	93	94	95	96

vc m/min	Codice d'avanzamento 51789	Codice d'avanzamento 51889	vc m/min	Codice d'avanz. 71994	vc m/min	Codice d'avanz. 71996	vc m/min	Codice d'avanz. 51893	vc m/min	Codice d'avanz. 71997
145	F	F					110	F		
120	E	E					110	E		
170	G	G					110	G		
145	G	G					100	G		
130	G	G					110	G		
125	F	F					110	F		
120	F	F					100	F		
120	F	F					110	F		
105	F	F					105	F		
145	G	G					110	G		
120	F	F					110	F		
85	D	D					85	D		
110	F	F					100	F		
105	D	D					80	D		
80	E	E					80	E		
65	D	D					65	D		
60	D	D					50	D		
60	B	B					50	B		
55	B	B								
							60	D		
							55	B		
							45	D		
195	H	H	120	F	120	F	120	H	120	E
160	H	H	100	F	100	F	120	H	100	E
140	H	H	90	F	90	F	100	H	90	E
130	G	G	80	F	80	F	90	G	80	E
40	B	B	40	B	40	A			40	A
35	C	C								
310	H	H	410	H	410	H	150	H	410	F
310	H	H	410	H	410	H	150	H	410	F
260	H	H	380	H	380	H	150	H	380	G
220	H	H	330	H	330	H	120	H	330	G
280	G	G					150	G		
125	F	F					80	F		
325	G	G	280	G	280	G	120	G	280	F
220	F	F					120	F		
125	F	F	110	F	110	F	40	F	110	E
105	E	E	80	E	80	E			80	D
90	E	E								
80	E	E					40	E		

Parametri di lavoro indicativi per punte SuperV

Serie d'avanzamento

Avanzamenti f (mm/giri)

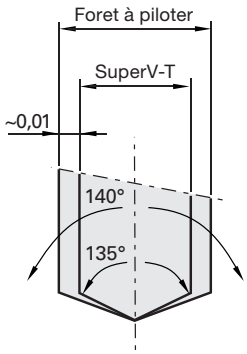
Diametro utensile mm	Lettera d'identi. A	B	C	D	E	F	G	H	I
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630

Con le lettere d'identificazione d'avanzamento stampate in grassetto, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

K, P, K/P
l'impiego universale delle nuove qualita' in metallo duro K consente tra l'altro, di definire i gruppi di utilizzo del metallo duro con K e K/P.

Indicazioni generali:
Molto importante è che per motivi di sicurezza nessuna punta possa ruotare liberamente senza supporto, con un numero maggiore di n = 6000 giri/min! La forza centrifuga potrebbe altrimenti rompere gli utensili già prima del raggiungimento della finitura superficiale del pezzo!

Procedimento per punte SuperV-T:
Per produrre fori profondi con la RT 100 T con risultati ottimali consigliamo di procedere con i seguenti passi:
1. fresare una superficie, p. es. con fresa Ratio Gühring RF 100 U con tagliente al centro. La superficie deve essere eseguita con angolo a destra, rispetto all'angolo di entrata del foro da produrre.
2. Eseguire un foro pilota cilindrico (tolleranza F9), con una profondità di almeno 1 x D. Consigliamo le nostre punte Ratio RT 100 U oppure RT 100 F. Per il loro angolo di affilatura a 140° e la tolleranza sul Ø m7, queste punte Ratio sono le più indicate per tale operazione.
3. Entrare con la punta elic. per fori profondi RT 100 T nel foro pilota con un nr di giri di ca 3 00 giri/min ed un avanzamento di ca. 500 mm/min.
4. Regolare la pressione del refrigerante ed il numero di giri.
5. Forare in continuo sull'intera lunghezza, senza scaricare.
6. Per fori passanti con uscita del foro obliqua, ridurre la velocità di avanzamento vf del 40% a ca. 1 mm prima dell'uscita.
7. Al raggiungimento della profondità di foro, spegnere giri ed adduzione refrigerante; corsa di ritorno con max. 5000 mm/min.



Impiego del refrigerante:
Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria [!]

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitici	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lav. plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

	≤15×D	≤20×D	≤25×D	≤30×D	≤40×D
Catalogo n°	51764	51765	51766	51767	51768
Mat. da taglio	M.D.I.	M.D.I.	M.D.I.	M.D.I.	M.D.I.
Gruppo impiego	K/P	K/P	K/P	K/P	K/P
Superficie	AlTiN	AlTiN	AlTiN	AlTiN	AlTiN
DIN/Forma	Stock std	Stock std	Stock std	Stock std	Stock std
Tipo	T	T	T	T	T
Refrig. interna	assiale	assiale	assiale	assiale	assiale
Pagina	97	98	99	100	101

v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.
110	H	110	H	100	H	80	G	80	G
110	H	110	H	100	H	80	G	80	G
120	H	120	H	120	H	100	H	100	H
120	H	120	H	100	H	100	H	100	H
110	F	110	F	110	F	110	F	110	F
110	H	110	H	100	H	80	G	80	G
100	G	100	G	100	G	80	G	80	G
110	G	110	G	100	G	80	G	80	F-G
110	F	110	F	100	F	80	F	80	F
110	H	110	H	100	H	80	G	80	G
110	G	110	G	100	G	80	F	80	F
110	F	110	F	100	F	80	F	80	F
100	E	100	E	80	E	80	E	80	E
80	E	80	E	60	E	60	E	60	E
100	F-G	100	F	90	F	80	F	80	F-G
80	E	80	E	70	D	70	D	70	D
50	E	50	E	50	D	50	D	50	D
50	E	50	E	50	D	50	D	50	D
50	D	50	D	50	D	50	D	50	D
100	E	100	E	100	E	80	E	80	E
70	B-C	60	C	60	C	60	C	60	C
100	E	100	E	100	E	80	E	80	E
140	H	140	H	130	H	120	H	120	H
100	H	100	H	90	H	80	H	80	H
140	H	140	H	130	H	120	H	120	H
100	H	100	H	90	H	80	H	80	H
100	F	100	F	90	F	80	F	80	F
100	F	100	F	90	F	80	F	80	F
90	H	90	H	80	H	70	H	70	H
30	B	30	B	30	B	30	B	30	B
120	A	120	A	120	A	120	A	120	A
120	H	120	H	110	H	100	H	100	H

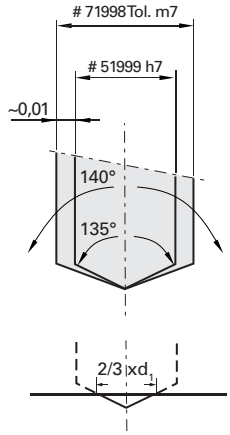
Micropunta SuperV-NX in metallo duro ad alte prestazioni

Parametri di lavoro indicativi

Serie d'avanzamento

Diametro utensile mm	Lettera d'identi. AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL	MM
0,50	0,006	0,012	0,018	0,022	0,030	0,035	0,040	0,045	0,050	0,050	0,055	0,060	0,060
0,80	0,008	0,016	0,024	0,032	0,040	0,050	0,060	0,070	0,080	0,080	0,080	0,090	0,090
1,00	0,012	0,022	0,032	0,042	0,060	0,070	0,080	0,090	0,100	0,100	0,110	0,110	0,120
1,50	0,021	0,036	0,051	0,066	0,090	0,100	0,120	0,130	0,150	0,150	0,160	0,170	0,180
2,00	0,032	0,052	0,072	0,092	0,120	0,140	0,160	0,180	0,200	0,210	0,220	0,230	0,240
2,50	0,045	0,070	0,095	0,120	0,150	0,170	0,200	0,220	0,250	0,260	0,270	0,280	0,300
3,00	0,060	0,090	0,120	0,150	0,180	0,210	0,240	0,270	0,300	0,310	0,330	0,340	0,360

Avanzamenti f (mm/giri)



K, P, K/P l'impiego universale delle nuove qualita' in metallo duro K consente tra l'altro, di definire i gruppi di utilizzo del metallo duro con K e K/P.

Con le lettere d'identificazione d'avanzamento stampate in grassetto, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

Consigli per la sicurezza: molto importante: per motivi di sicurezza nessuna punta può ruotare liberamente senza un numero di giri più elevato di n = 6000 giri al minuto. Altrimenti le forze centrifughe potrebbero rompere gli utensili lunghi già prima di ottenere la finitura del pezzo!

Indicazioni generali: Mandrini con poco gioco, attacchi utensili con allineamento preciso. Consigliamo l'utilizzo di mandrini ad espansione idraulica o di mandrini di calettamento. Consigliamo di refrigerare con emulsione od olio; pressione minima del refrigerante 40 bar.

Foro pilota
Impiegando la micropunta in MD 15xD consigliamo di produrre un foro pilota con profondità da1xD fi no a 2xD. La micropunta in MD da 4xD è l'utensile ottimale per questo foro pilota, dato che il suo angolo di affi latura e la sua tolleranza sul diametro sono specifi che per questo scopo.

Centrare
Per potere sfruttare a pieno il rendimento delle micropunte per profondità di foro da 8xD, consigliamo una centratura. A questo scopo si può usare la micropunta da 4xD, articolo 6400. Il diametro di centratura dovrebbe essere ca. 2/3xD.
In alternativa, il centraggio essere creato con Stock punte cilindriche per centri CN 142°, catalogo no. 71189.

Impiego del refrigerante:
Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria [!]

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrige-rante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitici	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lav. plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■

		≤4×D	≤7×D	≤5×D	≤8×D	≤15×D
Catalogo n°	51720	71998	71999	51997	51998	51999
Mat. da taglio	MDI	MDI	MDI	MDI	MDI	MDI
Superficie	AlTiN	AlTiN+	AlTiN+	AlTiN	AlTiN	AlTiN
DIN	Stock std	Stock std	Stock std	Stock std	Stock std	Stock std
Tipo	M	NX	NX	NX	NX	NX
Refrig. interna	-	-	-	assiale	assiale	assiale
Pagina	108	103	104	105	106	107






v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.
100	G	100	I	100	G	105	G	105	C	105	C
100	G	100	I	100	G	100	G	100	C	100	C
100	G	100	I	100	G	105	G	105	D	105	D
90	F	90	H	90	F	90	F	90	D	90	D
90	G	90	I	90	G	95	G	95	C	95	C
90	G	90	I	90	G	95	G	95	C	95	C
90	F	90	H	90	F	90	F	90	C	90	C
90	F	90	H	90	F	90	F	90	C	90	C
70	E	70	G	70	E	70	E	70	C	70	C
100	F	100	H	100	F	100	F	100	B	100	B
85	F	85	H	85	F	85	F	85	C	85	C
70	E	70	G	70	E	70	E	70	C	70	C
70	E	70	G	70	E	70	E	70	B	70	B
60	E	60	G	60	E	60	E	60	B	60	B
50	E	50	G	50	E	50	E	50	C	50	C
60	E	60	G	60	E	50	E	50	C	50	C
		60	B	60	B	50	B	50	B	50	B
		60	B	60	B	50	B	50	B	50	B
		30	B	30	B	70	B	70	B	70	B
		15	A	15	A	60	A	60	A	60	A
		30	B	30	B	70	B	70	B	70	B
130	K	130	M	130	K	150	E	150	E	150	E
130	K	130	M	130	K	140	E	140	E	140	E
130	K	130	M	130	K	140	E	140	E	140	E
120	J	120	L	120	J	130	E	130	E	130	E
		10	A	10	A	25	A	25	A	25	A
		15	A	15	A	35	A	35	A	35	A
		15	A	15	A	35	A	35	A	35	A
		70	M	70	M	70	M	70	M	70	M
		70	M	70	M	70	M	70	M	70	M
		135	D	135	D	135	D	135	D	135	D
		135	D	135	D	135	D	135	D	135	D

Il sistema di foratura tipo V-AP mini

Parametri di lavoro indicativi

Serie d'avanzamento

Avanzamenti f (mm/giro)

Dia. utensile mm	Codice lettera A	B	C	D	E	F	G	H	I
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Con le lettere d'identificazione d'avanzamento stampate **in grassetto**, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

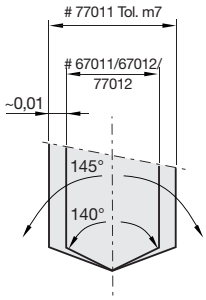
K, P, K/P l'impiego universale delle nuove qualita' in metallo duro K consente tra l'altro, di definire i gruppi di utilizzo del metallo duro con K e K/P.

Impiego del refrigerante:
Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria [!]

Si prega di seguire le istruzioni per l'applicazione a pagina 55!

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitici	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lav. plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

Portainserto ≤ 1,5×D, utensile pilota
Catalogo n° 77007



Catalogo n°	67011	67012	77012	77011
Mat. da taglio	MDI	MDI	MDI	MDI
Gruppo d'imp. MD	K/P	K/P	K/P	K/P
Superficie	TiAlN nano	AlTiN nano	lucide	AlTiN nano
Tipo	U	VA	AL	NC
Refrig. interna	assiale	assiale	assiale	assiale
Pagina	114	117	120	123




v_c m/min	Codigo avanzamento	v_c m/min	Codigo avanzamento	v_c m/min	Codigo avanzamento	v_c m/min	Codigo avanzamento
130	F					130	F
110	E					110	E
130	G					130	G
110	F					110	F
130	F					130	F
125	F					125	F
110	E					110	E
110	F					110	F
90	E					90	E
130	G					130	G
110	F					110	F
70	D					70	D
105	E					105	E
70	D					70	D
60	E					60	E
55	D					55	D
55	C					55	C
50	B					50	B
		25	B			25	B
		55	C			55	C
		40	C			40	C
		35	C			35	C
						100	F
						90	F
						120	G
						100	F
		90	F			80	E
						80	E
						80	E
						80	E
						90	F
		25	B			25	B
		40	C			40	C
		35	B			35	B
				200	G	200	G
				180	G	180	G
				150	G	150	G
				120	G	120	G
				180	G	180	G
				70	F	70	F
				180	G	180	G
				120	F	120	F
				70	F	70	F
				50	F	50	F
				45	F	45	F
				35	E	35	E

Il sistema di foratura tipo V-AP mini

Parametri di lavoro indicativi

Serie d'avanzamento

Avanzamenti f (mm/giro)

Dia. utensile mm	A	B	C	D	E	F	G	H	I
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Con le lettere d'identificazione d'avanzamento stampate **in grassetto**, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

K, P, K/P l'impiego universale delle nuove qualita' in metallo duro K consente tra l'altro, di definire i gruppi di utilizzo del metallo duro con K e K/P.

Impiego del refrigerante:
Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria [!]

Si prega di seguire le istruzioni per l'applicazione a pagina 55!

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitici	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lav. plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

Portainserto ≤ 3×D
Catalogo n° 77000

Catalogo n°	**67011**	**67012**	**77012**
Mat. da taglio	**MDI**	**MDI**	**MDI**
Gruppo d'imp. MD	K/P	K/P	K
Superficie	TiAlN nano	AlTiN nano	lucide
Tip	U	VA	AL
Refrig. interna	assiale	assiale	assiale
Pagina	114	117	120

v_c m/min	Codigo avanzamento
130	**F**
110	**E**
130	**G**
110	**F**
130	**F**
125	**F**
110	**E**
110	**F**
90	**E**
130	**G**
110	**F**
70	**D**
105	**E**
70	**D**
60	**E**
55	**D**
55	**C**
50	**B**

v_c m/min	Codigo avanzamento
25	**B**
55	**C**
40	**C**
35	**C**
90	**F**
25	**B**
40	**C**
35	**B**

v_c m/min	Codigo avanzamento
200	**G**
180	**G**
150	**G**
120	**G**
180	**G**
70	**F**
180	**G**
120	**F**
70	**F**
50	**F**
45	**F**
35	**E**

Il sistema di foratura tipo V-AP mini

Parametri di lavoro indicativi

Serie d'avanzamento

Avanzamenti f (mm/giro)

Dia. utensile mm	Codice lettera A	B	C	D	E	F	G	H	I
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Con le lettere d'identificazione d'avanzamento stampate **in grassetto**, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

K, P, K/P l'impiego universale delle nuove qualita' in metallo duro K consente tra l'altro, di definire i gruppi di utilizzo del metallo duro con K e K/P.

Impiego del refrigerante:
Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria [!]

Si prega di seguire le istruzioni per l'applicazione a pagina 55!

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitici	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lav. plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

Portainserto ≤ 5×D
Catalogo n° 77001

Catalogo n°	**67011**	**67012**	**77012**
Mat. da taglio	**MDI**	**MDI**	**MDI**
Gruppo d'imp. MD	K/P	K/P	K
Superficie	TiAlN nano	AlTiN nano	lucide
Tip	U	VA	AL
Refrig. interna	assiale	assiale	assiale
Pagina	114	117	120

v_c m/min	Codigo avanzamento
125	**F**
105	**E**
125	**G**
105	**F**
125	**F**
120	**F**
105	**E**
105	**F**
85	**E**
125	**G**
105	**F**
70	**D**
105	**E**
70	**D**
55	**E**
50	**D**
55	**C**
50	**B**

v_c m/min	Codigo avanzamento
25	**B**
55	**C**
40	**C**
35	**C**
90	**F**
25	**B**
40	**C**
35	**B**

v_c m/min	Codigo avanzamento
180	**G**
180	**G**
140	**G**
110	**G**
180	**G**
70	**F**
180	**G**
120	**F**
70	**F**
50	**F**
45	**F**
35	**E**

Il sistema di foratura tipo V-AP mini

Parametri di lavoro indicativi

Serie d'avanzamento

Avanzamenti f (mm/giro)

Dia. utensile mm	A	B	C	D	E	F	G	H	I
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Con le lettere d'identificazione d'avanzamento stampate **in grassetto**, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

K, P, K/P l'impiego universale delle nuove qualita' in metallo duro K consente tra l'altro, di definire i gruppi di utilizzo del metallo duro con K e K/P.

Impiego del refrigerante:
Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria [!]

Si prega di seguire le istruzioni per l'applicazione a pagina 55!

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitici	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lav. plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

Portainserto ≤ 7×D
Catalogo n° 77003

Catalogo n°	**67011**	**67012**	**77012**
Mat. da taglio	**MDI**	**MDI**	**MDI**
Gruppo d'imp. MD	K/P	K/P	K
Superficie	TiAlN nano	AlTiN nano	lucide
Tip	U	VA	AL
Refrig. interna	assiale	assiale	assiale
Pagina	114	117	120



v_c m/min	Codigo avanzamento	v_c m/min	Codigo avanzamento	v_c m/min	Codigo avanzamento
120	**E**				
105	**D**				
120	**F**				
105	**E**				
120	**E**				
110	**E**				
100	**D**				
100	**E**				
85	**D**				
120	**F**				
100	**E**				
70	**D**				
105	**D**				
70	**C**				
55	**D**				
50	**C**				
55	**B**				
50	**B**				
		25	**A**		
		55	**B**		
		40	**B**		
		35	**B**		
		70	**F**		
		25	**A**		
		40	**B**		
		35	**A**		
				180	**F**
				180	**F**
				140	**F**
				110	**F**
				180	**F**
				70	**E**
				180	**F**
				120	**E**
				70	**E**
				50	**E**
				45	**E**
				35	**D**

Il sistema di foratura tipo V-AP mini

Parametri di lavoro indicativi

Serie d'avanzamento

Avanzamenti f (mm/giro)

Dia. utensile mm	A	B	C	D	E	F	G	H	I
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Con le lettere d'identificazione d'avanzamento stampate **in grassetto**, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

K, P, K/P l'impiego universale delle nuove qualita' in metallo duro K consente tra l'altro, di definire i gruppi di utilizzo del metallo duro con K e K/P.

Impiego del refrigerante:
Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria [!]

Si prega di seguire le istruzioni per l'applicazione a pagina 55!

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitici	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lav. plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

Portainserto ≤ 10×D
Catalogo n° 77004

	67011	67012	77012
Catalogo n°	**67011**	**67012**	**77012**
Mat. da taglio	**MDI**	**MDI**	**MDI**
Gruppo d'imp. MD	K/P	K/P	K
Superficie	TiAlN nano	AlTiN nano	lucide
Tip	U	VA	AL
Refrig. interna	assiale	assiale	assiale
Pagina	114	117	120

v_c m/min	Codigo avanzamento
100	**E**
95	**D**
100	**F**
95	**E**
100	**E**
95	**E**
90	**D**
90	**E**
85	**D**
100	**F**
90	**E**
70	**D**
95	**D**
70	**C**
55	**D**
50	**C**
55	**B**
50	**B**

v_c m/min	Codigo avanzamento
25	**A**
55	**B**
40	**B**
35	**B**
70	**F**
25	**A**
40	**B**
35	**A**

v_c m/min	Codigo avanzamento
150	**F**
150	**F**
130	**F**
105	**F**
150	**F**
70	**E**
150	**F**
110	**E**
70	**E**
50	**E**
45	**E**
35	**D**

Il sistema di foratura tipo V-AP maxi

Parametri di lavoro indicativi

Serie d'avanzamento

Avanzamenti f (mm/giro)

Dia. utensile mm	A	B	C	D	E	F	G	H	I
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Con le lettere d'identificazione d'avanzamento stampate **in grassetto**, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

K, P, K/P l'impiego universale delle nuove qualita' in metallo duro K consente tra l'altro, di definire i gruppi di utilizzo del metallo duro con K e K/P.

Impiego del refrigerante:

Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria [!]

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrige-rante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitici	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lav. plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

Portainserto ≤ 3×D
Catalogo n° 76000

Catalogo n°	**56011**	**76011**
Mat. da taglio	**MDI**	**MDI**
Gruppo d'imp. MD	K/P	K/P
Superficie	TiAlN	TiN
Tipo	SuperV-AP maxi	SuperV-AP maxi
Refrig. interna	axial	axial
Pagina	129	128

v_c m/min	**Codigo avanzamento**	v_c m/min	**Codigo avanzamento**
130	**F**	*100*	**F**
110	**E**	*85*	**E**
130	**G**	*100*	**G**
110	**F**	*85*	**F**
130	**F**	*100*	**F**
125	**F**	*95*	**F**
110	**E**	*85*	**E**
110	**F**	*85*	**F**
90	**E**	*70*	**E**
130	**G**	*100*	**G**
110	**F**	*85*	**F**
70	**D**	*55*	**D**
105	E	*80*	E
70	D	*55*	D
55	E	*40*	E
50	D	*35*	D
55	C	*40*	C
50	B	*35*	B
25	B	*20*	B
55	C	*40*	C
40	C	*30*	C
35	C	*25*	C
210	**G**	*160*	**G**
155	**G**	*80*	**G**
155	**G**	*120*	**G**
130	**F**	*100*	**F**
35	B	*25*	B
40	C	*30*	C
35	B	*25*	B
290	G	*220*	G
260	G	*200*	G
235	G	*180*	G
195	G	*150*	G
260	G	*200*	G
105	F	*80*	F
270	**G**	*210*	**G**
180	F	*140*	F
105	F	*80*	F
85	F	*65*	F
65	F	*50*	F
55	E	*40*	E
105	E	*80*	E
105	E	*80*	E
105	E	*80*	E
105	E	*80*	E

Il sistema di foratura tipo V-AP maxi

Parametri di lavoro indicativi

Serie d'avanzamento

Avanzamenti f (mm/giro)

Dia. utensile mm	A	B	C	D	E	F	G	H	I
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Con le lettere d'identificazione d'avanzamento stampate **in grassetto**, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

K, P, K/P l'impiego universale delle nuove qualita' in metallo duro K consente tra l'altro, di definire i gruppi di utilizzo del metallo duro con K e K/P.

Impiego del refrigerante:
Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria [!]

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrige-rante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitici	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lav. plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

Portainserto ≤ 5×D
Catalogo n° 76001

Catalogo n°	**56011**	**76011**
Mat. da taglio	**MDI**	**MDI**
Gruppo d'imp. MD	K/P	K/P
Superficie	TiAlN	TiN
Tipo	SuperV-AP maxi	SuperV-AP maxi
Refrig. interna	axial	axial
Pagina	129	128

v_c m/min	**Codigo avanzamento**
125	**F**
105	**E**
125	**G**
105	**F**
125	**F**
120	**F**
105	**E**
105	**F**
85	**E**
125	**G**
105	**F**
70	**D**
105	E
70	D
55	E
50	D
55	C
50	B
25	B
55	C
40	C
35	C
195	**G**
145	**G**
145	**G**
120	**F**
35	B
25	B
40	C
35	B
260	G
260	G
220	G
180	G
260	G
105	F
270	**G**
180	F
105	F
85	F
65	F
55	E
105	E
105	E
105	E
105	E

v_c m/min	**Codigo avanzamento**
95	**F**
80	**E**
95	**G**
80	**F**
95	**F**
90	**F**
80	**E**
80	**F**
65	**E**
95	**G**
80	**F**
55	**D**
80	E
55	D
40	E
35	D
40	C
35	B
20	B
40	C
30	C
25	C
150	**G**
110	**G**
110	**G**
90	**F**
25	B
20	B
30	C
25	B
200	G
200	G
170	G
140	G
200	G
80	F
210	**G**
140	F
80	F
65	F
50	F
40	E
80	E
80	E
80	E
80	E

Il sistema di foratura tipo V-AP maxi

Parametri di lavoro indicativi

Serie d'avanzamento

Avanzamenti f (mm/giro)

Dia. utensile mm	A	B	C	D	E	F	G	H	I
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Con le lettere d'identificazione d'avanzamento stampate **in grassetto**, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

K, P, K/P l'impiego universale delle nuove qualita' in metallo duro K consente tra l'altro, di definire i gruppi di utilizzo del metallo duro con K e K/P.

Impiego del refrigerante:

Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria [!]

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrige-rante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitici	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lav. plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

Portainserto ≤ 7×D
Catalogo n° 76003

	56011	76011
Catalogo n°	**56011**	**76011**
Mat. da taglio	**MDI**	**MDI**
Gruppo d'imp. MD	K/P	K/P
Superficie	TiAlN	TiN
Tipo	SuperV-AP maxi	SuperV-AP maxi
Refrig. interna	axial	axial
Pagina	129	128

v_c m/min	Codigo avanzamento
120	**E**
105	**D**
120	**F**
105	**E**
120	**E**
110	**E**
100	**D**
100	**E**
85	**D**
120	**F**
100	**E**
70	**D**
105	D
70	C
55	D
50	C
55	B
50	B
25	A
55	B
40	B
35	B
195	**F**
145	**F**
145	**F**
120	**E**
35	B
25	A
40	B
35	A
260	F
260	F
220	F
180	F
260	F
105	E
270	F
180	**E**
105	E
85	E
65	E
55	D
105	D
105	D
105	D
105	D

v_c m/min	Codigo avanzamento
90	**E**
80	**D**
90	**F**
80	**E**
90	**E**
85	**E**
75	**D**
75	**E**
65	**D**
90	**F**
75	**E**
55	**D**
80	D
55	C
40	D
35	C
40	B
35	B
20	A
40	B
30	B
25	B
150	**F**
110	**F**
110	**F**
90	**E**
25	B
20	A
30	B
25	A
200	F
200	F
170	F
140	F
200	F
80	E
210	F
140	**E**
80	E
65	E
50	E
40	D
80	D
80	D
80	D
80	D

Parametri di lavoro indicativi per punte in MD

Serie d'avanzamento

Avanzamenti f (mm/giri)

Diametro utensile mm	Lettera d'identi. A	B	C	D	E	F	G	H	I
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Con le lettere d'identificazione d'avanzamento stampate **in grassetto**, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

K, P, K/P
l'impiego universale delle nuove qualita' in metallo duro K consente tra l'altro, di definire i gruppi di utilizzo del metallo duro con K e K/P.

Impiego del refrigerante:
Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria [!]

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitici	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lav. plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

≤3×D prof. di foro

≤5×D

Catalogo no.	**71184**	**51184**	**71380**	**71180**	**71290**
Mat. da taglio	**M.D.I.**	**M.D.I.**	**M.D.**	**M.D.**	**M.D.I.**
Gruppo impiego	K10/K20	K/P	K10/K20	K10/K20	K10/K20
Superficie	lucida	TiAlN nano	lucida	lucida	lucida
DIN/Forma	**6539**	**6539**	**8041**	**8037**	**Stock std**
Tipo	N	N	N	N	N
Refrig. interna					
Pagina	132	134	141	140	135





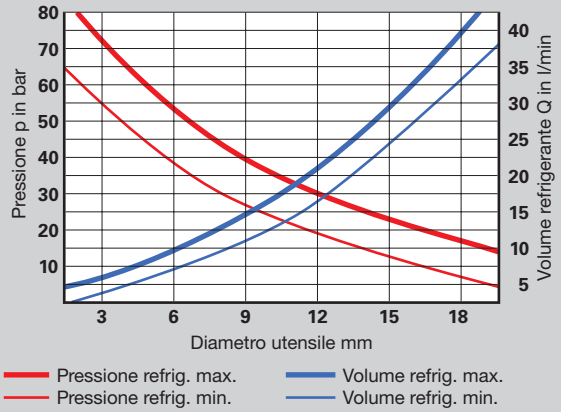
v_c m/min	Codice d'avanzamento	v_c m/min	Codice d'avanzamento	v_c m/min	Codice d'avanzamento		v_c m/min	Codice d'avanzamento
80	D	104	E				80	D
70	D	91	E				70	D
80	**E**	104	**F**	80	D	D	80	**E**
70	**D**	91	**E**	70	C	C	70	**D**
80	D	104	E				80	D
70	D	91	E				70	D
60	D	78	E				60	D
60	D	78	E				60	D
80	E	104	F				80	E
60	D	78	E				60	D
50	D	65	E				50	D
50	C	65	D				50	C
25	B	32	C	25	**B**	**B**	25	B
20	C	26	D	20	C	C	20	B
				10	B	B		
25	**B**	32	**E**				25	**B**
15	A	32	**D**				15	A
25	B	32	**D**				25	B
90	**D**	117	**E**	90	D	D	90	**D**
80	**D**	104	**E**	80	D	D	80	**D**
80	**D**	91	**E**	80	D	D	70	**D**
70	**D**	104	**E**	70	D	D	80	**D**
				10	**A**	**A**		
15	B	20	C				15	B
15	A	26	D				15	**A**
15	A	20	C				15	**A**
200	**G**	260	**H**				200	**G**
200	**G**	260	**H**				200	**G**
150	**F**	195	**G**				150	**F**
120	**F**	156	**G**				120	**F**
180	**F**	234	**F**				180	**E**
80	**E**	104	**F**				80	**E**
180	**E**	234	**F**	180	E	E	180	E
180	**E**	234	**F**	180	E	E	180	E
120	**E**	156	**F**				120	E
120	**E**	156	**F**				120	E
70	D	91	E				70	D
50	C	65	D				50	C
50	D	65	E				50	D
40	C	52	D				40	C
80	C	104	D				80	C

Stock Punte SuperV

Valori per la refrigerazione

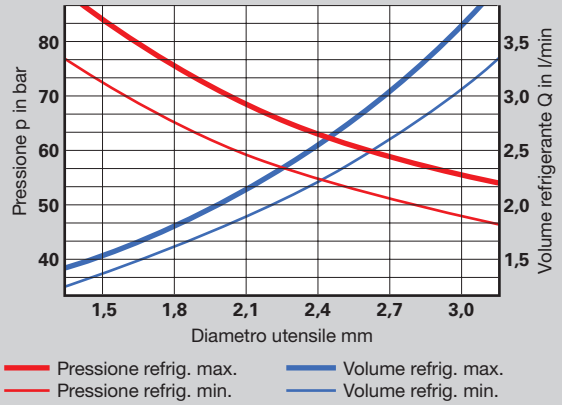
Valori refrigerante SuperV-T

(Valori indicativi per emulsione)



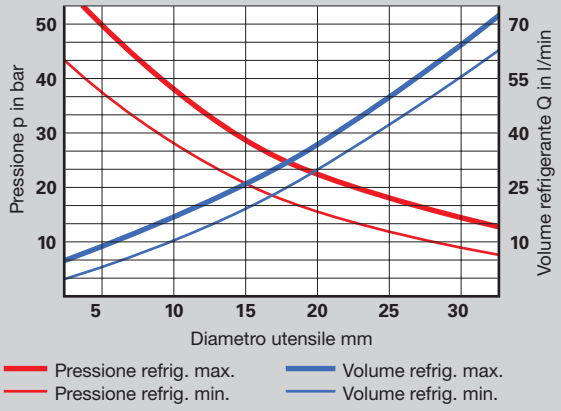
Valori refrigerante SuperV-NX

(Valori indicativi per emulsione)



Valori refrigerante SuperV 95-GG/GN

(Valori indicativi per emulsione)



Sistema di foratura V-AP

Raccomandazione generali

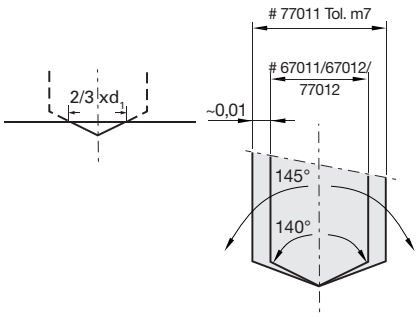
per tutti i portautensili

- Per fori passanti
- Non utilizzare l'utensile di foratura senza il processo per i tagli interrotti(scanalature, fori trasversali). Per taglio interrotto (max. 0.2 x D) è raccomandato ridurre l'avanzamento appena è possibile.
- In contrasto con gli inserti convenzionali, l'utensile Super V-AP è adatto anche per la foratura di lamiere.
- Sul tornio (utensile fisso) occorre garantire che l'utensile sia accuratamente centrato.
- Pre-condzione per un'ottimale lavorazione è un'alimentazione del refrigerante a olio intero o emulsionato.
- L'utensile è adatto solo per lavorazione a secco o MQL.

  Contattate i nostri ingegneri per ulteriori informazioni.

Raccomandazione aggiuntive per portautensili a partire **da 5×D**

- **Per profondità di foro da 5xD noi raccomandiamo per l'utensile la foratura da centro o pilota. Catalogo n° 77007 ed insetri pilota catalogo n° 77011.**
  In alternativa - dipendente dal materiale da lavorare - Punte SuperV tipo U, GG o VA oppure le punte NC catalogo n° 71189.
- Per fori passanti raccomandando la riduzione dell'avanzamento prima dell'uscita dal foro.



Per SuperV-AP mini:

Quando si cambia l'inserto osservare le seguenti coppie di serraggio per la vite di serraggio. E' assolutamente necessario rispettarle per ottenere ottimi risultati di lavorazione.

Gamma diametrale mm	11,0 - 12,99	13,0 - 13,99	14,0 - 15,99	16,0 - 17,99	18,0 - 19,99	20,0 - 21,99	22,0 - 29,99	30,0 - 40,0
Filetto	M2,2	M2,5	M3	M3,5	M4	M4,5	M5	M6
Dimensioni Torx	T7	T8	T9	T10	T15	T15	T20	T25
Coppia di serraggio (Nm)	0,8	1,0	1,7	2,7	4,0	6,0	8,0	14,0

Dettagli applicazione vite di bloccaggio (Loctite).

Parametri di lavoro indicativi per punte a cannone

Serie d'avanzamento

Avanzamento f (mm/giro) – Ø utensile mm

Codice lettera	K	L	M	N	O	P	Q	R
1,50	0,002	0,004	0,006	0,008	0,012	0,020	0,032	0,045
2,00	0,003	0,005	0,007	0,010	0,016	0,028	0,046	0,055
2,50	0,004	0,006	0,008	0,012	0,018	0,030	0,054	0,070
4,00	0,005	0,007	0,010	0,016	0,025	0,043	0,065	0,085
6,00	0,007	0,009	0,013	0,024	0,035	0,061	0,085	0,120
8,00	0,010	0,014	0,022	0,032	0,045	0,068	0,100	0,150
10,00	0,012	0,016	0,028	0,040	0,055	0,075	0,120	0,160
14,00	0,020	0,025	0,035	0,050	0,065	0,085	0,130	0,180
18,00	0,025	0,030	0,040	0,055	0,070	0,095	0,145	0,200
20,00	0,026	0,035	0,045	0,060	0,080	0,110	0,180	0,250
24,00	0,027	0,036	0,047	0,065	0,085	0,130	0,185	0,300
28,00	0,028	0,038	0,049	0,068	0,090	0,140	0,195	0,350
30,00	0,030	0,040	0,050	0,070	0,100	0,150	0,200	0,400
35,00	0,035	0,045	0,055	0,075	0,120	0,180	0,250	0,450
40,00	0,040	0,050	0,060	0,080	0,150	0,200	0,300	0,500

*** I valori di avanzamento di basano sempre su utensili con il rivestimento consigliato.
In alcuni casi la funzionalità degli utensili non può essere garantita senza rivestimento.

STOP Tutte le punte a cannone devono essere guidate da un foro pilota. Le punte a cannone non devono essere mai mosse libere al massimo dei giri nello spazio macchina.

Informazioni aggiuntive a pagina 62!

Lubrificanti:

olio da taglio, attivo, ■
olio da taglio attivo, lubrificanti con additivi che reagiscono chimicamente causando uno speciale strato adesivo e abrasivo riducendo il film del lubrificante.
emulsione ■
senza lubrificante □
solo refrigerazione ad aria ▣

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		▣
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

Catalogo n°	55027	55028 55029	75024 75020 75026 75021	55024 55020 55026 55021	75018 75017 75022 75023	55018 55017 55022 55023
Materiale tagliente	M.D.I.	M.D.I.	M.D.I.	M.D.I.	M.D. testa	M.D. testa
Superficie	AlTiN nano	AlTiN nano	lucido	AlTiN +	TiN	TiCN
Tipo	SuperT-Al	SuperT-Al	TBE-VHM	TBE-VHM	SuperT-N	SuperT-NX
Pagina	143	144/145	154/156/158/160	155/157/159/161	146/147/148/149	150/151/152/153






v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code
100	O	95	N	95	**N**	95	N	95	**M**	95	M
85	O	80	N	80	**N**	80	N	80	**M**	80	M
90	O	85	N	85	**N**	85	N	85	**M**	85	M
80	O	75	N	75	**N**	75	N	75	**M**	75	M
90	N	85	M	85	**M**	85	M	85	**L**	85	L
80	N	75	M	75	**M**	75	M	75	**L**	75	L
75	N	70	M	70	**M**	70	M	70	**L**	70	L
75	**N**	70	**M**	70	M	70	**M**	70	L	70	**L**
65	**N**	60	**M**	60	M	60	**M**	60	L	60	**L**
80	**O**	75	**N**	75	N	75	**N**	75	M	75	**M**
75	**N**	70	**M**	70	M	70	**M**	70	L	70	**L**
65	**N**	60	**M**	60	M	60	**M**	60	L	60	**L**
75	**N**	70	**M**	70	M	70	**M**	70	L	70	**L**
65	**N**	60	**M**	60	M	60	**M**	60	L	60	**L**
75	**M**	70	**L**	70	L	70	**L**	70	K	70	**K**
65	**M**	60	**L**	60	L	60	**L**	60	K	60	**K**
55	**L**	50	**K**	50	K	50	**K**	50	K	50	**K**
65	**M**	60	**L**	60	L	60	**L**	60	L	60	**L**
30	**M**	25	**L**	25	L	25	**L**	25	K	25	**K**
55	**N**	50	**M**	50	M	50	**M**	50	L	50	**L**
45	**N**	40	**M**	40	M	40	**M**	40	L	40	**L**
35	**N**	35	**M**	35	M	35	**M**	35	L	35	**L**
85	P	80	O	80	O	80	**O**	80	N	80	N
80	P	75	O	75	O	75	**O**	75	N	75	N
80	O	75	N	75	N	75	**N**	75	M	75	M
70	O	65	N	65	N	65	**N**	65	M	65	M
55	N	50	M	50	M	50	**M**	50	L	50	L
80	**P**	70	**O**	70	N	70	**N**	70	M	70	**M**
70	**P**	65	**O**	65	N	65	**N**	65	M	65	**M**
65	**O**	60	**N**	65	M	65	**M**	65	L	65	**L**
60	**O**	55	**N**	55	M	55	**M**	55	L	55	**L**
25	L	20	K	20	K	20	K	20	K	20	K
35	L	30	K	30	**K**	30	K	30	K	30	K
30	L	25	K	25	**K**	25	K	25	K	25	K
150	**Q**	140	**P**	140	P	140	**P**	140	N	140	**N**
120	**Q**	115	**P**	115	P	115	**P**	115	N	115	**N**
150	**R**	140	**Q**	140	Q	140	**Q**	140	P	140	**P**
130	**R**	120	**Q**	120	Q	120	**Q**	120	P	120	**P**
110	Q	100	P	100	**P**	100	P	90	O	90	O
75	O	70	N	70	**N**	70	N	70	M	70	M
120	R	115	Q	115	**Q**	115	Q	115	P	115	P
90	R	85	Q	85	**Q**	85	Q	85	P	85	P
95	Q	90	P	90	**P**	90	P	90	O	90	O
75	Q	70	P	70	**P**	70	P	70	O	70	O
70	Q	65	P	65	**P**	65	P	65	O	65	O
60	Q	55	P	55	**P**	55	P	55	O	55	O
75	O	70	N	70	**N**	70	N	70	M	70	M
70	O	65	N	65	**N**	65	N	65	M	65	M
60	N	55	M	55	M	55	M	55	L	55	L
50	N	45	M	45	M	45	M	45	L	45	L

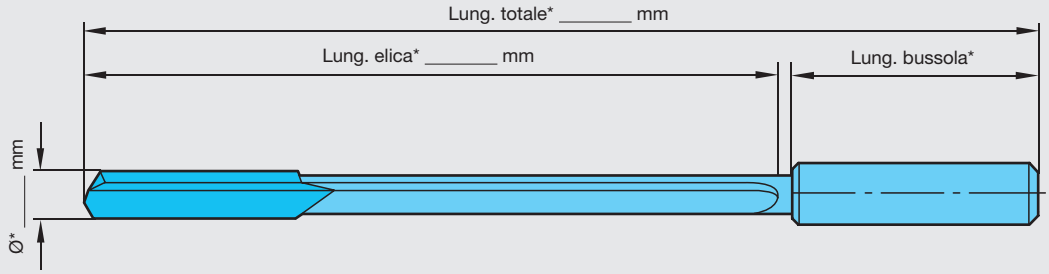
Punte a cannone ad 1 tagl. SuperT-N/SuperT-NX

Modulo soluzione speciali

Punte a cannone: ☐ **SuperT-N** ☐ **SuperT-NX**

Quantità richiesta: Utensile_____ pezzi

* Ø 2,0 - 40,0 mm
Lung. totale max. 3000 mm
Lung. totale e lung. bussola dipendono dalla bussola di serraggio scelta



Schizzo posizione di foratura

necessario solo per casi speciali

Bussola di serraggio: ☐ **nessuna** ☐ **nr. ident.:** _____ ☐ **a disegno allegato**

Rivestimento: ☐ **TiN** ☐ **TiCN** ☐ **lucide** ☐ _____

Pezzo da lavorare: **Prof. di foro:**_____ **Tolleranza del foro:** _____ **Mat./designazione:**_____
Resist. a traz./Durezza:_____

Macchina-tipo: ☐ **macc. per punte a cannone** ☐ **macchina utensile convenz.**

Lubrorefrigerante: ☐ **olio per punte a cannone** ☐ **emulsione**
Pressione _____ **bar** **Quantità** _____ **l/min**

Ditta: _____ **Timbro società:**

Telefono/Fax: _____

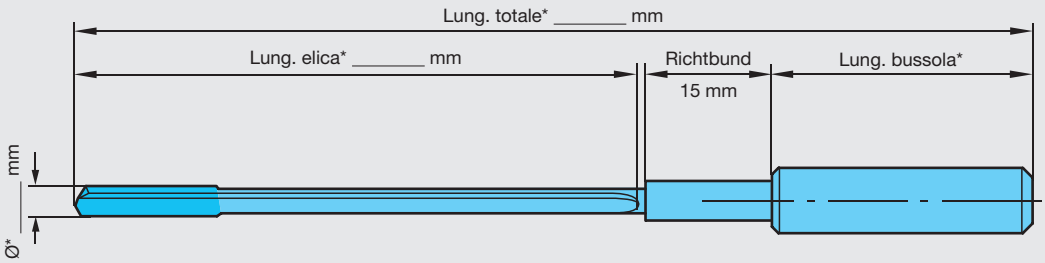
Responsabile: _____ **Firma:** _____

Punte a cannone ad 1 tagl. TBE-VHM

Modulo soluzione speciali

Punte a cannone: ☐ **TBE-VHM**  **Quantità richiesta:** **Utensile_____pezzi**

* Ø 0,9 - 12,0 mm
Lung. elica max. 500 mm
Lung. totale e lung. bussola dipendono dalla bussola di serraggio scelta



Schizzo posizione di foratura

necessario solo per casi speciali

Bussola di serraggio: ☐ **nessuna** ☐ **nr. ident.:** _____ ☐ **a disegno allegato**

Rivestimento: ☐ **TiN** ☐ **TiAlN** ☐ **AlTiN nano** ☐ **AlTiN+** ☐ **lucide** ☐ _____

Pezzo da lavorare: **Prof. di foro:**_____ **Tolleranza del foro:** _____ **Mat./designazione:** _____ _____
Resist. a traz./Durezza:_____

Macchina-tipo: ☐ **macc. per punte a cannone** ☐ **macchina utensile convenz.**

Lubrorefrigerante: ☐ **olio per punte a cannone** ☐ **emulsione**
Pressione _____ **bar** **Quantità** _____ **l/min**

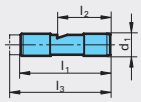
Ditta: _____ **Timbro società:**

Telefono/Fax: _____

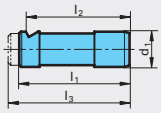
Responsabile: _____ **Firma:** _____

Accesori

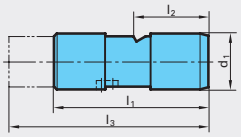
Bussole per forature profonde



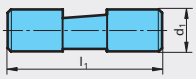
codice	d_1	l_1	l_2	l_3
1,1	10	40	24	-
1,2	10	40	24	45
1,3	10	40	24	55
1,4	16	45	31,2	-
1,5	25	70	34	-
1,6	25	70	34	78



codice	d_1	l_1	l_2	l_3
2,1	16	50	47	-
2,2	16	50	47	55
2,3	16	50	47	70

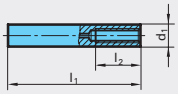


codice	d_1	l_1	l_2	l_3
3,1	25	70	34	100



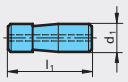
codice	d_1	l_1
4,1	19,05	70
4,2	12,70	70
4,3	25,40	70
4,4	31,75	70
4,5	38,10	70

5



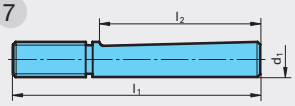
codice	d_1	l_1	l_2
5,1	10	60	20
5,2	16	80	28
5,3	25	100	50
5,4	10	100	
5,5	10	110	

6



codice	d_1	l_1
6,1	12,7	38
6,2	19,05	70
6,3	38,1	70

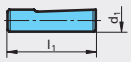
7



codice	d_1	l_1	l_2
7,1	16	112	73
7,2	20	126	82

Bussole a DIN 1835

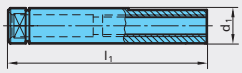
9 forma E



codice	d_1	l_1
9,1	8	36
9,2	10	40
9,3	12	45
9,4	16	48
9,5	20	50
9,6	25	56
9,7	32	60
9,8	31,75	70
9,9	38,1	70
9,10	40	70

Bussole a VDI-progetto

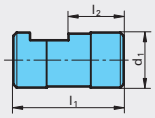
12



codice	d_1	l_1
12,1	10	68
12,2	16	90
12,3	25	112

Bussole a sitema Speed-Bit

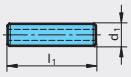
13



codice	d_1	l_1	l_2
13,1	16	40	16
13,2	25	50	25
13,3	35,6	60	

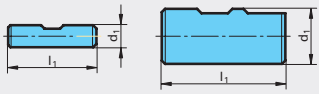
Bussole a DIN 6535

10 forma HA



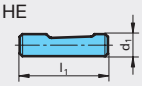
codice	d_1	l_1
10,1	8	36
10,2	10	40
10,3	12	45
10,4	16	48
10,5	20	50
10,6	25	56
10,7	32	60
10,8	25	70
10,9	40	70

8 forma HB con codice 8,6, 8,7, 8,8



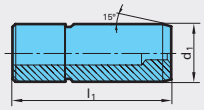
codice	d_1	l_1
8,1	8	36
8,2	10	40
8,3	12	45
8,4	16	48
8,5	20	50
8,6	25	56
8,7	32	60
8,8	40	70

11 forma HE



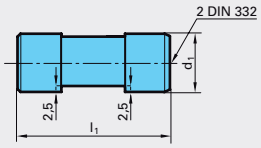
codice	d_1	l_1
11,1	8	36
11,2	10	40
11,3	12	45
11,4	16	48
11,5	20	50
11,6	25,4	70
11,7	25	56
11,8	32	60
11,9	40	70

16 sim. forma HA



code no.	d_1	l_1
16,1	10	50
16,2	16	64
16,3	20	70
16,4	25	81
16,5	32	92

17 sim. forma HE



code no.	d_1	l_1
17,1	19,05	70
17,2	25,40	70
17,3	31,75	70
17,4	38,1	70

Abbiamo a magazzeno le bussole del programma qui raffigurato, esso rappresenta però solo una scelta di bussole. Naturalmente noi produciamo anche bussole di massima precisione a disegno del cliente.

Attenzione! Per TBE-VHM sono necessarie bussole con perno di allineamento. Informazioni a richiesta

Accessori per macchine per punte a cannone

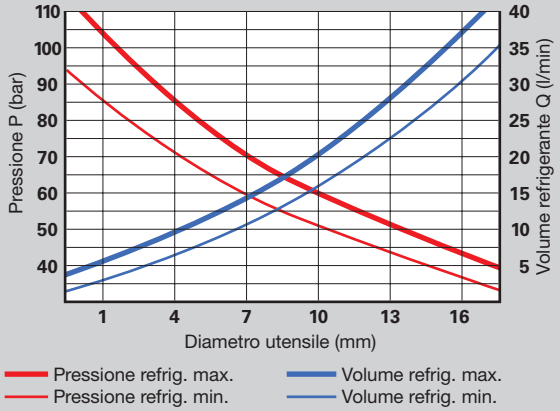
Contrariamente all'uso su macchine convenzionali, per impiego su specifiche macchine per punte a cannone occorrono determinati accessori, p.es.: bussole di guida, dischi a tenuta stagna, bussole a lunetta, ecc., che appartengono alla dotazione standard. Nella figura a lato trovate una scelta di tali prodotti.

Stock Punte a cannone

Valori per la refrigerazione

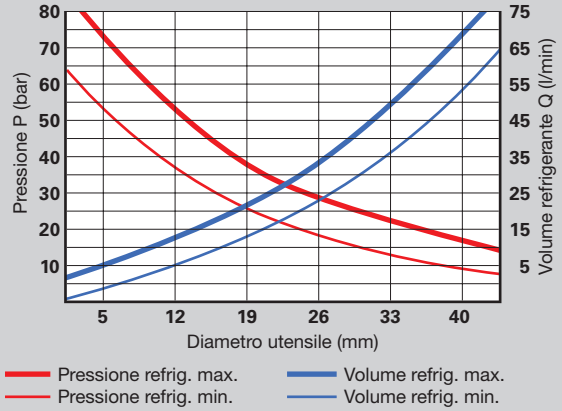
Valori refrigerante TBE-VHM/SuperT-AL

(Valori indicativi per emulsione)



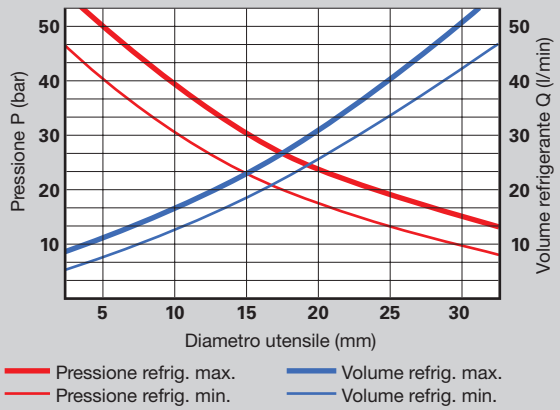
Valori refrigerante SuperT-N/-NX

(Valori indicativi per emulsione)



Valori refrigerante SuperT-GG

(Valori indicativi per emulsione)



Stock Punte a cannone

Valori per la refrigerazione

Procedimento per impiego di tutte le punte a cannone

- Produzione di un foro pilota (tolleranza H8).
- Entrare con un numero di giri di ca. 200 giri/min, avanzamento ca. 500 mm/min
- Regolazione della pressione del lubrificante e del nr. di giri
- Foratura in continuo sull'intera lunghezza, senza scaricare. Impiegando punte a cannone con un grosso rapporto lunghezza-diametro (p. es. EB 100 da lunghezza elica 160 mm), consigliamo di lavorare fino ad una profondità di foro di ca. 25 mm con parametri di taglio ridotti (ca. 75% della velocità di taglio ottimale).
- Spegnimento dell'adduzione refrigerante al raggiungimento della profondità di foro voluta
- Corsa di ritorno rapida con mandrino fermo.

I parametri di taglio possono essere ridotti se i parametri di refrigerazione sono insufficienti.

Un'altra opzione è aumentare la pressione del sistema.

Procedimento

Per produrre fori profondi con la SuperV-T con risultati ottimali, specialmente con entrata su raggi o su una struttura superficiale non livellata, consigliamo di procedere con i seguenti passi:

1. Fresare una superficie, p. es. con fresa tipo SuperF-UT-N con tagliente al centro. La superficie deve essere eseguita con angolo a destra, rispetto all'angolo di entrata del foro da produrre.
2. Eseguire un foro pilota cilindrico (tolleranza F9), con una profondità di almeno 1 x D. Consigliamo le nostre punte SuperV. Per il loro angolo di affilatura a 140° e la tolleranza sul Ø m7, queste punte sono le più indicate per tale operazione.
3. Entrare con la punta elicoidale per fori profondi nel foro pilota con un numero di giri di ca 300 giri/min ed un avanzamento di ca. 500 mm/min.
4. Regolare la pressione del refrigerante ed il numero di giri.
5. Forare in continuo sull'intera lunghezza, senza scaricare.
6. Per fori passanti con uscita a 90° ridurre la velocità di avanzamento al 50% a circa 1 mm prima dell'uscita.
7. Per fori passanti con uscita del foro obliqua, ridurre la velocità di avanzamento v_f del 40% a ca. 1 mm prima dell'uscita.
8. Al raggiungimento della profondità di foro, spegnere giri ed adduzione refrigerante; corsa di ritorno rapida con max. 5000 mm/min.

Punte SuperV

Punte SuperV senza fori di refrigerazione

Catalogo n° 61888

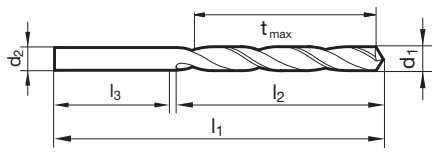
SuperV-F | 3xD | DIN 6539 | VHM | TiN | 140° | m7 | R | Cyl

P	M	K	N	S	H
○	●	○	○	●	●

Parametri di lav. ind. a pag. 26

- Assott. del nocc. ≥ Ø 3,000
- spoglia sul cono tagliente
- tagliente principale forma concava
- geometria dei taglienti ottimizzata
- sharp cutting behaviour

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
3,000	3,000	46,000	16,000	30,000
3,100	3,100	49,000	18,000	31,000
3,200	3,200	49,000	18,000	31,000
3,400	3,400	52,000	20,000	32,000
3,500	3,500	52,000	20,000	32,000
3,600	3,600	52,000	20,000	32,000
4,000	4,000	55,000	22,000	33,000
4,200	4,200	55,000	22,000	33,000
4,300	4,300	58,000	24,000	34,000
4,500	4,500	58,000	24,000	34,000
4,700	4,700	58,000	24,000	34,000
5,000	5,000	62,000	26,000	36,000
5,100	5,100	62,000	26,000	36,000
5,200	5,200	62,000	26,000	36,000
5,500	5,500	66,000	28,000	38,000
5,700	5,700	66,000	28,000	38,000
5,800	5,800	66,000	28,000	38,000
6,000	6,000	66,000	28,000	38,000
6,100	6,100	70,000	31,000	39,000
6,200	6,200	70,000	31,000	39,000
6,400	6,400	70,000	31,000	39,000
6,500	6,500	70,000	31,000	39,000
6,600	6,600	70,000	31,000	39,000
6,700	6,700	70,000	31,000	39,000

d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
6,800	6,800	74,000	34,000	40,000
7,000	7,000	74,000	34,000	40,000
7,200	7,200	74,000	34,000	40,000
7,300	7,300	74,000	34,000	40,000
7,500	7,500	74,000	34,000	40,000
7,700	7,700	79,000	37,000	42,000
7,800	7,800	79,000	37,000	42,000
8,000	8,000	79,000	37,000	42,000
8,400	8,400	79,000	37,000	42,000
8,500	8,500	79,000	37,000	42,000
8,700	8,700	84,000	40,000	44,000
8,900	8,900	84,000	40,000	44,000
9,000	9,000	84,000	40,000	44,000
9,100	9,100	84,000	40,000	44,000
9,200	9,200	84,000	40,000	44,000
9,300	9,300	84,000	40,000	44,000
9,400	9,400	84,000	40,000	44,000
9,500	9,500	84,000	40,000	44,000
9,700	9,700	89,000	43,000	46,000
10,000	10,000	89,000	43,000	46,000
10,100	10,100	89,000	43,000	46,000
10,200	10,200	89,000	43,000	46,000
12,000	12,000	102,000	51,000	51,000

Punte SuperV

Punte SuperV senza fori di refrigerazione

Catalogo n° 51873

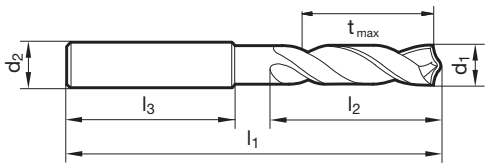
SuperV-U | 3xD | DIN 6537 K | VHM | TiAlN-nano | 140° | m7 | R | HA

P	M	K	N	S	H
●		●	○	○	○

Parametri di lav. ind. a pag. 26

- Assott. del nocc. ≥ Ø 3,000
- affilatura su piani
- forma del tagliente principale diritta
- geometria dei taglienti ottimizzata

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
3,000	6,000	62,000	20,000	36,000
3,100	6,000	62,000	20,000	36,000
3,200	6,000	62,000	20,000	36,000
3,300	6,000	62,000	20,000	36,000
3,400	6,000	62,000	20,000	36,000
3,500	6,000	62,000	20,000	36,000
3,600	6,000	62,000	20,000	36,000
3,700	6,000	62,000	20,000	36,000
3,800	6,000	66,000	24,000	36,000
3,900	6,000	66,000	24,000	36,000
4,000	6,000	66,000	24,000	36,000
4,100	6,000	66,000	24,000	36,000
4,200	6,000	66,000	24,000	36,000
4,300	6,000	66,000	24,000	36,000
4,400	6,000	66,000	24,000	36,000
4,500	6,000	66,000	24,000	36,000
4,600	6,000	66,000	24,000	36,000
4,650	6,000	66,000	24,000	36,000
4,700	6,000	66,000	24,000	36,000
4,800	6,000	66,000	28,000	36,000
4,900	6,000	66,000	28,000	36,000
5,000	6,000	66,000	28,000	36,000
5,100	6,000	66,000	28,000	36,000
5,200	6,000	66,000	28,000	36,000
5,300	6,000	66,000	28,000	36,000
5,400	6,000	66,000	28,000	36,000
5,500	6,000	66,000	28,000	36,000
5,550	6,000	66,000	28,000	36,000
5,600	6,000	66,000	28,000	36,000
5,700	6,000	66,000	28,000	36,000
5,800	6,000	66,000	28,000	36,000
5,900	6,000	66,000	28,000	36,000
6,000	6,000	66,000	28,000	36,000
6,100	8,000	79,000	34,000	36,000
6,200	8,000	79,000	34,000	36,000
6,300	8,000	79,000	34,000	36,000
6,400	8,000	79,000	34,000	36,000
6,500	8,000	79,000	34,000	36,000
6,600	8,000	79,000	34,000	36,000
6,700	8,000	79,000	34,000	36,000
6,800	8,000	79,000	34,000	36,000
6,900	8,000	79,000	34,000	36,000
7,000	8,000	79,000	34,000	36,000
7,100	8,000	79,000	41,000	36,000
7,200	8,000	79,000	41,000	36,000
7,300	8,000	79,000	41,000	36,000
7,400	8,000	79,000	41,000	36,000
7,500	8,000	79,000	41,000	36,000

d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
7,600	8,000	79,000	41,000	36,000
7,700	8,000	79,000	41,000	36,000
7,800	8,000	79,000	41,000	36,000
7,900	8,000	79,000	41,000	36,000
8,000	8,000	79,000	41,000	36,000
8,100	10,000	89,000	47,000	40,000
8,200	10,000	89,000	47,000	40,000
8,300	10,000	89,000	47,000	40,000
8,400	10,000	89,000	47,000	40,000
8,500	10,000	89,000	47,000	40,000
8,600	10,000	89,000	47,000	40,000
8,700	10,000	89,000	47,000	40,000
8,800	10,000	89,000	47,000	40,000
8,900	10,000	89,000	47,000	40,000
9,000	10,000	89,000	47,000	40,000
9,100	10,000	89,000	47,000	40,000
9,200	10,000	89,000	47,000	40,000
9,250	10,000	89,000	47,000	40,000
9,300	10,000	89,000	47,000	40,000
9,400	10,000	89,000	47,000	40,000
9,500	10,000	89,000	47,000	40,000
9,600	10,000	89,000	47,000	40,000
9,700	10,000	89,000	47,000	40,000
9,800	10,000	89,000	47,000	40,000
9,900	10,000	89,000	47,000	40,000
10,000	10,000	89,000	47,000	40,000
10,100	12,000	102,000	55,000	45,000
10,200	12,000	102,000	55,000	45,000
10,300	12,000	102,000	55,000	45,000
10,400	12,000	102,000	55,000	45,000
10,500	12,000	102,000	55,000	45,000
10,600	12,000	102,000	55,000	45,000
10,700	12,000	102,000	55,000	45,000
10,800	12,000	102,000	55,000	45,000
10,900	12,000	102,000	55,000	45,000
11,000	12,000	102,000	55,000	45,000
11,100	12,000	102,000	55,000	45,000
11,200	12,000	102,000	55,000	45,000
11,300	12,000	102,000	55,000	45,000
11,400	12,000	102,000	55,000	45,000
11,500	12,000	102,000	55,000	45,000
11,600	12,000	102,000	55,000	45,000
11,700	12,000	102,000	55,000	45,000
11,800	12,000	102,000	55,000	45,000
11,900	12,000	102,000	55,000	45,000
12,000	12,000	102,000	55,000	45,000
12,200	14,000	107,000	60,000	45,000
12,500	14,000	107,000	60,000	45,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
12,700	14,000	107,000	60,000	45,000
13,000	14,000	107,000	60,000	45,000
13,500	14,000	107,000	60,000	45,000
13,700	14,000	107,000	60,000	45,000
14,000	14,000	107,000	60,000	45,000
14,200	16,000	115,000	65,000	48,000
14,500	16,000	115,000	65,000	48,000
14,700	16,000	115,000	65,000	48,000
15,000	16,000	115,000	65,000	48,000
15,200	16,000	115,000	65,000	48,000
15,500	16,000	115,000	65,000	48,000
15,700	16,000	115,000	65,000	48,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
16,000	16,000	115,000	65,000	48,000
16,500	18,000	123,000	73,000	48,000
17,000	18,000	123,000	73,000	48,000
17,500	18,000	123,000	73,000	48,000
18,000	18,000	123,000	73,000	48,000
18,500	20,000	131,000	79,000	50,000
19,000	20,000	131,000	79,000	50,000
19,500	20,000	131,000	79,000	50,000
20,000	20,000	131,000	79,000	50,000

Punte SuperV

Punte SuperV senza fori di refrigerazione

Catalogo n° 51871

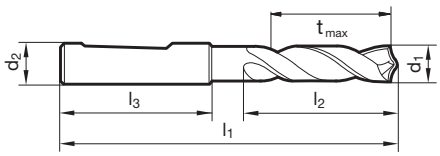
SuperV-U | 3xD | DIN 6537 K | VHM | TiAlN-nano | 140° | m7 | R | HE

P	M	K	N	S	H
●		●	○	○	○

Parametri di lav. ind. a pag. 26

- Assott. del nocc. ≥ Ø 3,000
- affilatura su piani
- forma del tagliente principale diritta
- geometria dei taglienti ottimizzata

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
3,000	6,000	62,000	20,000	36,000
3,100	6,000	62,000	20,000	36,000
3,170	6,000	62,000	20,000	36,000
3,200	6,000	62,000	20,000	36,000
3,300	6,000	62,000	20,000	36,000
3,400	6,000	62,000	20,000	36,000
3,500	6,000	62,000	20,000	36,000
3,570	6,000	62,000	20,000	36,000
3,600	6,000	62,000	20,000	36,000
3,700	6,000	62,000	20,000	36,000
3,800	6,000	66,000	24,000	36,000
3,900	6,000	66,000	24,000	36,000
3,970	6,000	66,000	24,000	36,000
4,000	6,000	66,000	24,000	36,000
4,100	6,000	66,000	24,000	36,000
4,200	6,000	66,000	24,000	36,000
4,300	6,000	66,000	24,000	36,000
4,370	6,000	66,000	24,000	36,000
4,400	6,000	66,000	24,000	36,000
4,500	6,000	66,000	24,000	36,000
4,600	6,000	66,000	24,000	36,000
4,700	6,000	66,000	24,000	36,000
4,760	6,000	66,000	28,000	36,000
4,800	6,000	66,000	28,000	36,000
4,900	6,000	66,000	28,000	36,000
5,000	6,000	66,000	28,000	36,000
5,100	6,000	66,000	28,000	36,000
5,160	6,000	66,000	28,000	36,000
5,200	6,000	66,000	28,000	36,000
5,300	6,000	66,000	28,000	36,000
5,400	6,000	66,000	28,000	36,000
5,500	6,000	66,000	28,000	36,000
5,550	6,000	66,000	28,000	36,000
5,560	6,000	66,000	28,000	36,000
5,600	6,000	66,000	28,000	36,000
5,700	6,000	66,000	28,000	36,000
5,800	6,000	66,000	28,000	36,000
5,900	6,000	66,000	28,000	36,000
5,950	6,000	66,000	28,000	36,000
6,000	6,000	66,000	28,000	36,000
6,100	8,000	79,000	34,000	36,000
6,200	8,000	79,000	34,000	36,000
6,300	8,000	79,000	34,000	36,000
6,350	8,000	79,000	34,000	36,000
6,400	8,000	79,000	34,000	36,000
6,500	8,000	79,000	34,000	36,000
6,600	8,000	79,000	34,000	36,000
6,700	8,000	79,000	34,000	36,000

d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
6,750	8,000	79,000	34,000	36,000
6,800	8,000	79,000	34,000	36,000
6,900	8,000	79,000	34,000	36,000
7,000	8,000	79,000	34,000	36,000
7,100	8,000	79,000	41,000	36,000
7,140	8,000	79,000	41,000	36,000
7,200	8,000	79,000	41,000	36,000
7,300	8,000	79,000	41,000	36,000
7,400	8,000	79,000	41,000	36,000
7,500	8,000	79,000	41,000	36,000
7,540	8,000	79,000	41,000	36,000
7,600	8,000	79,000	41,000	36,000
7,700	8,000	79,000	41,000	36,000
7,800	8,000	79,000	41,000	36,000
7,900	8,000	79,000	41,000	36,000
7,940	8,000	79,000	41,000	36,000
8,000	8,000	79,000	41,000	36,000
8,100	10,000	89,000	47,000	40,000
8,200	10,000	89,000	47,000	40,000
8,300	10,000	89,000	47,000	40,000
8,330	10,000	89,000	47,000	40,000
8,400	10,000	89,000	47,000	40,000
8,500	10,000	89,000	47,000	40,000
8,600	10,000	89,000	47,000	40,000
8,700	10,000	89,000	47,000	40,000
8,730	10,000	89,000	47,000	40,000
8,800	10,000	89,000	47,000	40,000
8,900	10,000	89,000	47,000	40,000
9,000	10,000	89,000	47,000	40,000
9,100	10,000	89,000	47,000	40,000
9,130	10,000	89,000	47,000	40,000
9,200	10,000	89,000	47,000	40,000
9,250	10,000	89,000	47,000	40,000
9,300	10,000	89,000	47,000	40,000
9,400	10,000	89,000	47,000	40,000
9,500	10,000	89,000	47,000	40,000
9,520	10,000	89,000	47,000	40,000
9,600	10,000	89,000	47,000	40,000
9,700	10,000	89,000	47,000	40,000
9,800	10,000	89,000	47,000	40,000
9,900	10,000	89,000	47,000	40,000
9,920	10,000	89,000	47,000	40,000
10,000	10,000	89,000	47,000	40,000
10,100	12,000	102,000	55,000	45,000
10,200	12,000	102,000	55,000	45,000
10,300	12,000	102,000	55,000	45,000
10,400	12,000	102,000	55,000	45,000
10,500	12,000	102,000	55,000	45,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
10,600	12,000	102,000	55,000	45,000
10,700	12,000	102,000	55,000	45,000
10,800	12,000	102,000	55,000	45,000
10,900	12,000	102,000	55,000	45,000
11,000	12,000	102,000	55,000	45,000
11,100	12,000	102,000	55,000	45,000
11,200	12,000	102,000	55,000	45,000
11,300	12,000	102,000	55,000	45,000
11,400	12,000	102,000	55,000	45,000
11,500	12,000	102,000	55,000	45,000
11,600	12,000	102,000	55,000	45,000
11,700	12,000	102,000	55,000	45,000
11,800	12,000	102,000	55,000	45,000
11,900	12,000	102,000	55,000	45,000
12,000	12,000	102,000	55,000	45,000
12,100	14,000	107,000	60,000	45,000
12,200	14,000	107,000	60,000	45,000
12,300	14,000	107,000	60,000	45,000
12,400	14,000	107,000	60,000	45,000
12,500	14,000	107,000	60,000	45,000
12,600	14,000	107,000	60,000	45,000
12,700	14,000	107,000	60,000	45,000
13,000	14,000	107,000	60,000	45,000
13,200	14,000	107,000	60,000	45,000
13,300	14,000	107,000	60,000	45,000
13,500	14,000	107,000	60,000	45,000
13,700	14,000	107,000	60,000	45,000
13,800	14,000	107,000	60,000	45,000
14,000	14,000	107,000	60,000	45,000
14,100	16,000	115,000	65,000	48,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
14,200	16,000	115,000	65,000	48,000
14,300	16,000	115,000	65,000	48,000
14,400	16,000	115,000	65,000	48,000
14,500	16,000	115,000	65,000	48,000
14,700	16,000	115,000	65,000	48,000
15,000	16,000	115,000	65,000	48,000
15,200	16,000	115,000	65,000	48,000
15,500	16,000	115,000	65,000	48,000
15,600	16,000	115,000	65,000	48,000
15,700	16,000	115,000	65,000	48,000
15,800	16,000	115,000	65,000	48,000
16,000	16,000	115,000	65,000	48,000
16,100	18,000	123,000	73,000	48,000
16,200	18,000	123,000	73,000	48,000
16,300	18,000	123,000	73,000	48,000
16,500	18,000	123,000	73,000	48,000
17,000	18,000	123,000	73,000	48,000
17,500	18,000	123,000	73,000	48,000
18,000	18,000	123,000	73,000	48,000
18,300	20,000	131,000	79,000	50,000
18,500	20,000	131,000	79,000	50,000
19,000	20,000	131,000	79,000	50,000
19,500	20,000	131,000	79,000	50,000
20,000	20,000	131,000	79,000	50,000

Punte SuperV

Punte SuperV senza fori di refrigerazione

Catalogo n° 51787

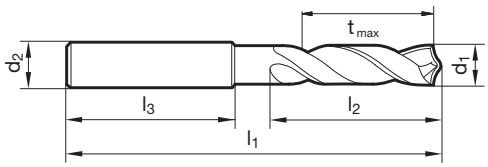
SuperV-U | 5xD | DIN 6537 L | VHM | TiAlN-nano | 140° | m7 | R | HA

P	M	K	N	S	H
●		●	○	○	○

Parametri di lav. ind. a pag. 28

- Assott. del nocc. ≥ Ø 3,000
- affilatura su piani
- forma del tagliente principale diritta
- geometria dei taglienti ottimizzata

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
3,000	6,000	66,000	28,000	36,000
3,100	6,000	66,000	28,000	36,000
3,200	6,000	66,000	28,000	36,000
3,300	6,000	66,000	28,000	36,000
3,400	6,000	66,000	28,000	36,000
3,500	6,000	66,000	28,000	36,000
3,600	6,000	66,000	28,000	36,000
3,700	6,000	66,000	28,000	36,000
3,800	6,000	74,000	36,000	36,000
3,900	6,000	74,000	36,000	36,000
4,000	6,000	74,000	36,000	36,000
4,100	6,000	74,000	36,000	36,000
4,200	6,000	74,000	36,000	36,000
4,300	6,000	74,000	36,000	36,000
4,400	6,000	74,000	36,000	36,000
4,500	6,000	74,000	36,000	36,000
4,600	6,000	74,000	36,000	36,000
4,700	6,000	74,000	36,000	36,000
4,760	6,000	82,000	44,000	36,000
4,800	6,000	82,000	44,000	36,000
4,900	6,000	82,000	44,000	36,000
5,000	6,000	82,000	44,000	36,000
5,100	6,000	82,000	44,000	36,000
5,200	6,000	82,000	44,000	36,000
5,300	6,000	82,000	44,000	36,000
5,400	6,000	82,000	44,000	36,000
5,500	6,000	82,000	44,000	36,000
5,600	6,000	82,000	44,000	36,000
5,700	6,000	82,000	44,000	36,000
5,800	6,000	82,000	44,000	36,000
5,900	6,000	82,000	44,000	36,000
6,000	6,000	82,000	44,000	36,000
6,100	8,000	91,000	53,000	36,000
6,200	8,000	91,000	53,000	36,000
6,300	8,000	91,000	53,000	36,000
6,350	8,000	91,000	53,000	36,000
6,400	8,000	91,000	53,000	36,000
6,500	8,000	91,000	53,000	36,000
6,600	8,000	91,000	53,000	36,000
6,700	8,000	91,000	53,000	36,000
6,800	8,000	91,000	53,000	36,000
6,900	8,000	91,000	53,000	36,000
7,000	8,000	91,000	53,000	36,000
7,100	8,000	91,000	53,000	36,000
7,200	8,000	91,000	53,000	36,000
7,300	8,000	91,000	53,000	36,000
7,400	8,000	91,000	53,000	36,000
7,500	8,000	91,000	53,000	36,000

d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
7,600	8,000	91,000	53,000	36,000
7,700	8,000	91,000	53,000	36,000
7,800	8,000	91,000	53,000	36,000
7,900	8,000	91,000	53,000	36,000
8,000	8,000	91,000	53,000	36,000
8,100	10,000	103,000	61,000	40,000
8,200	10,000	103,000	61,000	40,000
8,300	10,000	103,000	61,000	40,000
8,330	10,000	103,000	61,000	40,000
8,400	10,000	103,000	61,000	40,000
8,500	10,000	103,000	61,000	40,000
8,600	10,000	103,000	61,000	40,000
8,700	10,000	103,000	61,000	40,000
8,800	10,000	103,000	61,000	40,000
8,900	10,000	103,000	61,000	40,000
9,000	10,000	103,000	61,000	40,000
9,100	10,000	103,000	61,000	40,000
9,200	10,000	103,000	61,000	40,000
9,300	10,000	103,000	61,000	40,000
9,400	10,000	103,000	61,000	40,000
9,500	10,000	103,000	61,000	40,000
9,600	10,000	103,000	61,000	40,000
9,700	10,000	103,000	61,000	40,000
9,800	10,000	103,000	61,000	40,000
9,900	10,000	103,000	61,000	40,000
10,000	10,000	103,000	61,000	40,000
10,100	12,000	118,000	71,000	45,000
10,200	12,000	118,000	71,000	45,000
10,300	12,000	118,000	71,000	45,000
10,400	12,000	118,000	71,000	45,000
10,500	12,000	118,000	71,000	45,000
10,600	12,000	118,000	71,000	45,000
10,700	12,000	118,000	71,000	45,000
10,800	12,000	118,000	71,000	45,000
10,900	12,000	118,000	71,000	45,000
11,000	12,000	118,000	71,000	45,000
11,100	12,000	118,000	71,000	45,000
11,200	12,000	118,000	71,000	45,000
11,300	12,000	118,000	71,000	45,000
11,400	12,000	118,000	71,000	45,000
11,500	12,000	118,000	71,000	45,000
11,600	12,000	118,000	71,000	45,000
11,700	12,000	118,000	71,000	45,000
11,800	12,000	118,000	71,000	45,000
11,900	12,000	118,000	71,000	45,000
12,000	12,000	118,000	71,000	45,000
12,200	14,000	124,000	77,000	45,000
12,500	14,000	124,000	77,000	45,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
12,700	14,000	124,000	77,000	45,000
13,000	14,000	124,000	77,000	45,000
13,500	14,000	124,000	77,000	45,000
13,700	14,000	124,000	77,000	45,000
14,000	14,000	124,000	77,000	45,000
14,200	16,000	133,000	83,000	48,000
14,500	16,000	133,000	83,000	48,000
14,700	16,000	133,000	83,000	48,000
15,000	16,000	133,000	83,000	48,000
15,200	16,000	133,000	83,000	48,000
15,500	16,000	133,000	83,000	48,000
15,700	16,000	133,000	83,000	48,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
16,000	16,000	133,000	83,000	48,000
16,500	18,000	143,000	93,000	48,000
17,000	18,000	143,000	93,000	48,000
17,500	18,000	143,000	93,000	48,000
18,000	18,000	143,000	93,000	48,000
18,500	20,000	153,000	101,000	50,000
19,000	20,000	153,000	101,000	50,000
19,500	20,000	153,000	101,000	50,000
20,000	20,000	153,000	101,000	50,000

Punte SuperV

Punte SuperV senza fori di refrigerazione

Catalogo n° 51887

SuperV-U | 5xD | DIN 6537 L | VHM | TiAlN-nano | 140° | m7 | R | HE

P	M	K	N	S	H
●		●	○	○	○

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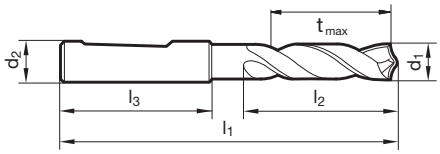
- Assott. del nocc. ≥ Ø 3,000
- affilatura su piani
- forma del tagliente principale diritta
- geometria dei taglienti ottimizzata

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
3,000	6,000	66,000	28,000	36,000
3,100	6,000	66,000	28,000	36,000
3,170	6,000	66,000	28,000	36,000
3,200	6,000	66,000	28,000	36,000
3,300	6,000	66,000	28,000	36,000
3,400	6,000	66,000	28,000	36,000
3,500	6,000	66,000	28,000	36,000
3,570	6,000	66,000	28,000	36,000
3,600	6,000	66,000	28,000	36,000
3,700	6,000	66,000	28,000	36,000
3,800	6,000	74,000	36,000	36,000
3,900	6,000	74,000	36,000	36,000
3,970	6,000	74,000	36,000	36,000
4,000	6,000	74,000	36,000	36,000
4,100	6,000	74,000	36,000	36,000
4,200	6,000	74,000	36,000	36,000
4,300	6,000	74,000	36,000	36,000
4,370	6,000	74,000	36,000	36,000
4,400	6,000	74,000	36,000	36,000
4,500	6,000	74,000	36,000	36,000
4,600	6,000	74,000	36,000	36,000
4,700	6,000	74,000	36,000	36,000
4,760	6,000	82,000	44,000	36,000
4,800	6,000	82,000	44,000	36,000
4,900	6,000	82,000	44,000	36,000
5,000	6,000	82,000	44,000	36,000
5,100	6,000	82,000	44,000	36,000
5,160	6,000	82,000	44,000	36,000
5,200	6,000	82,000	44,000	36,000
5,300	6,000	82,000	44,000	36,000
5,400	6,000	82,000	44,000	36,000
5,500	6,000	82,000	44,000	36,000
5,560	6,000	82,000	44,000	36,000
5,600	6,000	82,000	44,000	36,000
5,700	6,000	82,000	44,000	36,000
5,800	6,000	82,000	44,000	36,000
5,900	6,000	82,000	44,000	36,000
5,950	6,000	82,000	44,000	36,000
6,000	6,000	82,000	44,000	36,000
6,100	8,000	91,000	53,000	36,000
6,200	8,000	91,000	53,000	36,000
6,300	8,000	91,000	53,000	36,000
6,350	8,000	91,000	53,000	36,000
6,400	8,000	91,000	53,000	36,000
6,500	8,000	91,000	53,000	36,000
6,600	8,000	91,000	53,000	36,000
6,700	8,000	91,000	53,000	36,000
6,750	8,000	91,000	53,000	36,000

d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
6,800	8,000	91,000	53,000	36,000
6,900	8,000	91,000	53,000	36,000
7,000	8,000	91,000	53,000	36,000
7,100	8,000	91,000	53,000	36,000
7,140	8,000	91,000	53,000	36,000
7,200	8,000	91,000	53,000	36,000
7,300	8,000	91,000	53,000	36,000
7,400	8,000	91,000	53,000	36,000
7,500	8,000	91,000	53,000	36,000
7,540	8,000	91,000	53,000	36,000
7,600	8,000	91,000	53,000	36,000
7,700	8,000	91,000	53,000	36,000
7,800	8,000	91,000	53,000	36,000
7,900	8,000	91,000	53,000	36,000
7,940	8,000	91,000	53,000	36,000
8,000	8,000	91,000	53,000	36,000
8,100	10,000	103,000	61,000	40,000
8,200	10,000	103,000	61,000	40,000
8,300	10,000	103,000	61,000	40,000
8,330	10,000	103,000	61,000	40,000
8,400	10,000	103,000	61,000	40,000
8,500	10,000	103,000	61,000	40,000
8,600	10,000	103,000	61,000	40,000
8,700	10,000	103,000	61,000	40,000
8,730	10,000	103,000	61,000	40,000
8,800	10,000	103,000	61,000	40,000
8,900	10,000	103,000	61,000	40,000
9,000	10,000	103,000	61,000	40,000
9,100	10,000	103,000	61,000	40,000
9,130	10,000	103,000	61,000	40,000
9,200	10,000	103,000	61,000	40,000
9,300	10,000	103,000	61,000	40,000
9,400	10,000	103,000	61,000	40,000
9,500	10,000	103,000	61,000	40,000
9,520	10,000	103,000	61,000	40,000
9,600	10,000	103,000	61,000	40,000
9,700	10,000	103,000	61,000	40,000
9,800	10,000	103,000	61,000	40,000
9,900	10,000	103,000	61,000	40,000
9,920	10,000	103,000	61,000	40,000
10,000	10,000	103,000	61,000	40,000
10,100	12,000	118,000	71,000	45,000
10,200	12,000	118,000	71,000	45,000
10,300	12,000	118,000	71,000	45,000
10,400	12,000	118,000	71,000	45,000
10,500	12,000	118,000	71,000	45,000
10,600	12,000	118,000	71,000	45,000
10,700	12,000	118,000	71,000	45,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
10,800	12,000	118,000	71,000	45,000
10,900	12,000	118,000	71,000	45,000
11,000	12,000	118,000	71,000	45,000
11,100	12,000	118,000	71,000	45,000
11,200	12,000	118,000	71,000	45,000
11,300	12,000	118,000	71,000	45,000
11,400	12,000	118,000	71,000	45,000
11,500	12,000	118,000	71,000	45,000
11,600	12,000	118,000	71,000	45,000
11,700	12,000	118,000	71,000	45,000
11,800	12,000	118,000	71,000	45,000
11,900	12,000	118,000	71,000	45,000
12,000	12,000	118,000	71,000	45,000
12,100	14,000	124,000	77,000	45,000
12,200	14,000	124,000	77,000	45,000
12,500	14,000	124,000	77,000	45,000
12,700	14,000	124,000	77,000	45,000
13,000	14,000	124,000	77,000	45,000
13,500	14,000	124,000	77,000	45,000
13,700	14,000	124,000	77,000	45,000
14,000	14,000	124,000	77,000	45,000
14,100	16,000	133,000	83,000	48,000
14,200	16,000	133,000	83,000	48,000
14,500	16,000	133,000	83,000	48,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
14,700	16,000	133,000	83,000	48,000
15,000	16,000	133,000	83,000	48,000
15,200	16,000	133,000	83,000	48,000
15,500	16,000	133,000	83,000	48,000
15,700	16,000	133,000	83,000	48,000
16,000	16,000	133,000	83,000	48,000
16,500	18,000	143,000	93,000	48,000
17,000	18,000	143,000	93,000	48,000
17,500	18,000	143,000	93,000	48,000
18,000	18,000	143,000	93,000	48,000
18,500	20,000	153,000	101,000	50,000
19,000	20,000	153,000	101,000	50,000
19,500	20,000	153,000	101,000	50,000
20,000	20,000	153,000	101,000	50,000

Punte SuperV

Punte con refrigerazione interna SuperV

Catalogo n° 51776

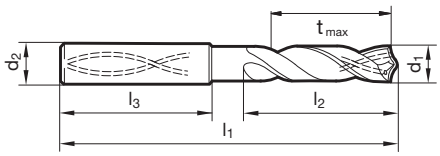
SuperV-IK-U | 3xD | DIN 6537 K | VHM | TiAlN-nano | 140° | m7 | R | HA

P	M	K	N	S	H
●	○	●	○	○	○

Parametri di lav. ind. a pag. 26

- Assott. del nocc. ≥ Ø 3,000
- affilatura su piani
- forma del tagliente principale diritta
- geometria dei taglienti ottimizzata

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	62,000	20,000	36,000
3,100		6,000	62,000	20,000	36,000
3,200		6,000	62,000	20,000	36,000
3,300		6,000	62,000	20,000	36,000
3,400		6,000	62,000	20,000	36,000
3,500		6,000	62,000	20,000	36,000
3,600		6,000	62,000	20,000	36,000
3,700		6,000	62,000	20,000	36,000
3,800		6,000	66,000	24,000	36,000
3,900		6,000	66,000	24,000	36,000
4,000		6,000	66,000	24,000	36,000
4,100		6,000	66,000	24,000	36,000
4,200		6,000	66,000	24,000	36,000
4,300		6,000	66,000	24,000	36,000
4,400		6,000	66,000	24,000	36,000
4,500		6,000	66,000	24,000	36,000
4,600		6,000	66,000	24,000	36,000
4,650		6,000	66,000	24,000	36,000
4,700		6,000	66,000	24,000	36,000
4,800		6,000	66,000	28,000	36,000
4,900		6,000	66,000	28,000	36,000
5,000		6,000	66,000	28,000	36,000
5,100		6,000	66,000	28,000	36,000
5,200		6,000	66,000	28,000	36,000
5,300		6,000	66,000	28,000	36,000
5,400		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,550		6,000	66,000	28,000	36,000
5,600		6,000	66,000	28,000	36,000
5,700		6,000	66,000	28,000	36,000
5,800		6,000	66,000	28,000	36,000
5,900		6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000
6,100		8,000	79,000	34,000	36,000
6,200		8,000	79,000	34,000	36,000
6,300		8,000	79,000	34,000	36,000
6,350	1/4	8,000	79,000	34,000	36,000
6,400		8,000	79,000	34,000	36,000
6,500		8,000	79,000	34,000	36,000
6,600		8,000	79,000	34,000	36,000
6,700		8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
6,900		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
7,100		8,000	79,000	41,000	36,000
7,200		8,000	79,000	41,000	36,000
7,300		8,000	79,000	41,000	36,000
7,400		8,000	79,000	41,000	36,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
7,500		8,000	79,000	41,000	36,000
7,600		8,000	79,000	41,000	36,000
7,700		8,000	79,000	41,000	36,000
7,800		8,000	79,000	41,000	36,000
7,900		8,000	79,000	41,000	36,000
8,000		8,000	79,000	41,000	36,000
8,100		10,000	89,000	47,000	40,000
8,200		10,000	89,000	47,000	40,000
8,300		10,000	89,000	47,000	40,000
8,400		10,000	89,000	47,000	40,000
8,500		10,000	89,000	47,000	40,000
8,600		10,000	89,000	47,000	40,000
8,700		10,000	89,000	47,000	40,000
8,800		10,000	89,000	47,000	40,000
8,900		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,100		10,000	89,000	47,000	40,000
9,200		10,000	89,000	47,000	40,000
9,250		10,000	89,000	47,000	40,000
9,300		10,000	89,000	47,000	40,000
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,200		14,000	107,000	60,000	45,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,700		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,500		18,000	123,000	73,000	48,000
16,700		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
18,700		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
19,700		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000

Punte SuperV

Punte con refrigerazione interna SuperV

Catalogo n° 51876

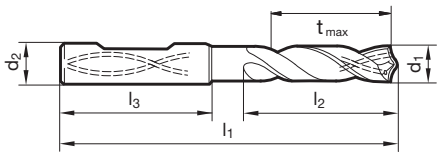
SuperV-IK-U | 3xD | DIN 6537 K | VHM | TiAlN-nano | 140° | m7 | R | HE

P	M	K	N	S	H
●	○	●	○	○	○

Parametri di lav. ind. a pag. 26

- Assott. del nocc. ≥ Ø 3,000
- affilatura su piani
- forma del tagliente principale diritta
- geometria dei taglienti ottimizzata

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	62,000	20,000	36,000
3,100		6,000	62,000	20,000	36,000
3,200		6,000	62,000	20,000	36,000
3,300		6,000	62,000	20,000	36,000
3,400		6,000	62,000	20,000	36,000
3,500		6,000	62,000	20,000	36,000
3,600		6,000	62,000	20,000	36,000
3,700		6,000	62,000	20,000	36,000
3,800		6,000	66,000	24,000	36,000
3,900		6,000	66,000	24,000	36,000
4,000		6,000	66,000	24,000	36,000
4,100		6,000	66,000	24,000	36,000
4,200		6,000	66,000	24,000	36,000
4,300		6,000	66,000	24,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000
4,400		6,000	66,000	24,000	36,000
4,500		6,000	66,000	24,000	36,000
4,600		6,000	66,000	24,000	36,000
4,700		6,000	66,000	24,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000
4,800		6,000	66,000	28,000	36,000
4,900		6,000	66,000	28,000	36,000
5,000		6,000	66,000	28,000	36,000
5,100		6,000	66,000	28,000	36,000
5,160	13/64	6,000	66,000	28,000	36,000
5,200		6,000	66,000	28,000	36,000
5,300		6,000	66,000	28,000	36,000
5,400		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,560	7/32	6,000	66,000	28,000	36,000
5,600		6,000	66,000	28,000	36,000
5,700		6,000	66,000	28,000	36,000
5,800		6,000	66,000	28,000	36,000
5,900		6,000	66,000	28,000	36,000
5,950	15/64	6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000
6,100		8,000	79,000	34,000	36,000
6,200		8,000	79,000	34,000	36,000
6,300		8,000	79,000	34,000	36,000
6,350	1/4	8,000	79,000	34,000	36,000
6,400		8,000	79,000	34,000	36,000
6,500		8,000	79,000	34,000	36,000
6,600		8,000	79,000	34,000	36,000
6,700		8,000	79,000	34,000	36,000
6,750	17/64	8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
6,900		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
7,100		8,000	79,000	41,000	36,000
7,140	9/32	8,000	79,000	41,000	36,000
7,200		8,000	79,000	41,000	36,000
7,300		8,000	79,000	41,000	36,000
7,400		8,000	79,000	41,000	36,000
7,500		8,000	79,000	41,000	36,000
7,540	19/64	8,000	79,000	41,000	36,000
7,600		8,000	79,000	41,000	36,000
7,700		8,000	79,000	41,000	36,000
7,800		8,000	79,000	41,000	36,000
7,900		8,000	79,000	41,000	36,000
7,940	5/16	8,000	79,000	41,000	36,000
8,000		8,000	79,000	41,000	36,000
8,100		10,000	89,000	47,000	40,000
8,200		10,000	89,000	47,000	40,000
8,300		10,000	89,000	47,000	40,000
8,330	21/64	10,000	89,000	47,000	40,000
8,400		10,000	89,000	47,000	40,000
8,500		10,000	89,000	47,000	40,000
8,600		10,000	89,000	47,000	40,000
8,700		10,000	89,000	47,000	40,000
8,730	11/32	10,000	89,000	47,000	40,000
8,800		10,000	89,000	47,000	40,000
8,900		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,100		10,000	89,000	47,000	40,000
9,130	23/64	10,000	89,000	47,000	40,000
9,200		10,000	89,000	47,000	40,000
9,300		10,000	89,000	47,000	40,000
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,520	3/8	10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
9,920	25/64	10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,100		14,000	107,000	60,000	45,000
12,200		14,000	107,000	60,000	45,000
12,300	31/64	14,000	107,000	60,000	45,000
12,400		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,200		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,700		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
14,100		16,000	115,000	65,000	48,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
14,900		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,600		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,100		18,000	123,000	73,000	48,000
16,200		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
17,700		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000

Punte SuperV

Punte con refrigerazione interna SuperV

Catalogo n° 51770

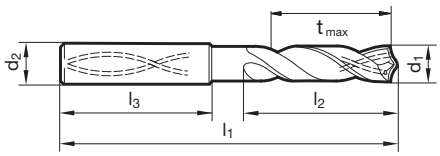
SuperV-VA | 3xD | DIN 6537 K | VHM | AlTiN nano | 140° | m7 | R | HA

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 26

- Assott. del nocc. ≥ Ø 3,000
- affilatura su piani
- forma del tagliente principale diritta
- geometria dei taglienti ottimizzata
- adatto in particolare per acciai inossidabile

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	62,000	20,000	36,000
3,100		6,000	62,000	20,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000
3,200		6,000	62,000	20,000	36,000
3,250		6,000	62,000	20,000	36,000
3,300		6,000	62,000	20,000	36,000
3,400		6,000	62,000	20,000	36,000
3,500		6,000	62,000	20,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000
3,600		6,000	62,000	20,000	36,000
3,700		6,000	62,000	20,000	36,000
3,800		6,000	66,000	24,000	36,000
3,900		6,000	66,000	24,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000
4,000		6,000	66,000	24,000	36,000
4,100		6,000	66,000	24,000	36,000
4,200		6,000	66,000	24,000	36,000
4,300		6,000	66,000	24,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000
4,400		6,000	66,000	24,000	36,000
4,500		6,000	66,000	24,000	36,000
4,600		6,000	66,000	24,000	36,000
4,650		6,000	66,000	24,000	36,000
4,700		6,000	66,000	24,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000
4,800		6,000	66,000	28,000	36,000
4,900		6,000	66,000	28,000	36,000
5,000		6,000	66,000	28,000	36,000
5,100		6,000	66,000	28,000	36,000
5,160	13/64	6,000	66,000	28,000	36,000
5,200		6,000	66,000	28,000	36,000
5,300		6,000	66,000	28,000	36,000
5,400		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,550		6,000	66,000	28,000	36,000
5,560	7/32	6,000	66,000	28,000	36,000
5,600		6,000	66,000	28,000	36,000
5,700		6,000	66,000	28,000	36,000
5,800		6,000	66,000	28,000	36,000
5,900		6,000	66,000	28,000	36,000
5,950	15/64	6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000
6,100		8,000	79,000	34,000	36,000
6,200		8,000	79,000	34,000	36,000
6,300		8,000	79,000	34,000	36,000
6,350	1/4	8,000	79,000	34,000	36,000
6,400		8,000	79,000	34,000	36,000
6,500		8,000	79,000	34,000	36,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
6,600		8,000	79,000	34,000	36,000
6,700		8,000	79,000	34,000	36,000
6,750	17/64	8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
6,900		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
7,100		8,000	79,000	41,000	36,000
7,140	9/32	8,000	79,000	41,000	36,000
7,200		8,000	79,000	41,000	36,000
7,300		8,000	79,000	41,000	36,000
7,400		8,000	79,000	41,000	36,000
7,500		8,000	79,000	41,000	36,000
7,540	19/64	8,000	79,000	41,000	36,000
7,600		8,000	79,000	41,000	36,000
7,700		8,000	79,000	41,000	36,000
7,800		8,000	79,000	41,000	36,000
7,900		8,000	79,000	41,000	36,000
7,940	5/16	8,000	79,000	41,000	36,000
8,000		8,000	79,000	41,000	36,000
8,100		10,000	89,000	47,000	40,000
8,200		10,000	89,000	47,000	40,000
8,300		10,000	89,000	47,000	40,000
8,330	21/64	10,000	89,000	47,000	40,000
8,400		10,000	89,000	47,000	40,000
8,500		10,000	89,000	47,000	40,000
8,600		10,000	89,000	47,000	40,000
8,700		10,000	89,000	47,000	40,000
8,730	11/32	10,000	89,000	47,000	40,000
8,800		10,000	89,000	47,000	40,000
8,900		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,100		10,000	89,000	47,000	40,000
9,130	23/64	10,000	89,000	47,000	40,000
9,200		10,000	89,000	47,000	40,000
9,250		10,000	89,000	47,000	40,000
9,300		10,000	89,000	47,000	40,000
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,520	3/8	10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
9,920	25/64	10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,200		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
12,800		14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,700		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,300		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
16,900		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
18,900		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,300		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000

Punte SuperV

Punte con refrigerazione interna SuperV

Catalogo n° 51771

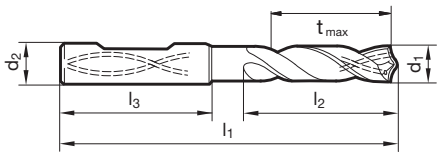
SuperV-VA | 3xD | DIN 6537 K | VHM | AlTiN nano | 140° | m7 | R | HE

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 26

- Assott. del nocc. ≥ Ø 3,000
- affilatura su piani
- forma del tagliente principale diritta
- geometria dei taglienti ottimizzata
- adatto in particolare per acciai inossidabile

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	62,000	20,000	36,000
3,100		6,000	62,000	20,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000
3,200		6,000	62,000	20,000	36,000
3,250		6,000	62,000	20,000	36,000
3,300		6,000	62,000	20,000	36,000
3,400		6,000	62,000	20,000	36,000
3,500		6,000	62,000	20,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000
3,600		6,000	62,000	20,000	36,000
3,700		6,000	62,000	20,000	36,000
3,800		6,000	66,000	24,000	36,000
3,900		6,000	66,000	24,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000
4,000		6,000	66,000	24,000	36,000
4,100		6,000	66,000	24,000	36,000
4,200		6,000	66,000	24,000	36,000
4,300		6,000	66,000	24,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000
4,400		6,000	66,000	24,000	36,000
4,500		6,000	66,000	24,000	36,000
4,600		6,000	66,000	24,000	36,000
4,650		6,000	66,000	24,000	36,000
4,700		6,000	66,000	24,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000
4,800		6,000	66,000	28,000	36,000
4,900		6,000	66,000	28,000	36,000
5,000		6,000	66,000	28,000	36,000
5,100		6,000	66,000	28,000	36,000
5,160	13/64	6,000	66,000	28,000	36,000
5,200		6,000	66,000	28,000	36,000
5,300		6,000	66,000	28,000	36,000
5,400		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
5,550		6,000	66,000	28,000	36,000
5,560	7/32	6,000	66,000	28,000	36,000
5,600		6,000	66,000	28,000	36,000
5,700		6,000	66,000	28,000	36,000
5,800		6,000	66,000	28,000	36,000
5,900		6,000	66,000	28,000	36,000
5,950	15/64	6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000
6,100		8,000	79,000	34,000	36,000
6,200		8,000	79,000	34,000	36,000
6,300		8,000	79,000	34,000	36,000
6,350	1/4	8,000	79,000	34,000	36,000
6,400		8,000	79,000	34,000	36,000
6,500		8,000	79,000	34,000	36,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
6,600		8,000	79,000	34,000	36,000
6,700		8,000	79,000	34,000	36,000
6,750	17/64	8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
6,900		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
7,100		8,000	79,000	41,000	36,000
7,140	9/32	8,000	79,000	41,000	36,000
7,200		8,000	79,000	41,000	36,000
7,300		8,000	79,000	41,000	36,000
7,400		8,000	79,000	41,000	36,000
7,500		8,000	79,000	41,000	36,000
7,540	19/64	8,000	79,000	41,000	36,000
7,600		8,000	79,000	41,000	36,000
7,700		8,000	79,000	41,000	36,000
7,800		8,000	79,000	41,000	36,000
7,900		8,000	79,000	41,000	36,000
7,940	5/16	8,000	79,000	41,000	36,000
8,000		8,000	79,000	41,000	36,000
8,100		10,000	89,000	47,000	40,000
8,200		10,000	89,000	47,000	40,000
8,300		10,000	89,000	47,000	40,000
8,330	21/64	10,000	89,000	47,000	40,000
8,400		10,000	89,000	47,000	40,000
8,500		10,000	89,000	47,000	40,000
8,600		10,000	89,000	47,000	40,000
8,700		10,000	89,000	47,000	40,000
8,730	11/32	10,000	89,000	47,000	40,000
8,800		10,000	89,000	47,000	40,000
8,900		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,100		10,000	89,000	47,000	40,000
9,130	23/64	10,000	89,000	47,000	40,000
9,200		10,000	89,000	47,000	40,000
9,250		10,000	89,000	47,000	40,000
9,300		10,000	89,000	47,000	40,000
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,520	3/8	10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
9,920	25/64	10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,200		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
12,800		14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,700		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,300		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
16,900		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
18,900		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,300		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000

Punte SuperV

Punte con refrigerazione interna SuperV

Catalogo n° 71995

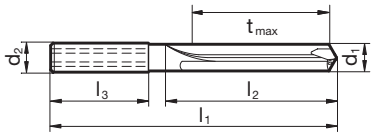
SuperV-95-GG | 4xD | WN | VHM | luci-do | 120° | m7 | R | HA

P	M	K	N	S	H
		●	○		

Parametri di lav. ind. a pag. 26

- Assott. del nocc. ≥ Ø 3,000
- spoglia sul cono tagliente
- strette tolleranze sul diametro
- ottima finitura di superf. del foro
- osservare la pressone del lubrificante (vedere diagramma)

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	66,000	24,000	36,000
3,100		6,000	66,000	24,000	36,000
3,200		6,000	66,000	24,000	36,000
3,300		6,000	66,000	24,000	36,000
3,400		6,000	66,000	24,000	36,000
3,500		6,000	66,000	24,000	36,000
3,600		6,000	66,000	24,000	36,000
3,700		6,000	66,000	24,000	36,000
3,800		6,000	74,000	30,000	36,000
3,900		6,000	74,000	30,000	36,000
4,000		6,000	74,000	30,000	36,000
4,100		6,000	74,000	30,000	36,000
4,200		6,000	74,000	30,000	36,000
4,300		6,000	74,000	30,000	36,000
4,400		6,000	74,000	30,000	36,000
4,500		6,000	74,000	30,000	36,000
4,600		6,000	74,000	30,000	36,000
4,700		6,000	74,000	30,000	36,000
4,800		6,000	74,000	36,000	36,000
4,900		6,000	74,000	36,000	36,000
5,000		6,000	74,000	36,000	36,000
5,100		6,000	74,000	36,000	36,000
5,160	13/64	6,000	74,000	36,000	36,000
5,200		6,000	74,000	36,000	36,000
5,300		6,000	74,000	36,000	36,000
5,400		6,000	74,000	36,000	36,000
5,500		6,000	74,000	36,000	36,000
5,560	7/32	6,000	74,000	36,000	36,000
5,600		6,000	74,000	36,000	36,000
5,700		6,000	74,000	36,000	36,000
5,800		6,000	74,000	36,000	36,000
5,900		6,000	74,000	36,000	36,000
5,950	15/64	6,000	74,000	36,000	36,000
6,000		6,000	74,000	36,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,750	17/64	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,540	19/64	8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
7,940	5/16	8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,330	21/64	10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,730	11/32	10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,200		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,720	27/64	12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,510	29/64	12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,300	31/64	14,000	124,000	74,000	45,000
12,500		14,000	124,000	74,000	45,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,700	1/2	14,000	124,000	74,000	45,000
13,000		14,000	124,000	74,000	45,000
13,500		14,000	124,000	74,000	45,000
14,000		14,000	124,000	74,000	45,000
14,500		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
18,500		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000
21,500		25,000	168,000	110,000	56,000

Punte SuperV

Punte con refrigerazione interna SuperV

Catalogo n° 61880

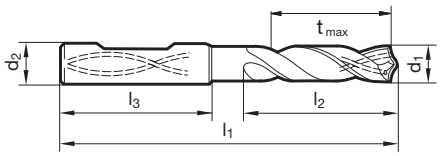
SuperV-IK-F | 5xD | DIN 6537 L | VHM | TiN | 140° | m7 | R | HE

P	M	K	N	S	H
○	●	○	○	●	●

Parametri di lav. ind. a pag. 28

- Assott. del nocc. ≥ Ø 4,000
- spoglia sul cono tagliente
- tagliente principale forma concava
- geometria dei taglienti ottimizzata
- sharp cutting behaviour

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
4,000		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,300		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,800		6,000	82,000	44,000	36,000
4,900		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,700		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
5,900		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,750	17/64	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,200		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
11,000		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,200		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
12,900		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,200		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,800		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,100		16,000	133,000	83,000	48,000
14,200		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,800		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000
21,000		25,000	165,000	105,000	56,000
22,000		25,000	165,000	105,000	56,000
23,500		25,000	180,000	117,000	56,000
24,000		25,000	180,000	117,000	56,000
24,500		25,000	180,000	117,000	56,000
25,000	63/64	25,000	180,000	117,000	56,000

Punte SuperV

Punte con refrigerazione interna SuperV

Catalogo n° 51781

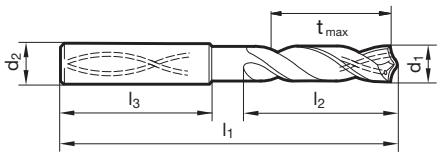
SuperV-IK-U | 5xD | DIN 6537 L | VHM | TiAlN-nano | 140° | m7 | R | HA

P	M	K	N	S	H
●	○	●	○	○	○

Parametri di lav. ind. a pag. 28

- Assott. del nocc. ≥ Ø 3,000
- affilatura su piani
- forma del tagliente principale diritta
- geometria dei taglienti ottimizzata

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	66,000	28,000	36,000
3,100		6,000	66,000	28,000	36,000
3,200		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,400		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
3,600		6,000	66,000	28,000	36,000
3,700		6,000	66,000	28,000	36,000
3,800		6,000	74,000	36,000	36,000
3,900		6,000	74,000	36,000	36,000
4,000		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,300		6,000	74,000	36,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000
4,400		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,600		6,000	74,000	36,000	36,000
4,650		6,000	74,000	36,000	36,000
4,700		6,000	74,000	36,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000
4,800		6,000	82,000	44,000	36,000
4,900		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,550		6,000	82,000	44,000	36,000
5,560	7/32	6,000	82,000	44,000	36,000
5,600		6,000	82,000	44,000	36,000
5,700		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
5,900		6,000	82,000	44,000	36,000
5,950	15/64	6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,750	17/64	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,540	19/64	8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
7,940	5/16	8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,330	21/64	10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,730	11/32	10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,250		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
10,700		12,000	118,000	71,000	45,000
10,720	27/64	12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,200		14,000	124,000	77,000	45,000
12,300	31/64	14,000	124,000	77,000	45,000
12,400		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,200		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,600		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
13,800		14,000	124,000	77,000	45,000
13,900		14,000	124,000	77,000	45,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
14,000		14,000	124,000	77,000	45,000
14,100		16,000	133,000	83,000	48,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,600		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
15,800		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
16,700		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
17,700		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
18,700		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
19,700		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Punte SuperV

Punte con refrigerazione interna SuperV

Catalogo n° 51881

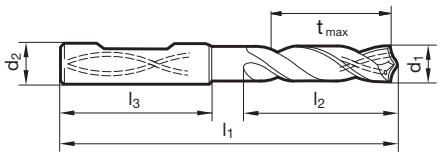
SuperV-IK-U | 5xD | DIN 6537 L | VHM | TiAlN-nano | 140° | m7 | R | HE

P	M	K	N	S	H
●	○	●	○	○	○

Parametri di lav. ind. a pag. 28

- Assott. del nocc. ≥ Ø 3,000
- affilatura su piani
- forma del tagliente principale diritta
- geometria dei taglienti ottimizzata

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	66,000	28,000	36,000
3,100		6,000	66,000	28,000	36,000
3,200		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,400		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
3,600		6,000	66,000	28,000	36,000
3,700		6,000	66,000	28,000	36,000
3,800		6,000	74,000	36,000	36,000
3,900		6,000	74,000	36,000	36,000
4,000		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,300		6,000	74,000	36,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000
4,400		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,600		6,000	74,000	36,000	36,000
4,700		6,000	74,000	36,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000
4,800		6,000	82,000	44,000	36,000
4,900		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,560	7/32	6,000	82,000	44,000	36,000
5,600		6,000	82,000	44,000	36,000
5,700		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
5,900		6,000	82,000	44,000	36,000
5,950	15/64	6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,750	17/64	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
7,100		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,540	19/64	8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
7,940	5/16	8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,330	21/64	10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,730	11/32	10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,200		14,000	124,000	77,000	45,000
12,300	31/64	14,000	124,000	77,000	45,000
12,400		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
13,800		14,000	124,000	77,000	45,000
13,900		14,000	124,000	77,000	45,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
14,000		14,000	124,000	77,000	45,000
14,100		16,000	133,000	83,000	48,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
15,800		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,300		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,200		20,000	153,000	101,000	50,000
18,500		20,000	153,000	101,000	50,000
18,600		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Punte SuperV

Punte con refrigerazione interna SuperV

Catalogo n° 51772

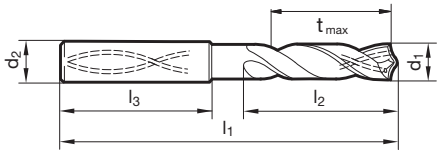
SuperV-VA | 5xD | DIN 6537 L | VHM | AlTiN nano | 140° | m7 | R | HA

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 28

- Assott. del nocc. ≥ Ø 3,000
- affilatura su piani
- forma del tagliente principale diritta
- geometria dei taglienti ottimizzata
- adatto in particolare per acciai inossidabile

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	66,000	28,000	36,000
3,100		6,000	66,000	28,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000
3,200		6,000	66,000	28,000	36,000
3,250		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,400		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000
3,600		6,000	66,000	28,000	36,000
3,700		6,000	66,000	28,000	36,000
3,800		6,000	74,000	36,000	36,000
3,900		6,000	74,000	36,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000
4,000		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,300		6,000	74,000	36,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000
4,400		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,600		6,000	74,000	36,000	36,000
4,650		6,000	74,000	36,000	36,000
4,700		6,000	74,000	36,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000
4,800		6,000	82,000	44,000	36,000
4,900		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,550		6,000	82,000	44,000	36,000
5,560	7/32	6,000	82,000	44,000	36,000
5,600		6,000	82,000	44,000	36,000
5,700		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
5,900		6,000	82,000	44,000	36,000
5,950	15/64	6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,750	17/64	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,540	19/64	8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
7,940	5/16	8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,330	21/64	10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,730	11/32	10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,250		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,200		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
14,290	9/16	16,000	133,000	83,000	48,000
14,300		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,300		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,300		18,000	143,000	93,000	48,000
16,500		18,000	143,000	93,000	48,000
16,900		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,300		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
18,900		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,300		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Punte SuperV

Punte con refrigerazione interna SuperV

Catalogo n° 51773

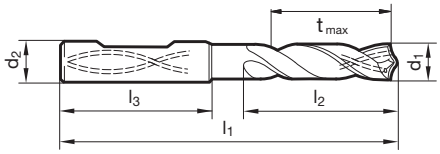
SuperV-VA | 5xD | DIN 6537 L | VHM | AlTiN nano | 140° | m7 | R | HE

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 28

- Assott. del nocc. ≥ Ø 3,000
- affilatura su piani
- forma del tagliente principale diritta
- geometria dei taglienti ottimizzata
- adatto in particolare per acciai inossidabile

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	66,000	28,000	36,000
3,100		6,000	66,000	28,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000
3,200		6,000	66,000	28,000	36,000
3,250		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,400		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000
3,600		6,000	66,000	28,000	36,000
3,700		6,000	66,000	28,000	36,000
3,800		6,000	74,000	36,000	36,000
3,900		6,000	74,000	36,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000
4,000		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,300		6,000	74,000	36,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000
4,400		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,600		6,000	74,000	36,000	36,000
4,650		6,000	74,000	36,000	36,000
4,700		6,000	74,000	36,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000
4,800		6,000	82,000	44,000	36,000
4,900		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,550		6,000	82,000	44,000	36,000
5,560	7/32	6,000	82,000	44,000	36,000
5,600		6,000	82,000	44,000	36,000
5,700		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
5,900		6,000	82,000	44,000	36,000
5,950	15/64	6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,750	17/64	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,540	19/64	8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
7,940	5/16	8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,330	21/64	10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,730	11/32	10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,250		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,200		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
14,290	9/16	16,000	133,000	83,000	48,000
14,300		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,300		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,300		18,000	143,000	93,000	48,000
16,500		18,000	143,000	93,000	48,000
16,900		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,300		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
18,900		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,300		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

Punte SuperV

Punte con refrigerazione interna SuperV

Catalogo n° 51789

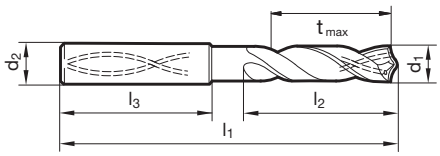
SuperV-IK-U | 7xD | WN | VHM | TiAlN-nano | 140° | m7 | R | HA

P	M	K	N	S	H
●	○	●	○	○	○

Parametri di lav. ind. a pag. 30

- Assott. del nocc. ≥ Ø 3,000
- affilatura su piani
- forma del tagliente principale diritta
- geometria dei taglienti ottimizzata
- 4 fasi di guida

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	70,000	30,000	36,000
3,100		6,000	70,000	30,000	36,000
3,170	1/8	6,000	70,000	30,000	36,000
3,200		6,000	70,000	30,000	36,000
3,250		6,000	70,000	30,000	36,000
3,300		6,000	70,000	30,000	36,000
3,400		6,000	75,000	35,500	36,000
3,500		6,000	75,000	35,500	36,000
3,570	9/64	6,000	75,000	35,500	36,000
3,600		6,000	75,000	35,500	36,000
3,700		6,000	75,000	35,500	36,000
3,800		6,000	75,000	37,500	36,000
3,900		6,000	75,000	37,500	36,000
3,970	5/32	6,000	75,000	37,500	36,000
4,000		6,000	75,000	37,500	36,000
4,100		6,000	75,000	37,500	36,000
4,200		6,000	75,000	37,500	36,000
4,300		6,000	85,000	45,000	36,000
4,400		6,000	85,000	45,000	36,000
4,500		6,000	85,000	45,000	36,000
4,600		6,000	85,000	45,000	36,000
4,700		6,000	85,000	45,000	36,000
4,800		6,000	90,000	50,000	36,000
4,900		6,000	90,000	50,000	36,000
5,000		6,000	90,000	50,000	36,000
5,100		6,000	90,000	50,000	36,000
5,200		6,000	90,000	50,000	36,000
5,300		6,000	90,000	50,000	36,000
5,400		6,000	97,000	57,000	36,000
5,500		6,000	97,000	57,000	36,000
5,700		6,000	97,000	57,000	36,000
5,800		6,000	97,000	57,000	36,000
5,900		6,000	97,000	57,000	36,000
6,000		6,000	97,000	57,000	36,000
6,200		8,000	106,000	66,000	36,000
6,300		8,000	106,000	66,000	36,000
6,500		8,000	106,000	66,000	36,000
6,600		8,000	106,000	66,000	36,000
6,700		8,000	106,000	66,000	36,000
6,800		8,000	106,000	66,000	36,000
6,900		8,000	116,000	76,000	36,000
7,000		8,000	116,000	76,000	36,000
7,100		8,000	116,000	76,000	36,000
7,200		8,000	116,000	76,000	36,000
7,500		8,000	116,000	76,000	36,000
7,600		8,000	116,000	76,000	36,000
7,700		8,000	116,000	76,000	36,000
7,800		8,000	116,000	76,000	36,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
8,000		8,000	116,000	76,000	36,000
8,100		10,000	131,000	87,000	40,000
8,200		10,000	131,000	87,000	40,000
8,400		10,000	131,000	87,000	40,000
8,500		10,000	131,000	87,000	40,000
8,600		10,000	131,000	87,000	40,000
8,700		10,000	131,000	87,000	40,000
8,800		10,000	131,000	87,000	40,000
9,000		10,000	131,000	87,000	40,000
9,100		10,000	139,000	95,000	40,000
9,200		10,000	139,000	95,000	40,000
9,300		10,000	139,000	95,000	40,000
9,400		10,000	139,000	95,000	40,000
9,500		10,000	139,000	95,000	40,000
9,700		10,000	139,000	95,000	40,000
9,800		10,000	139,000	95,000	40,000
9,900		10,000	139,000	95,000	40,000
10,000		10,000	139,000	95,000	40,000
10,200		12,000	155,000	106,000	45,000
10,500		12,000	155,000	106,000	45,000
10,800		12,000	155,000	106,000	45,000
11,000		12,000	155,000	106,000	45,000
11,200		12,000	163,000	114,000	45,000
11,500		12,000	163,000	114,000	45,000
11,800		12,000	163,000	114,000	45,000
12,000		12,000	163,000	114,000	45,000
12,200		14,000	182,000	133,000	45,000
12,500		14,000	182,000	133,000	45,000
12,700	1/2	14,000	182,000	133,000	45,000
13,000		14,000	182,000	133,000	45,000
13,500		14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
14,200		16,000	204,000	152,000	48,000
14,500		16,000	204,000	152,000	48,000
15,000		16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000
16,500		18,000	223,000	171,000	48,000
17,000		18,000	223,000	171,000	48,000
17,500		18,000	223,000	171,000	48,000
18,000		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
19,000		20,000	244,000	190,000	50,000
19,500		20,000	244,000	190,000	50,000
20,000		20,000	244,000	190,000	50,000

Punte SuperV

Punte con refrigerazione interna SuperV

Catalogo n° 51889

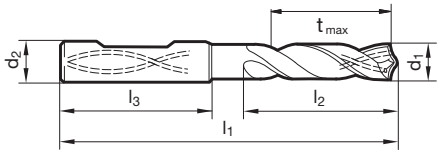
SuperV-IK-U | 7xD | WN | VHM | TiAlN-nano | 140° | m7 | R | HE

P	M	K	N	S	H
●	○	●	○	○	○

Parametri di lav. ind. a pag. 30

- Assott. del nocc. ≥ Ø 3,000
- affilatura su piani
- forma del tagliente principale diritta
- geometria dei taglienti ottimizzata
- 4 fasi di guida

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	70,000	30,000	36,000
3,100		6,000	70,000	30,000	36,000
3,170	1/8	6,000	70,000	30,000	36,000
3,200		6,000	70,000	30,000	36,000
3,250		6,000	70,000	30,000	36,000
3,300		6,000	70,000	30,000	36,000
3,400		6,000	75,000	35,500	36,000
3,500		6,000	75,000	35,500	36,000
3,570	9/64	6,000	75,000	35,500	36,000
3,600		6,000	75,000	35,500	36,000
3,700		6,000	75,000	35,500	36,000
3,800		6,000	75,000	37,500	36,000
3,900		6,000	75,000	37,500	36,000
3,970	5/32	6,000	75,000	37,500	36,000
4,000		6,000	75,000	37,500	36,000
4,100		6,000	75,000	37,500	36,000
4,200		6,000	75,000	37,500	36,000
4,300		6,000	85,000	45,000	36,000
4,400		6,000	85,000	45,000	36,000
4,500		6,000	85,000	45,000	36,000
4,600		6,000	85,000	45,000	36,000
4,700		6,000	85,000	45,000	36,000
4,800		6,000	90,000	50,000	36,000
4,900		6,000	90,000	50,000	36,000
5,000		6,000	90,000	50,000	36,000
5,100		6,000	90,000	50,000	36,000
5,200		6,000	90,000	50,000	36,000
5,300		6,000	90,000	50,000	36,000
5,400		6,000	97,000	57,000	36,000
5,500		6,000	97,000	57,000	36,000
5,700		6,000	97,000	57,000	36,000
5,800		6,000	97,000	57,000	36,000
5,900		6,000	97,000	57,000	36,000
6,000		6,000	97,000	57,000	36,000
6,200		8,000	106,000	66,000	36,000
6,300		8,000	106,000	66,000	36,000
6,500		8,000	106,000	66,000	36,000
6,600		8,000	106,000	66,000	36,000
6,700		8,000	106,000	66,000	36,000
6,800		8,000	106,000	66,000	36,000
6,900		8,000	116,000	76,000	36,000
7,000		8,000	116,000	76,000	36,000
7,100		8,000	116,000	76,000	36,000
7,200		8,000	116,000	76,000	36,000
7,500		8,000	116,000	76,000	36,000
7,600		8,000	116,000	76,000	36,000
7,700		8,000	116,000	76,000	36,000
7,800		8,000	116,000	76,000	36,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
8,000		8,000	116,000	76,000	36,000
8,100		10,000	131,000	87,000	40,000
8,200		10,000	131,000	87,000	40,000
8,400		10,000	131,000	87,000	40,000
8,500		10,000	131,000	87,000	40,000
8,600		10,000	131,000	87,000	40,000
8,700		10,000	131,000	87,000	40,000
8,800		10,000	131,000	87,000	40,000
9,000		10,000	131,000	87,000	40,000
9,100		10,000	139,000	95,000	40,000
9,200		10,000	139,000	95,000	40,000
9,300		10,000	139,000	95,000	40,000
9,400		10,000	139,000	95,000	40,000
9,500		10,000	139,000	95,000	40,000
9,700		10,000	139,000	95,000	40,000
9,800		10,000	139,000	95,000	40,000
9,900		10,000	139,000	95,000	40,000
10,000		10,000	139,000	95,000	40,000
10,200		12,000	155,000	106,000	45,000
10,300		12,000	155,000	106,000	45,000
10,500		12,000	155,000	106,000	45,000
10,800		12,000	155,000	106,000	45,000
11,000		12,000	155,000	106,000	45,000
11,200		12,000	163,000	114,000	45,000
11,500		12,000	163,000	114,000	45,000
11,800		12,000	163,000	114,000	45,000
12,000		12,000	163,000	114,000	45,000
12,100		14,000	182,000	133,000	45,000
12,200		14,000	182,000	133,000	45,000
12,500		14,000	182,000	133,000	45,000
12,700	1/2	14,000	182,000	133,000	45,000
13,000		14,000	182,000	133,000	45,000
13,500		14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
14,100		16,000	204,000	152,000	48,000
14,200		16,000	204,000	152,000	48,000
14,500		16,000	204,000	152,000	48,000
15,000		16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000
16,500		18,000	223,000	171,000	48,000
17,000		18,000	223,000	171,000	48,000
17,500		18,000	223,000	171,000	48,000
18,000		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
19,000		20,000	244,000	190,000	50,000
19,500		20,000	244,000	190,000	50,000
20,000		20,000	244,000	190,000	50,000

Punte SuperV

Punte con refrigerazione interna SuperV

Catalogo n° 71994

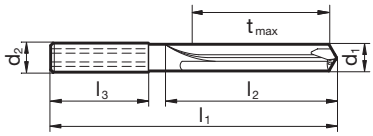
SuperV-95-GG | 7xD | WN | VHM | lucido | 120° | m7 | R | HA

P	M	K	N	S	H
		●	○		

Parametri di lav. ind. a pag. 30

- Assott. del nocc. ≥ Ø 3,000
- spoglia sul cono tagliente
- strette tolleranze sul diametro
- ottima finitura di superf. del foro
- osservare la pressone del lubrificante (vedere diagramma)

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	74,000	32,000	36,000
3,100		6,000	74,000	32,000	36,000
3,200		6,000	74,000	32,000	36,000
3,300		6,000	74,000	32,000	36,000
3,400		6,000	74,000	34,000	36,000
3,500		6,000	74,000	34,000	36,000
3,600		6,000	74,000	34,000	36,000
3,700		6,000	74,000	34,000	36,000
3,800		6,000	97,000	45,000	36,000
3,900		6,000	97,000	45,000	36,000
4,000		6,000	97,000	45,000	36,000
4,100		6,000	97,000	45,000	36,000
4,200		6,000	97,000	45,000	36,000
4,300		6,000	97,000	45,000	36,000
4,400		6,000	97,000	45,000	36,000
4,500		6,000	97,000	45,000	36,000
4,700		6,000	97,000	45,000	36,000
4,800		6,000	97,000	57,000	36,000
4,900		6,000	97,000	57,000	36,000
5,000		6,000	97,000	57,000	36,000
5,500		6,000	97,000	57,000	36,000
6,000		6,000	97,000	57,000	36,000
6,500		8,000	116,000	76,000	36,000
6,800		8,000	116,000	76,000	36,000
7,000		8,000	116,000	76,000	36,000
7,500		8,000	116,000	76,000	36,000
7,800		8,000	116,000	76,000	36,000
8,000		8,000	116,000	76,000	36,000
8,500		10,000	139,000	95,000	40,000
9,000		10,000	139,000	95,000	40,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
9,500		10,000	139,000	95,000	40,000
10,000		10,000	139,000	95,000	40,000
10,200		12,000	163,000	114,000	45,000
10,500		12,000	163,000	114,000	45,000
11,000		12,000	163,000	114,000	45,000
11,500		12,000	163,000	114,000	45,000
12,000		12,000	163,000	114,000	45,000
12,300	31/64	14,000	182,000	133,000	45,000
12,500		14,000	182,000	133,000	45,000
12,700	1/2	14,000	182,000	133,000	45,000
13,000		14,000	182,000	133,000	45,000
13,500		14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
14,500		16,000	204,000	152,000	48,000
15,000		16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000
16,500		18,000	223,000	171,000	48,000
17,000		18,000	223,000	171,000	48,000
17,500		18,000	223,000	171,000	48,000
18,000		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
19,000		20,000	244,000	190,000	50,000
19,500		20,000	244,000	190,000	50,000
20,000		20,000	244,000	190,000	50,000

Punte SuperV

Punte con refrigerazione interna SuperV

Catalogo n° 71996

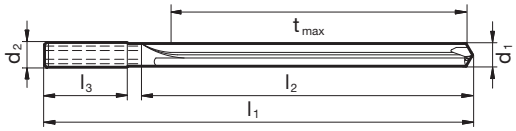
SuperV-95-GG | 10xD | WN | VHM | lucido | 120° | m7 | R | HA

P	M	K	N	S	H
		●	○		

Parametri di lav. ind. a pag. 30

- Assott. del nocc. ≥ Ø 3,000
- spoglia sul cono tagliente
- strette tolleranze sul diametro
- ottima finitura di superf. del foro
- osservare la pressone del lubrificante (vedere diagramma)

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	91,000	42,000	36,000
3,300		6,000	91,000	42,000	36,000
3,500		6,000	91,000	48,000	36,000
3,800		6,000	121,000	77,000	36,000
4,000		6,000	121,000	77,000	36,000
4,200		6,000	121,000	77,000	36,000
4,500		6,000	121,000	77,000	36,000
4,700		6,000	121,000	77,000	36,000
4,800		6,000	121,000	82,000	36,000
5,000		6,000	121,000	82,000	36,000
5,500		6,000	121,000	82,000	36,000
6,000		6,000	121,000	82,000	36,000
6,350	1/4	8,000	146,000	106,000	36,000
6,500		8,000	146,000	106,000	36,000
6,800		8,000	146,000	106,000	36,000
7,000		8,000	146,000	106,000	36,000
7,500		8,000	146,000	106,000	36,000
7,800		8,000	146,000	106,000	36,000
8,000		8,000	146,000	106,000	36,000
8,500		10,000	175,000	130,000	40,000
9,000		10,000	175,000	130,000	40,000
9,500		10,000	175,000	130,000	40,000
10,000		10,000	175,000	130,000	40,000
10,200		12,000	209,000	159,000	45,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
10,500		12,000	209,000	159,000	45,000
11,000		12,000	209,000	159,000	45,000
11,500		12,000	209,000	159,000	45,000
12,000		12,000	209,000	159,000	45,000
12,500		14,000	233,000	183,000	45,000
12,700	1/2	14,000	233,000	183,000	45,000
13,000		14,000	233,000	183,000	45,000
13,500		14,000	233,000	183,000	45,000
14,000		14,000	233,000	183,000	45,000
14,500		16,000	260,000	207,000	48,000
15,000		16,000	260,000	207,000	48,000
15,500		16,000	260,000	207,000	48,000
16,000		16,000	260,000	207,000	48,000
16,500		18,000	284,000	231,000	48,000
17,000		18,000	284,000	231,000	48,000
17,500		18,000	284,000	231,000	48,000
18,000		18,000	284,000	231,000	48,000
18,500		20,000	308,000	255,000	50,000
19,000		20,000	308,000	255,000	50,000
19,500		20,000	308,000	255,000	50,000
20,000		20,000	308,000	255,000	50,000

Punte SuperV

Punte con refrigerazione interna SuperV

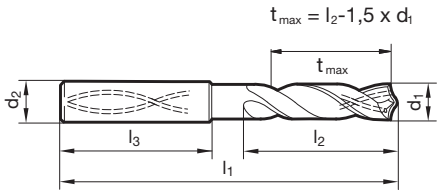
Catalogo n° 51893

SuperV-IK-U | 12xD | WN | VHM | TiAlN-nano | 135° | h7 | R | HA

P	M	K	N	S	H
●	○	●	○	○	

Parametri di lav. ind. a pag. 30

- Assott. del nocc. ≥ Ø 3,000
- affilatura su piani
- rivestimento in testa
- forma del tagliente principale diritta
- geometria dei taglienti ottimizzata
- 4 fasi di guida
- osservare la pressone del lubrificante (vedere diagramma)



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	90,000	50,000	36,000
3,100		6,000	90,000	50,000	36,000
3,200		6,000	90,000	50,000	36,000
3,300		6,000	90,000	50,000	36,000
3,400		6,000	90,000	50,000	36,000
3,500		6,000	90,000	50,000	36,000
3,600		6,000	90,000	50,000	36,000
3,700		6,000	90,000	50,000	36,000
3,800		6,000	102,000	64,000	36,000
3,900		6,000	102,000	64,000	36,000
4,000		6,000	102,000	64,000	36,000
4,100		6,000	102,000	64,000	36,000
4,200		6,000	102,000	64,000	36,000
4,300		6,000	102,000	64,000	36,000
4,400		6,000	102,000	64,000	36,000
4,500		6,000	102,000	64,000	36,000
4,600		6,000	102,000	64,000	36,000
4,700		6,000	102,000	64,000	36,000
4,800		6,000	116,000	78,000	36,000
4,900		6,000	116,000	78,000	36,000
5,000		6,000	116,000	78,000	36,000
5,100		6,000	116,000	78,000	36,000
5,200		6,000	116,000	78,000	36,000
5,300		6,000	116,000	78,000	36,000
5,400		6,000	116,000	78,000	36,000
5,500		6,000	116,000	78,000	36,000
5,600		6,000	116,000	78,000	36,000
5,700		6,000	116,000	78,000	36,000
5,800		6,000	116,000	78,000	36,000
5,900		6,000	116,000	78,000	36,000
6,000		6,000	116,000	78,000	36,000
6,100		8,000	146,000	108,000	36,000
6,200		8,000	146,000	108,000	36,000
6,300		8,000	146,000	108,000	36,000
6,400		8,000	146,000	108,000	36,000
6,500		8,000	146,000	108,000	36,000
6,600		8,000	146,000	108,000	36,000
6,700		8,000	146,000	108,000	36,000
6,800		8,000	146,000	108,000	36,000
6,900		8,000	146,000	108,000	36,000
7,000		8,000	146,000	108,000	36,000
7,100		8,000	146,000	108,000	36,000
7,200		8,000	146,000	108,000	36,000
7,300		8,000	146,000	108,000	36,000
7,400		8,000	146,000	108,000	36,000
7,500		8,000	146,000	108,000	36,000
7,600		8,000	146,000	108,000	36,000
7,700		8,000	146,000	108,000	36,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
7,800		8,000	146,000	108,000	36,000
7,900		8,000	146,000	108,000	36,000
8,000		8,000	146,000	108,000	36,000
8,100		10,000	162,000	120,000	40,000
8,200		10,000	162,000	120,000	40,000
8,300		10,000	162,000	120,000	40,000
8,400		10,000	162,000	120,000	40,000
8,500		10,000	162,000	120,000	40,000
8,600		10,000	162,000	120,000	40,000
8,700		10,000	162,000	120,000	40,000
8,800		10,000	162,000	120,000	40,000
8,900		10,000	162,000	120,000	40,000
9,000		10,000	162,000	120,000	40,000
9,100		10,000	162,000	120,000	40,000
9,200		10,000	162,000	120,000	40,000
9,300		10,000	162,000	120,000	40,000
9,400		10,000	162,000	120,000	40,000
9,500		10,000	162,000	120,000	40,000
9,600		10,000	162,000	120,000	40,000
9,700		10,000	162,000	120,000	40,000
9,800		10,000	162,000	120,000	40,000
9,900		10,000	162,000	120,000	40,000
10,000		10,000	162,000	120,000	40,000
10,200		12,000	204,000	156,000	45,000
10,500		12,000	204,000	156,000	45,000
11,000		12,000	204,000	156,000	45,000
11,500		12,000	204,000	156,000	45,000
12,000		12,000	204,000	156,000	45,000
12,500		14,000	230,000	182,000	45,000
12,700	1/2	14,000	230,000	182,000	45,000
13,000		14,000	230,000	182,000	45,000
13,500		14,000	230,000	182,000	45,000
14,000		14,000	230,000	182,000	45,000
14,500		16,000	260,000	208,000	48,000
15,000		16,000	260,000	208,000	48,000
15,500		16,000	260,000	208,000	48,000
16,000		16,000	260,000	208,000	48,000
16,500		18,000	285,000	234,000	48,000
17,000		18,000	285,000	234,000	48,000
17,500		18,000	285,000	234,000	48,000
18,000		18,000	285,000	234,000	48,000
18,500		20,000	310,000	258,000	50,000
19,000		20,000	310,000	258,000	50,000
19,500		20,000	310,000	258,000	50,000
20,000		20,000	310,000	258,000	50,000

Punte SuperV

Punte con refrigerazione interna SuperV

Catalogo n° 71997

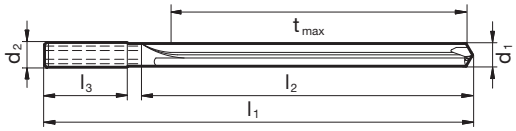
SuperV-95-GN | 15xD | WN | VHM | luci-do | 120° | m7 | R | HA

P	M	K	N	S	H
		●	○		

Parametri di lav. ind. a pag. 30

- Assott. del nocc. ≥ Ø 5,000
- spoglia sul cono tagliente
- passo negativo
- per fori molto precisi
- ottima finitura di superf. del foro
- osservare la pressone del lubrificante (vedere diagramma)

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
5,000		6,000	145,000	105,000	36,000
6,000		6,000	145,000	105,000	36,000
8,000		8,000	180,000	137,000	36,000
9,000		10,000	217,000	170,000	40,000
10,000		10,000	217,000	170,000	40,000
11,000		12,000	258,000	205,000	45,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
12,000		12,000	258,000	205,000	45,000
14,000		14,000	290,000	236,000	45,000

Punte SuperV

Punte con refrigerazione interna SuperV

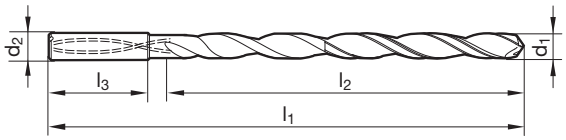
Catalogo n° 51764

SuperV-T | 15xD | WN | VHM | Al-TiN | 135° | h7 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 32

- Assott. del nocc. ≥ Ø 3,000
- spoglia sul cono tagliente
- rivestimento in testa
- tagliente principale forma concava
- taglio trasversale della scanalatura ottimizzato
- max. taglio trasversale del foro
- applicazione nei mandrini irdaulici
- 4 fasi di guida
- osservare la pressone del lubrificante (vedere diagramma)



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	95,000	55,000	36,000
3,170	1/8	6,000	106,000	67,000	36,000
3,500		6,000	116,000	76,000	36,000
3,570	9/64	6,000	116,000	76,000	36,000
3,970	5/32	6,000	116,000	76,000	36,000
4,000		6,000	116,000	76,000	36,000
4,370	11/64	6,000	133,000	93,000	36,000
4,500		6,000	133,000	93,000	36,000
4,760	3/16	6,000	133,000	93,000	36,000
5,000		6,000	133,000	93,000	36,000
5,100		6,000	150,000	110,000	36,000
5,160	13/64	6,000	150,000	110,000	36,000
5,410		6,000	150,000	110,000	36,000
5,500		6,000	150,000	110,000	36,000
5,560	7/32	6,000	150,000	110,000	36,000
5,950	15/64	6,000	150,000	110,000	36,000
6,000		6,000	150,000	110,000	36,000
6,350	1/4	8,000	167,000	127,000	36,000
6,500		8,000	167,000	127,000	36,000
6,750	17/64	8,000	167,000	127,000	36,000
7,000		8,000	167,000	127,000	36,000
7,140	9/32	8,000	183,000	143,000	36,000
7,500		8,000	183,000	143,000	36,000
7,540	19/64	8,000	183,000	143,000	36,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
7,940	5/16	8,000	183,000	143,000	36,000
8,000		8,000	183,000	143,000	36,000
8,330	21/64	10,000	204,000	160,000	40,000
8,500		10,000	204,000	160,000	40,000
8,730	11/32	10,000	204,000	160,000	40,000
9,000		10,000	204,000	160,000	40,000
9,130	23/64	10,000	221,000	177,000	40,000
9,520	3/8	10,000	221,000	177,000	40,000
9,920	25/64	10,000	221,000	177,000	40,000
10,000		10,000	221,000	177,000	40,000
10,320	13/32	12,000	247,000	198,000	45,000
10,720	27/64	12,000	247,000	198,000	45,000
11,000		12,000	247,000	198,000	45,000
11,110	7/16	12,000	263,000	214,000	45,000
11,510	29/64	12,000	263,000	214,000	45,000
11,910	15/32	12,000	263,000	214,000	45,000
12,000		12,000	263,000	214,000	45,000
12,300	31/64	14,000	297,000	248,000	45,000
12,700	1/2	14,000	297,000	248,000	45,000
13,100	33/64	14,000	297,000	248,000	45,000
13,490	17/32	14,000	297,000	248,000	45,000
13,890	35/64	14,000	297,000	248,000	45,000
14,000		14,000	297,000	248,000	45,000

Punte SuperV

Punte con refrigerazione interna SuperV

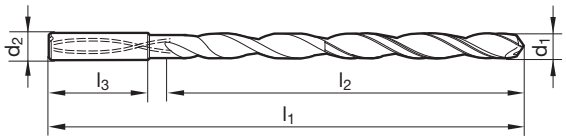
Catalogo n° 51765

SuperV-T | 20xD | WN | VHM | Al-TiN | 135° | h7 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 32

- Assott. del nocc. ≥ Ø 3,000
- spoglia sul cono tagliente
- rivestimento in testa
- tagliente principale forma concava
- taglio trasversale della scanalatura ottimizzato
- max. taglio trasversale del foro
- application in hydraulic chucks
- 4 fasi di guida
- osservare la pressone del lubrificante (vedere diagramma)



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	110,000	70,000	36,000
3,500		6,000	136,000	96,000	36,000
3,970	5/32	6,000	136,000	96,000	36,000
4,000		6,000	136,000	96,000	36,000
4,500		6,000	158,000	118,000	36,000
4,760	3/16	6,000	158,000	118,000	36,000
5,000		6,000	158,000	118,000	36,000
5,100		6,000	180,000	140,000	36,000
5,500		6,000	180,000	140,000	36,000
5,560	7/32	6,000	180,000	140,000	36,000
6,000		6,000	180,000	140,000	36,000
6,350	1/4	8,000	202,000	162,000	36,000
6,500		8,000	202,000	162,000	36,000
7,000		8,000	202,000	162,000	36,000
7,140	9/32	8,000	223,000	183,000	36,000
7,500		8,000	223,000	183,000	36,000
8,000		8,000	223,000	183,000	36,000
8,500		10,000	249,000	205,000	40,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
9,000		10,000	249,000	205,000	40,000
10,000		10,000	271,000	227,000	40,000
11,000		12,000	302,000	253,000	45,000
12,000		12,000	323,000	274,000	45,000
12,700	1/2	14,000	367,000	318,000	45,000
13,490	17/32	14,000	367,000	318,000	45,000
14,000		14,000	367,000	318,000	45,000

Punte SuperV

Punte con refrigerazione interna SuperV

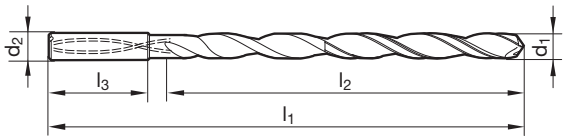
Catalogo n° 51766

SuperV-T | 25xD | WN | VHM | Al-TiN | 135° | h7 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 32

- Assott. del nocc. ≥ Ø 3,000
- spoglia sul cono tagliente
- rivestimento in testa
- tagliente principale forma concava
- taglio trasversale della scanalatura ottimizzato
- max. taglio trasversale del foro
- application in hydraulic chucks
- 4 fasi di guida
- osservare la pressone del lubrificante (vedere diagramma)



d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	125,000	85,000	36,000
3,100		6,000	141,000	101,000	36,000
3,500		6,000	156,000	116,000	36,000
3,800		6,000	156,000	116,000	36,000
3,970	5/32	6,000	156,000	116,000	36,000
4,000		6,000	156,000	116,000	36,000
4,200		6,000	183,000	143,000	36,000
4,500		6,000	183,000	143,000	36,000
4,760	3/16	6,000	183,000	143,000	36,000
5,000		6,000	183,000	143,000	36,000
5,100		6,000	210,000	170,000	36,000
5,500		6,000	210,000	170,000	36,000
5,560	7/32	6,000	210,000	170,000	36,000
6,000		6,000	210,000	170,000	36,000
6,300		8,000	237,000	197,000	36,000
6,350	1/4	8,000	237,000	197,000	36,000
6,500		8,000	237,000	197,000	36,000
7,000		8,000	237,000	197,000	36,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
7,140	9/32	8,000	263,000	223,000	36,000
7,500		8,000	263,000	223,000	36,000
8,000		8,000	263,000	223,000	36,000
8,500		10,000	294,000	250,000	40,000
8,800		10,000	294,000	250,000	40,000
9,000		10,000	294,000	250,000	40,000
10,000		10,000	321,000	277,000	40,000
11,000		12,000	359,000	310,000	45,000
12,000		12,000	386,000	337,000	45,000

Punte SuperV

Punte con refrigerazione interna SuperV

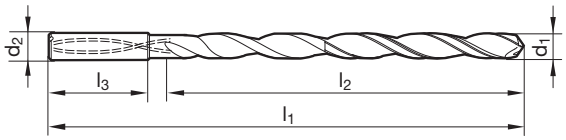
Catalogo n° 51767

SuperV-T | 30xD | WN | VHM | Al-TiN | 135° | h7 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 32

- Assott. del nocc. ≥ Ø 3,000
- spoglia sul cono tagliente
- rivestimento in testa
- tagliente principale forma concava
- taglio trasversale della scanalatura ottimizzato
- max. taglio trasversale del foro
- application in hydraulic chucks
- 4 fasi di guida
- osservare la pressone del lubrificante (vedere diagramma)



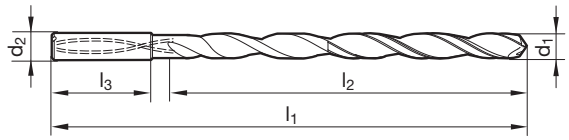
d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
3,000		6,000	140,000	100,000	36,000
3,100		6,000	158,000	118,000	36,000
3,500		6,000	176,000	136,000	36,000
3,800		6,000	176,000	136,000	36,000
3,970	5/32	6,000	176,000	136,000	36,000
4,000		6,000	176,000	136,000	36,000
4,200		6,000	208,000	168,000	36,000
4,500		6,000	208,000	168,000	36,000
4,760	3/16	6,000	208,000	168,000	36,000
5,000		6,000	208,000	168,000	36,000
5,100		6,000	240,000	200,000	36,000
5,500		6,000	240,000	200,000	36,000
5,560	7/32	6,000	240,000	200,000	36,000
6,000		6,000	240,000	200,000	36,000
6,300		8,000	272,000	232,000	36,000
6,350	1/4	8,000	272,000	232,000	36,000
6,500		8,000	272,000	232,000	36,000
7,000		8,000	272,000	232,000	36,000

d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 mm
7,140	9/32	8,000	303,000	263,000	36,000
7,500		8,000	303,000	263,000	36,000
8,000		8,000	303,000	263,000	36,000
8,500		10,000	339,000	295,000	40,000
8,800		10,000	339,000	295,000	40,000
9,000		10,000	339,000	295,000	40,000
10,000		10,000	371,000	327,000	40,000

Punte SuperV

Punte con refrigerazione interna SuperV

Catalogo n° 51768



SuperV-T | 40xD | WN | VHM | Al-TiN | 135° | h7 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 32

- Assott. del nocc. ≥ Ø 3,000
- spoglia sul cono tagliente
- rivestimento in testa
- tagliente principale forma concava
- taglio trasversale della scanalatura ottimizzato
- max. taglio trasversale del foro
- application in hydraulic chucks
- 4 fasi di guida
- osservare la pressone del lubrificante (vedere diagramma)

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	170,000	130,000	36,000
3,100		6,000	193,000	153,000	36,000
3,170	1/8	6,000	193,000	153,000	36,000
3,500		6,000	193,000	153,000	36,000
3,800		6,000	216,000	176,000	36,000
3,970	5/32	6,000	216,000	176,000	36,000
4,000		6,000	216,000	176,000	36,000
4,200		6,000	238,000	198,000	36,000
4,500		6,000	238,000	198,000	36,000
4,760	3/16	6,000	258,000	218,000	36,000
5,000		6,000	258,000	218,000	36,000
5,100		6,000	280,000	240,000	36,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
5,500		6,000	280,000	240,000	36,000
5,560	7/32	6,000	300,000	260,000	36,000
6,000		6,000	300,000	260,000	36,000
6,300		8,000	322,000	282,000	36,000
6,350	1/4	8,000	322,000	282,000	36,000
6,500		8,000	322,000	282,000	36,000
7,000		8,000	342,000	302,000	36,000
7,140	9/32	8,000	363,000	323,000	36,000
7,500		8,000	363,000	323,000	36,000
8,000		8,000	383,000	343,000	36,000

Punte SuperV

Punte SuperV, 3 taglienti

Catalogo n° 71862

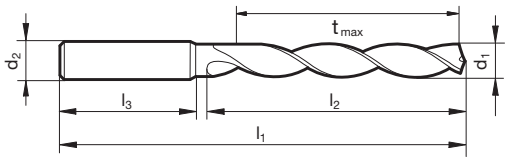
SuperV-83-GAL | 5xD | DIN 6537 L | VHM | lucido | 130° | m7 | R | HA

P	M	K	N	S	H
		●	●		

Parametri di lav. ind. a pag. 28

- Assott. del nocc. ≥ Ø 3,000
- affilatura spiropoint
- scanalature larghe
- ottimale centraggio
- utilizzabile per taglio interrotto

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
3,000	6,000	66,000	28,000	36,000
3,100	6,000	66,000	28,000	36,000
3,200	6,000	66,000	28,000	36,000
3,300	6,000	66,000	28,000	36,000
3,500	6,000	66,000	28,000	36,000
3,700	6,000	66,000	28,000	36,000
3,800	6,000	74,000	36,000	36,000
4,000	6,000	74,000	36,000	36,000
4,100	6,000	74,000	36,000	36,000
4,200	6,000	74,000	36,000	36,000
4,500	6,000	74,000	36,000	36,000
4,800	6,000	82,000	44,000	36,000
5,000	6,000	82,000	44,000	36,000
5,100	6,000	82,000	44,000	36,000
5,200	6,000	82,000	44,000	36,000
5,300	6,000	82,000	44,000	36,000
5,500	6,000	82,000	44,000	36,000
5,800	6,000	82,000	44,000	36,000
6,000	6,000	82,000	44,000	36,000
6,100	8,000	91,000	53,000	36,000
6,200	8,000	91,000	53,000	36,000
6,400	8,000	91,000	53,000	36,000
6,500	8,000	91,000	53,000	36,000
6,700	8,000	91,000	53,000	36,000
6,800	8,000	91,000	53,000	36,000
6,900	8,000	91,000	53,000	36,000
7,000	8,000	91,000	53,000	36,000
7,100	8,000	91,000	53,000	36,000
7,400	8,000	91,000	53,000	36,000
7,500	8,000	91,000	53,000	36,000
7,800	8,000	91,000	53,000	36,000
8,000	8,000	91,000	53,000	36,000
8,100	10,000	103,000	61,000	40,000
8,200	10,000	103,000	61,000	40,000
8,400	10,000	103,000	61,000	40,000
8,500	10,000	103,000	61,000	40,000

d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
8,600	10,000	103,000	61,000	40,000
8,700	10,000	103,000	61,000	40,000
8,800	10,000	103,000	61,000	40,000
9,000	10,000	103,000	61,000	40,000
9,100	10,000	103,000	61,000	40,000
9,500	10,000	103,000	61,000	40,000
9,800	10,000	103,000	61,000	40,000
10,000	10,000	103,000	61,000	40,000
10,100	12,000	118,000	71,000	45,000
10,200	12,000	118,000	71,000	45,000
10,300	12,000	118,000	71,000	45,000
10,500	12,000	118,000	71,000	45,000
11,000	12,000	118,000	71,000	45,000
11,200	12,000	118,000	71,000	45,000
11,500	12,000	118,000	71,000	45,000
11,800	12,000	118,000	71,000	45,000
12,000	12,000	118,000	71,000	45,000
12,100	14,000	124,000	77,000	45,000
12,500	14,000	124,000	77,000	45,000
13,000	14,000	124,000	77,000	45,000
13,500	14,000	124,000	77,000	45,000
14,000	14,000	124,000	77,000	45,000
14,100	16,000	133,000	83,000	48,000
14,500	16,000	133,000	83,000	48,000
15,000	16,000	133,000	83,000	48,000
15,500	16,000	133,000	83,000	48,000
16,000	16,000	133,000	83,000	48,000
16,500	18,000	143,000	93,000	48,000
17,000	18,000	143,000	93,000	48,000
17,500	18,000	143,000	93,000	48,000
18,000	18,000	143,000	93,000	48,000
18,500	20,000	153,000	101,000	50,000
19,000	20,000	153,000	101,000	50,000
19,500	20,000	153,000	101,000	50,000
20,000	20,000	153,000	101,000	50,000

Punte SuperV

Micropunte ad alto rendimento in MD SuperV-NX senza fori interni

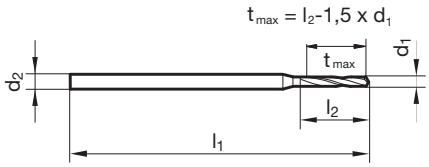
Catalogo n° 71998

SuperV-NX | 4xD | WN | VHM | Al-TiN+ | 140° | m7 | R | Cyl

P	M	K	N	S	H
●	○	●	○	○	

Parametri di lav. ind. a pag. 34

- Assott. del nocc. ≥ Ø 0,500
- affilatura su piani
- forma del tagliente principale diritta
- fresatura dei taglienti ridotti



d1 mm	inch	d2 mm	l1 mm	l2 mm
0,500		3,000	47,000	3,000
0,550		3,000	47,000	3,300
0,600		3,000	47,000	3,600
0,650		3,000	47,000	3,900
0,700		3,000	47,000	4,200
0,750		3,000	47,000	4,500
0,800		3,000	47,000	4,800
0,850		3,000	47,000	5,100
0,900		3,000	47,000	5,400
0,950		3,000	47,000	5,700
1,000		3,000	47,000	6,000
1,050		3,000	47,000	6,300
1,100		3,000	47,000	6,600
1,150		3,000	47,000	6,900
1,200		3,000	47,000	7,200
1,250		3,000	47,000	7,500
1,300		3,000	47,000	7,800
1,350		3,000	47,000	8,100
1,400		3,000	47,000	8,400
1,450		3,000	47,000	8,700
1,500		3,000	47,000	9,000
1,550		3,000	47,000	9,300
1,590	1/16	3,000	47,000	9,600
1,600		3,000	47,000	9,600
1,650		3,000	47,000	9,900
1,700		3,000	47,000	10,200
1,750		3,000	47,000	10,500
1,800		3,000	52,000	10,800
1,850		3,000	52,000	11,100
1,900		3,000	52,000	11,400

d1 mm	inch	d2 mm	l1 mm	l2 mm
1,950		3,000	52,000	11,700
1,980	5/64	4,000	59,000	12,000
2,000		4,000	59,000	12,000
2,050		4,000	59,000	12,300
2,100		4,000	59,000	12,600
2,150		4,000	59,000	12,900
2,200		4,000	59,000	13,200
2,250		4,000	59,000	13,500
2,300		4,000	59,000	13,800
2,350		4,000	59,000	14,100
2,380	3/32	4,000	59,000	14,400
2,400		4,000	59,000	14,400
2,450		4,000	59,000	14,700
2,500		4,000	59,000	15,000
2,550		4,000	59,000	15,300
2,600		4,000	59,000	15,600
2,650		4,000	59,000	15,900
2,700		4,000	59,000	16,200
2,750		4,000	59,000	16,500
2,780	7/64	4,000	59,000	16,800
2,800		4,000	59,000	16,800
2,850		4,000	59,000	17,100
2,900		4,000	59,000	17,400
2,950		4,000	59,000	17,700
3,000		4,000	59,000	18,000

Punte SuperV

Micropunte ad alto rendimento in MD SuperV-NX senza fori interni

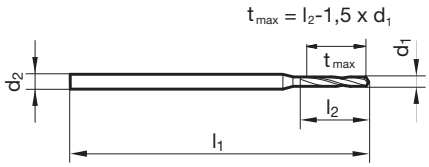
Catalogo n° 71999

SuperV-NX | 7xD | WN | VHM | Al-TiN+ | 140° | m7 | R | HA

P	M	K	N	S	H
●	○	●	○	○	

Parametri di lav. ind. a pag. 34

- Assott. del nocc. ≥ Ø 0,500
- affilatura su piani
- forma del tagliente principale diritta
- fresatura dei taglienti ridotti



d1 mm	inch	d2 mm	l1 mm	l2 mm
0,500		3,000	47,000	4,000
0,550		3,000	47,000	4,400
0,600		3,000	47,000	4,800
0,650		3,000	47,000	5,200
0,700		3,000	47,000	5,600
0,750		3,000	47,000	6,000
0,800		3,000	47,000	6,400
0,850		3,000	47,000	6,800
0,900		3,000	47,000	7,200
0,950		3,000	47,000	7,600
1,000		3,000	47,000	8,000
1,050		3,000	47,000	8,400
1,100		3,000	47,000	8,800
1,150		3,000	47,000	9,200
1,200		3,000	52,000	10,800
1,250		3,000	52,000	11,300
1,300		3,000	52,000	11,700
1,350		3,000	52,000	12,200
1,400		3,000	52,000	12,600
1,450		3,000	52,000	13,100
1,500		3,000	52,000	13,500
1,550		3,000	52,000	14,000
1,590	1/16	3,000	52,000	14,400
1,600		3,000	52,000	14,400
1,650		3,000	52,000	14,900
1,700		3,000	52,000	15,300
1,750		3,000	52,000	15,800
1,800		3,000	52,000	16,200
1,850		3,000	52,000	16,700
1,900		3,000	52,000	17,100

d1 mm	inch	d2 mm	l1 mm	l2 mm
1,950		3,000	52,000	17,600
1,980	5/64	4,000	63,000	18,000
2,000		4,000	63,000	18,000
2,050		4,000	63,000	18,500
2,100		4,000	63,000	18,900
2,150		4,000	63,000	19,400
2,200		4,000	63,000	19,800
2,250		4,000	63,000	20,300
2,300		4,000	63,000	20,700
2,350		4,000	63,000	21,200
2,380	3/32	4,000	63,000	21,600
2,400		4,000	63,000	21,600
2,450		4,000	63,000	22,100
2,500		4,000	63,000	22,500
2,550		4,000	63,000	23,000
2,600		4,000	67,000	23,400
2,650		4,000	67,000	23,900
2,700		4,000	67,000	24,300
2,750		4,000	67,000	24,800
2,780	7/64	4,000	67,000	25,200
2,800		4,000	67,000	25,200
2,850		4,000	67,000	25,700
2,900		4,000	67,000	26,100
2,950		4,000	67,000	26,600
3,000		4,000	67,000	27,000

Punte SuperV

Micropunte ad alto rendimento in MD SuperV-NX con fori interni

Catalogo n° 51997

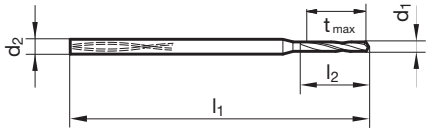
SuperV-IK-NX | 5xD | WN | VHM | Al-TiN | 140° | m7 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 34

- Assott. del nocc. ≥ Ø 1,400
- affilatura su piani
- forma del tagliente principale diritta
- fresatura dei taglienti ridotti
- osservare la pressone del lubrificante (vedere diagramma)

$t_{max} = l_2 - 1{,}5 \times d_1$



d1 mm	inch	d2 mm	l1 mm	l2 mm
1,400		4,000	52,000	11,000
1,450		4,000	52,000	12,000
1,500		4,000	52,000	12,000
1,550		4,000	52,000	12,000
1,590	1/16	4,000	52,000	13,000
1,600		4,000	52,000	13,000
1,650		4,000	52,000	13,000
1,700		4,000	56,000	14,000
1,750		4,000	56,000	14,000
1,800		4,000	56,000	14,000
1,850		4,000	56,000	15,000
1,900		4,000	56,000	15,000
1,950		4,000	56,000	16,000
1,980	5/64	4,000	56,000	16,000
2,000		4,000	56,000	16,000
2,050		4,000	56,000	16,000
2,100		4,000	62,000	17,000
2,150		4,000	62,000	17,000
2,200		4,000	62,000	18,000
2,250		4,000	62,000	18,000
2,300		4,000	62,000	18,000
2,350		4,000	62,000	19,000
2,380	3/32	4,000	62,000	19,000
2,400		4,000	62,000	19,000

d1 mm	inch	d2 mm	l1 mm	l2 mm
2,450		4,000	62,000	20,000
2,500		4,000	62,000	20,000
2,550		4,000	62,000	20,000
2,600		4,000	66,000	21,000
2,650		4,000	66,000	21,000
2,700		4,000	66,000	22,000
2,750		4,000	66,000	22,000
2,780	7/64	4,000	66,000	22,000
2,800		4,000	66,000	22,000
2,850		4,000	66,000	23,000
2,900		4,000	66,000	23,000
2,950		4,000	66,000	24,000
3,000		4,000	66,000	24,000

Punte SuperV

Micropunte ad alto rendimento in MD SuperV-NX con fori interni

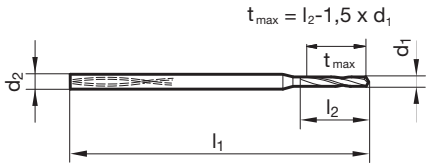
Catalogo n° 51998

SuperV-IK-NX | 8xD | WN | VHM | Al-TiN | 135° | h7 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 34

- Assott. del nocc. ≥ Ø 1,400
- affilatura su piani
- forma del tagliente principale diritta
- fresatura dei taglienti ridotti
- osservare la pressone del lubrificante (vedere diagramma)



d1 mm	inch	d2 mm	l1 mm	l2 mm
1,400		4,000	52,000	15,000
1,450		4,000	52,000	16,000
1,500		4,000	52,000	17,000
1,550		4,000	52,000	17,000
1,590	1/16	4,000	52,000	18,000
1,600		4,000	52,000	18,000
1,650		4,000	52,000	18,000
1,700		4,000	56,000	19,000
1,750		4,000	56,000	19,000
1,800		4,000	56,000	20,000
1,850		4,000	56,000	20,000
1,900		4,000	56,000	21,000
1,950		4,000	56,000	21,000
1,980	5/64	4,000	56,000	22,000
2,000		4,000	56,000	22,000
2,050		4,000	56,000	23,000
2,100		4,000	62,000	23,000
2,150		4,000	62,000	24,000
2,200		4,000	62,000	24,000
2,250		4,000	62,000	25,000
2,300		4,000	62,000	25,000
2,350		4,000	62,000	26,000
2,380	3/32	4,000	62,000	26,000
2,400		4,000	62,000	26,000

d1 mm	inch	d2 mm	l1 mm	l2 mm
2,450		4,000	62,000	27,000
2,500		4,000	62,000	28,000
2,550		4,000	62,000	28,000
2,600		4,000	66,000	29,000
2,650		4,000	66,000	29,000
2,700		4,000	66,000	30,000
2,750		4,000	66,000	30,000
2,780	7/64	4,000	66,000	31,000
2,800		4,000	66,000	31,000
2,850		4,000	66,000	31,000
2,900		4,000	66,000	32,000
2,950		4,000	66,000	32,000
3,000		4,000	66,000	33,000

Punte SuperV

Micropunte ad alto rendimento in MD SuperV-NX con fori interni

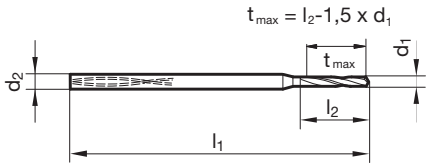
Catalogo n° 51999

SuperV-IK-NX | 15xD | WN | VHM | Al-TiN | 135° | h7 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 34

- Assott. del nocc. ≥ Ø 1,400
- affilatura su piani
- rivestimento in testa
- forma del tagliente principale diritta
- fresatura dei taglienti ridotti
- osservare la pressone del lubrificante (vedere diagramma)



d1 **mm**	inch	d2 mm	l1 mm	l2 mm
1,400		4,000	62,000	25,000
1,500		4,000	62,000	27,000
1,590	1/16	4,000	62,000	29,000
1,600		4,000	62,000	29,000
1,700		4,000	70,000	31,000
1,800		4,000	70,000	32,000
1,900		4,000	70,000	34,000
1,980	5/64	4,000	70,000	36,000
2,000		4,000	70,000	36,000
2,100		4,000	78,000	38,000
2,200		4,000	78,000	40,000
2,300		4,000	78,000	42,000

d1 **mm**	inch	d2 mm	l1 mm	l2 mm
2,380	3/32	4,000	78,000	44,000
2,400		4,000	78,000	44,000
2,500		4,000	78,000	45,000
2,600		4,000	87,000	47,000
2,700		4,000	87,000	48,000
2,780	7/64	4,000	87,000	50,000
2,800		4,000	87,000	50,000
2,900		4,000	87,000	52,000
3,000		4,000	87,000	54,000

Punte SuperV

Micropunte universale SuperV-M VHM

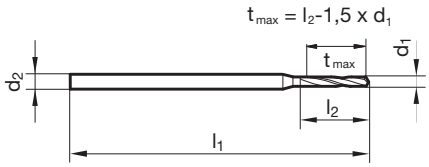
Catalogo n° 51720

SuperV-M | WN | VHM | Al-TiN | 140° | h7 | R | HA

P	M	K	N	S	H
●		●			

Parametri di lav. ind. a pag. 34

- Assott. del nocc. ≥ Ø 0,800
- affilatura su piani
- forma del tagliente principale diritta



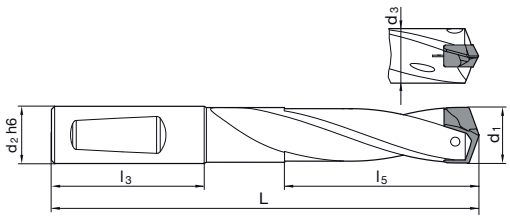
d1 mm	inch	d2 mm	l1 mm	l2 mm
0,100		3,000	38,000	1,200
0,150		3,000	38,000	2,000
0,200		3,000	38,000	2,500
0,250		3,000	38,000	3,000
0,300		3,000	38,000	5,000
0,310		3,000	38,000	5,000
0,350		3,000	38,000	6,000
0,370		3,000	38,000	6,000
0,400		3,000	38,000	7,000
0,450		3,000	38,000	7,000
0,500		3,000	38,000	7,000
0,550		3,000	38,000	7,000
0,600		3,000	38,000	7,000
0,640		3,000	38,000	7,000
0,650		3,000	38,000	7,000
0,700		3,000	38,000	8,000
0,710		3,000	38,000	8,000
0,720		3,000	38,000	8,000
0,740		3,000	38,000	8,000
0,750		3,000	38,000	8,000
0,790	1/32	3,000	38,000	8,000
0,800		3,000	38,000	10,000
0,810		3,000	38,000	10,000
0,820		3,000	38,000	10,000
0,840		3,000	38,000	10,000
0,900		3,000	38,000	10,000
0,910		3,000	38,000	10,000
0,920		3,000	38,000	10,000
0,930		3,000	38,000	10,000
0,940		3,000	38,000	10,000
0,950		3,000	38,000	10,000
0,990		3,000	38,000	10,000
1,000		3,000	38,000	10,000
1,100		3,000	38,000	10,000
1,150		3,000	38,000	10,000
1,200		3,000	38,000	10,000

d1 mm	inch	d2 mm	l1 mm	l2 mm
1,400		3,000	38,000	10,000
1,450		3,000	38,000	10,000
1,500		3,000	38,000	10,000
1,510		3,000	38,000	10,000
1,520		3,000	38,000	10,000
1,550		3,000	38,000	10,000
1,600		3,000	38,000	12,000
1,650		3,000	38,000	12,000
1,700		3,000	38,000	12,000
1,800		3,000	38,000	12,000
1,810		3,000	38,000	12,000
1,830		3,000	38,000	12,000
1,850		3,000	38,000	12,000
1,900		3,000	38,000	12,000
1,920		3,000	38,000	12,000
1,950		3,000	38,000	12,000
1,980	5/64	3,000	38,000	12,000
2,000		3,000	38,000	12,000
2,100		3,000	38,000	12,000
2,400		3,000	38,000	12,000
2,500		3,000	38,000	12,000
2,600		3,000	38,000	12,000
2,750		3,000	38,000	12,000
2,950		3,000	38,000	12,000
3,000		3,000	38,000	12,000

Sistema di foratura SuperV

Porta utensili SuperV-AP mini

Catalogo n° 77007



SuperV-AP mini | 1,5xD | WN | niche-lato | R | HE

Parametri di lav. ind. a pag. 36

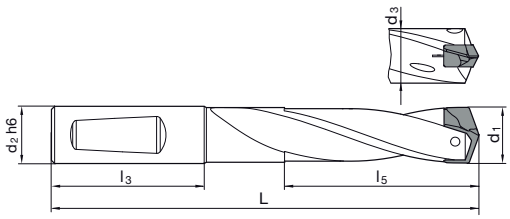
- specialmente per resistenza all'usura
- taglio trasversale della scanalatura ottimizzato
- uscita del lubrificante ottimizzata
- vite di serraggio catalogo-Nr. 77020 inclusa
- cacciavite catalogo-Nr. 76021 incluso

d1 mm	**Codice**	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Grandezza
11,00-11,49	**11,000**	12,000	10,700	84,000	45,000	19,300	110
11,50-11,99	**11,500**	12,000	11,200	85,000	45,000	20,100	115
12,00-12,49	**12,000**	12,000	11,700	87,000	45,000	21,000	120
12,50-12,99	**12,500**	14,000	12,200	89,000	45,000	21,900	125
13,00-13,49	**13,000**	14,000	12,700	90,000	45,000	22,600	130
13,50-13,99	**13,500**	14,000	13,200	92,000	45,000	23,600	135
14,00-14,49	**14,000**	14,000	13,700	93,000	45,000	24,500	140
14,50-14,99	**14,500**	16,000	14,200	98,000	48,000	25,300	145
15,00-15,49	**15,000**	16,000	14,700	100,000	48,000	26,100	150
15,50-15,99	**15,500**	16,000	15,200	101,000	48,000	27,000	155
16,00-16,49	**16,000**	16,000	15,700	102,000	48,000	27,800	160
16,50-16,99	**16,500**	18,000	16,200	105,000	48,000	28,700	165
17,00-17,49	**17,000**	18,000	16,700	106,000	48,000	29,600	170
17,50-17,99	**17,500**	18,000	17,200	107,000	48,000	30,400	175
18,00-18,49	**18,000**	18,000	17,700	109,000	48,000	31,200	180
18,50-18,99	**18,500**	20,000	18,200	113,000	50,000	32,100	185
19,00-19,49	**19,000**	20,000	18,700	114,000	50,000	32,900	190
19,50-19,99	**19,500**	20,000	19,200	116,000	50,000	33,700	195
20,00-20,49	**20,000**	20,000	19,700	117,000	50,000	34,600	200
20,50-20,99	**20,500**	25,000	20,200	128,000	56,000	35,500	205
21,00-21,49	**21,000**	25,000	20,700	129,000	56,000	36,400	210
21,50-21,99	**21,500**	25,000	21,200	130,000	56,000	37,200	215
22,00-22,49	**22,000**	25,000	21,700	131,000	56,000	38,000	220
22,50-22,99	**22,500**	25,000	22,200	134,000	56,000	38,900	225
23,00-23,49	**23,000**	25,000	22,700	135,000	56,000	39,800	230
23,50-23,99	**23,500**	25,000	23,200	137,000	56,000	40,600	235
24,00-24,49	**24,000**	25,000	23,700	138,000	56,000	41,500	240
24,50-24,99	**24,500**	25,000	24,200	140,000	56,000	42,300	245
25,00-25,49	**25,000**	25,000	24,700	142,000	56,000	43,200	250
25,50-25,99	**25,500**	32,000	25,200	148,000	60,000	44,000	255
26,00-26,49	**26,000**	32,000	25,700	151,000	60,000	44,300	260
26,50-26,99	**26,500**	32,000	26,200	153,000	60,000	45,100	265
27,00-27,49	**27,000**	32,000	26,700	155,000	60,000	46,000	270
27,50-27,99	**27,500**	32,000	27,200	156,000	60,000	46,800	275
28,00-28,49	**28,000**	32,000	27,700	157,000	60,000	47,700	280
28,50-28,99	**28,500**	32,000	28,200	159,000	60,000	48,500	285
29,00-29,49	**29,000**	32,000	28,700	161,000	60,000	49,400	290
29,50-29,99	**29,500**	32,000	29,200	162,000	60,000	50,200	295
30,00-30,49	**30,000**	32,000	29,700	164,000	60,000	50,900	300
30,50-30,99	**30,500**	32,000	30,200	166,000	60,000	51,700	305
31,00-31,49	**31,000**	32,000	30,700	167,000	60,000	52,600	310
31,50-31,99	**31,500**	32,000	31,200	168,000	60,000	53,400	315
32,00-32,99	**32,000**	32,000	31,700	172,000	60,000	55,100	320
33,00-33,99	**33,000**	32,000	32,700	175,000	60,000	56,800	330
34,00-34,99	**34,000**	32,000	33,700	178,000	60,000	58,500	340
35,00-35,99	**35,000**	32,000	34,700	181,000	60,000	60,200	350
36,00-36,99	**36,000**	32,000	35,700	184,000	60,000	61,800	360
37,00-37,99	**37,000**	32,000	36,700	188,000	60,000	63,500	370
38,00-38,99	**38,000**	32,000	37,700	191,000	60,000	65,200	380
39,00-40,00	**39,000**	32,000	38,700	194,000	60,000	66,900	390

Sistema di foratura SuperV

Porta utensili SuperV-AP mini

Catalogo n° 77000



SuperV-AP mini | 3xD | WN | niche-lato | R | HE

Parametri di lav. ind. a pag. 38

- specialmente per resistenza all'usura
- taglio trasversale della scanalatura ottimizzato
- uscita del lubrificante ottimizzata
- vite di serraggio catalogo-Nr. 77020 inclusa
- cacciavite catalogo-Nr. 76021 incluso

d1 mm	**Codice**	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Grandezza
11,00-11,49	**11,000**	12,000	10,700	101,000	45,000	36,600	110
11,50-11,99	**11,500**	12,000	11,200	103,000	45,000	38,100	115
12,00-12,49	**12,000**	12,000	11,700	106,000	45,000	39,700	120
12,50-12,99	**12,500**	14,000	12,200	108,000	45,000	41,300	125
13,00-13,49	**13,000**	14,000	12,700	110,000	45,000	42,900	130
13,50-13,99	**13,500**	14,000	13,200	113,000	45,000	44,600	135
14,00-14,49	**14,000**	14,000	13,700	115,000	45,000	46,200	140
14,50-14,99	**14,500**	16,000	14,200	120,000	48,000	47,800	145
15,00-15,49	**15,000**	16,000	14,700	123,000	48,000	49,300	150
15,50-15,99	**15,500**	16,000	15,200	125,000	48,000	50,900	155
16,00-16,49	**16,000**	16,000	15,700	127,000	48,000	52,900	160
16,50-16,99	**16,500**	18,000	16,200	130,000	48,000	54,100	165
17,00-17,49	**17,000**	18,000	16,700	132,000	48,000	55,800	170
17,50-17,99	**17,500**	18,000	17,200	134,000	48,000	57,400	175
18,00-18,49	**18,000**	18,000	17,700	137,000	48,000	58,900	180
18,50-18,99	**18,500**	20,000	18,200	141,000	50,000	60,500	185
19,00-19,49	**19,000**	20,000	18,700	143,000	50,000	62,100	190
19,50-19,99	**19,500**	20,000	19,200	146,000	50,000	63,700	195
20,00-20,49	**20,000**	20,000	19,700	148,000	50,000	65,300	200
20,50-20,99	**20,500**	25,000	20,200	159,000	56,000	67,000	205
21,00-21,49	**21,000**	25,000	20,700	161,000	56,000	68,600	210
21,50-21,99	**21,500**	25,000	21,200	163,000	56,000	70,100	215
22,00-22,49	**22,000**	25,000	21,700	165,000	56,000	71,700	220
22,50-22,99	**22,500**	25,000	22,200	168,000	56,000	73,300	225
23,00-23,49	**23,000**	25,000	22,700	170,000	56,000	74,900	230
23,50-23,99	**23,500**	25,000	23,200	173,000	56,000	76,500	235
24,00-24,49	**24,000**	25,000	23,700	175,000	56,000	78,100	240
24,50-24,99	**24,500**	25,000	24,200	177,000	56,000	79,700	245
25,00-25,49	**25,000**	25,000	24,700	180,000	56,000	81,300	250
25,50-25,99	**25,500**	32,000	25,200	187,000	60,000	82,900	255
26,00-26,49	**26,000**	32,000	25,700	191,000	60,000	84,000	260
26,50-26,99	**26,500**	32,000	26,200	193,000	60,000	86,100	265
27,00-27,49	**27,000**	32,000	26,700	196,000	60,000	87,200	270
27,50-27,99	**27,500**	32,000	27,200	198,000	60,000	88,900	275
28,00-28,49	**28,000**	32,000	27,700	200,000	60,000	90,400	280
28,50-28,99	**28,500**	32,000	28,200	202,000	60,000	92,500	285
29,00-29,49	**29,000**	32,000	28,700	205,000	60,000	94,600	290
29,50-29,99	**29,500**	32,000	29,200	207,000	60,000	95,100	295
30,00-30,49	**30,000**	32,000	29,700	210,000	60,000	96,700	300
30,50-30,99	**30,500**	32,000	30,200	212,000	60,000	98,300	305
31,00-31,49	**31,000**	32,000	30,700	214,000	60,000	99,800	310
31,50-31,99	**31,500**	32,000	31,200	216,000	60,000	101,400	315
32,00-32,99	**32,000**	32,000	31,700	221,000	60,000	104,600	320
33,00-33,99	**33,000**	32,000	32,700	226,000	60,000	107,800	330
34,00-34,99	**34,000**	32,000	33,700	230,000	60,000	111,000	340
35,00-35,99	**35,000**	32,000	34,700	235,000	60,000	114,200	350
36,00-36,99	**36,000**	32,000	35,700	240,000	60,000	117,300	360
37,00-37,99	**37,000**	32,000	36,700	245,000	60,000	120,500	370
38,00-38,99	**38,000**	32,000	37,700	249,000	60,000	123,700	380
39,00-40,00	**39,000**	32,000	38,700	254,000	60,000	126,900	390

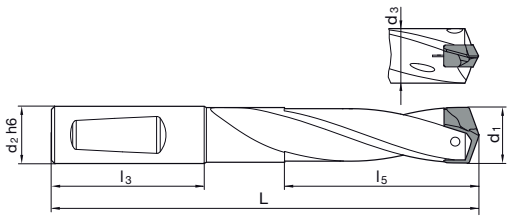
Sistema di foratura SuperV

Porta utensili SuperV-AP mini

Catalogo n° 77001

SuperV-AP mini | 5xD | WN | niche-lato | R | HE

Parametri di lav. ind. a pag. 40



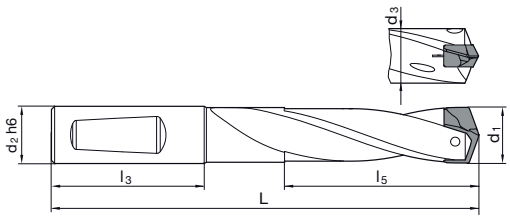
- specialmente per resistenza all'usura
- taglio trasversale della scanalatura ottimizzato
- uscita del lubrificante ottimizzata
- vite di serraggio catalogo-Nr. 77020 inclusa
- cacciavite catalogo-Nr. 76021 incluso

d1 mm	**Codice**	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Grandezza
11,00-11,49	**11,000**	12,000	10,700	124,000	45,000	59,600	110
11,50-11,99	**11,500**	12,000	11,200	127,000	45,000	62,100	115
12,00-12,49	**12,000**	12,000	11,700	131,000	45,000	64,700	120
12,50-12,99	**12,500**	14,000	12,200	134,000	45,000	67,300	125
13,00-13,49	**13,000**	14,000	12,700	137,000	45,000	69,900	130
13,50-13,99	**13,500**	14,000	13,200	141,000	45,000	72,600	135
14,00-14,49	**14,000**	14,000	13,700	144,000	45,000	75,200	140
14,50-14,99	**14,500**	16,000	14,200	150,000	48,000	77,800	145
15,00-15,49	**15,000**	16,000	14,700	154,000	48,000	80,300	150
15,50-15,99	**15,500**	16,000	15,200	157,000	48,000	82,900	155
16,00-16,49	**16,000**	16,000	15,700	160,000	48,000	85,900	160
16,50-16,99	**16,500**	18,000	16,200	164,000	48,000	88,100	165
17,00-17,49	**17,000**	18,000	16,700	167,000	48,000	90,800	170
17,50-17,99	**17,500**	18,000	17,200	170,000	48,000	93,400	175
18,00-18,49	**18,000**	18,000	17,700	174,000	48,000	95,900	180
18,50-18,99	**18,500**	20,000	18,200	179,000	50,000	98,500	185
19,00-19,49	**19,000**	20,000	18,700	182,000	50,000	101,100	190
19,50-19,99	**19,500**	20,000	19,200	186,000	50,000	103,700	195
20,00-20,49	**20,000**	20,000	19,700	189,000	50,000	106,300	200
20,50-20,99	**20,500**	25,000	20,200	201,000	56,000	109,000	205
21,00-21,49	**21,000**	25,000	20,700	204,000	56,000	111,600	210
21,50-21,99	**21,500**	25,000	21,200	207,000	56,000	114,100	215
22,00-22,49	**22,000**	25,000	21,700	210,000	56,000	116,700	220
22,50-22,99	**22,500**	25,000	22,200	214,000	56,000	119,300	225
23,00-23,49	**23,000**	25,000	22,700	217,000	56,000	121,900	230
23,50-23,99	**23,500**	25,000	23,200	221,000	56,000	124,500	235
24,00-24,49	**24,000**	25,000	23,700	224,000	56,000	127,100	240
24,50-24,99	**24,500**	25,000	24,200	227,000	56,000	129,700	245
25,00-25,49	**25,000**	25,000	24,700	231,000	56,000	132,300	250
25,50-25,99	**25,500**	32,000	25,200	239,000	60,000	134,900	255
26,00-26,49	**26,000**	32,000	25,700	244,000	60,000	137,000	260
26,50-26,99	**26,500**	32,000	26,200	247,000	60,000	140,000	265
27,00-27,49	**27,000**	32,000	26,700	251,000	60,000	142,200	270
27,50-27,99	**27,500**	32,000	27,200	254,000	60,000	144,800	275
28,00-28,49	**28,000**	32,000	27,700	257,000	60,000	147,400	280
28,50-28,99	**28,500**	32,000	28,200	260,000	60,000	150,400	285
29,00-29,49	**29,000**	32,000	28,700	264,000	60,000	153,500	290
30,00-30,49	**30,000**	32,000	29,700	271,000	60,000	157,600	300
30,50-30,99	**30,500**	32,000	30,200	274,000	60,000	160,200	305
31,00-31,49	**31,000**	32,000	30,700	277,000	60,000	162,800	310
31,50-31,99	**31,500**	32,000	31,200	280,000	60,000	165,400	315
32,00-32,99	**32,000**	32,000	31,700	287,000	60,000	170,600	320
33,00-33,99	**33,000**	32,000	32,700	294,000	60,000	175,800	330
34,00-34,99	**34,000**	32,000	33,700	300,000	60,000	181,000	340
35,00-35,99	**35,000**	32,000	34,700	307,000	60,000	186,200	350
36,00-36,99	**36,000**	32,000	35,700	314,000	60,000	191,300	360
37,00-37,99	**37,000**	32,000	36,700	321,000	60,000	196,500	370
38,00-38,99	**38,000**	32,000	37,700	327,000	60,000	201,700	380
39,00-40,00	**39,000**	32,000	38,700	334,000	60,000	206,900	390

Sistema di foratura SuperV

Porta utensili SuperV-AP mini

Catalogo n° 77003



SuperV-AP mini | 7xD | WN | niche-lato | R | HE

Parametri di lav. ind. a pag. 42

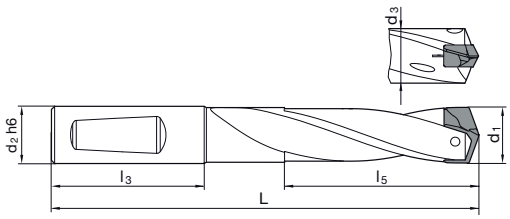
- specialmente per resistenza all'usura
- taglio trasversale della scanalatura ottimizzato
- uscita del lubrificante ottimizzata
- vite di serraggio catalogo-Nr. 77020 inclusa
- cacciavite catalogo-Nr. 76021 incluso

d1 mm	**Codice**	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Grandezza
11,00-11,49	**11,000**	12,000	10,700	147,000	45,000	82,600	110
11,50-11,99	**11,500**	12,000	11,200	151,000	45,000	86,100	115
12,00-12,49	**12,000**	12,000	11,700	156,000	45,000	89,700	120
12,50-12,99	**12,500**	14,000	12,200	160,000	45,000	93,300	125
13,00-13,49	**13,000**	14,000	12,700	164,000	45,000	96,900	130
13,50-13,99	**13,500**	14,000	13,200	169,000	45,000	100,600	135
14,00-14,49	**14,000**	14,000	13,700	173,000	45,000	104,200	140
14,50-14,99	**14,500**	16,000	14,200	180,000	48,000	107,800	145
15,00-15,49	**15,000**	16,000	14,700	185,000	48,000	111,300	150
15,50-15,99	**15,500**	16,000	15,200	189,000	48,000	114,900	155
16,00-16,49	**16,000**	16,000	15,700	193,000	48,000	118,900	160
16,50-16,99	**16,500**	18,000	16,200	198,000	48,000	122,100	165
17,00-17,49	**17,000**	18,000	16,700	202,000	48,000	125,800	170
17,50-17,99	**17,500**	18,000	17,200	206,000	48,000	129,400	175
18,00-18,49	**18,000**	18,000	17,700	211,000	48,000	132,900	180
18,50-18,99	**18,500**	20,000	18,200	217,000	50,000	136,500	185
19,00-19,49	**19,000**	20,000	18,700	221,000	50,000	140,100	190
19,50-19,99	**19,500**	20,000	19,200	226,000	50,000	143,700	195
20,00-20,49	**20,000**	20,000	19,700	230,000	50,000	147,300	200
20,50-20,99	**20,500**	25,000	20,200	243,000	56,000	151,000	205
21,00-21,49	**21,000**	25,000	20,700	247,000	56,000	154,600	210
21,50-21,99	**21,500**	25,000	21,200	251,000	56,000	158,100	215
22,00-22,49	**22,000**	25,000	21,700	255,000	56,000	161,700	220
22,50-22,99	**22,500**	25,000	22,200	260,000	56,000	165,300	225
23,00-23,49	**23,000**	25,000	22,700	264,000	56,000	168,900	230
23,50-23,99	**23,500**	25,000	23,200	269,000	56,000	172,500	235
24,00-24,49	**24,000**	25,000	23,700	273,000	56,000	176,100	240
24,50-24,99	**24,500**	25,000	24,200	277,000	56,000	179,700	245
25,00-25,49	**25,000**	25,000	24,700	282,000	56,000	183,300	250
25,50-25,99	**25,500**	32,000	25,200	291,000	60,000	186,900	255
26,00-26,49	**26,000**	32,000	25,700	297,000	60,000	190,000	260
26,50-26,99	**26,500**	32,000	26,200	301,000	60,000	194,000	265
27,00-27,49	**27,000**	32,000	26,700	306,000	60,000	197,200	270
27,50-27,99	**27,500**	32,000	27,200	310,000	60,000	200,800	275
28,00-28,49	**28,000**	32,000	27,700	314,000	60,000	204,400	280
28,50-28,99	**28,500**	32,000	28,200	318,000	60,000	208,400	285
29,00-29,49	**29,000**	32,000	28,700	323,000	60,000	212,500	290
29,50-29,99	**29,500**	32,000	29,200	327,000	60,000	215,100	295
30,00-30,49	**30,000**	32,000	29,700	332,000	60,000	218,600	300
30,50-30,99	**30,500**	32,000	30,200	336,000	60,000	222,200	305
31,00-31,49	**31,000**	32,000	30,700	340,000	60,000	225,800	310
31,50-31,99	**31,500**	32,000	31,200	344,000	60,000	229,400	315
33,00-33,99	**33,000**	32,000	32,700	362,000	60,000	244,600	330
36,00-36,99	**36,000**	32,000	35,700	387,000	60,000	265,800	360
39,00-40,00	**39,000**	32,000	38,700	413,000	60,000	287,400	390

Sistema di foratura SuperV

Porta utensili SuperV-AP mini

Catalogo n° 77004



SuperV-AP mini | 10xD | WN | niche-lato | R | HE

Parametri di lav. ind. a pag. 44

- specialmente per resistenza all'usura
- taglio trasversale della scanalatura ottimizzato
- uscita del lubrificante ottimizzata
- vite di serraggio catalogo-Nr. 77020 inclusa
- cacciavite catalogo-Nr. 76021 incluso

d1 mm	**Codice**	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Grandezza
11,00-11,49	**11,000**	12,000	10,700	182,000	45,000	117,100	110
11,50-11,99	**11,500**	12,000	11,200	187,000	45,000	122,100	115
12,00-12,49	**12,000**	12,000	11,700	194,000	45,000	127,200	120
12,50-12,99	**12,500**	14,000	12,200	199,000	45,000	132,300	125
13,00-13,49	**13,000**	14,000	12,700	205,000	45,000	137,500	130
13,50-13,99	**13,500**	14,000	13,200	211,000	45,000	142,500	135
14,00-14,49	**14,000**	14,000	13,700	217,000	45,000	147,700	140
14,50-14,99	**14,500**	16,000	14,200	225,000	48,000	152,800	145
15,00-15,49	**15,000**	16,000	14,700	232,000	48,000	157,800	150
15,50-15,99	**15,500**	16,000	15,200	237,000	48,000	162,900	155
16,00-16,49	**16,000**	16,000	15,700	243,000	48,000	168,000	160
16,50-16,99	**16,500**	18,000	16,200	249,000	48,000	170,000	165
17,00-17,49	**17,000**	18,000	16,700	255,000	48,000	178,300	170
17,50-17,99	**17,500**	18,000	17,200	260,000	48,000	183,500	175
18,00-18,49	**18,000**	18,000	17,700	267,000	48,000	188,400	180
18,50-18,99	**18,500**	20,000	18,200	274,000	50,000	193,500	185
19,00-19,49	**19,000**	20,000	18,700	280,000	50,000	198,700	190
19,50-19,99	**19,500**	20,000	19,200	286,000	50,000	203,700	195
20,00-20,49	**20,000**	20,000	19,700	292,000	50,000	208,900	200
20,50-20,99	**20,500**	25,000	20,200	306,000	56,000	214,000	205
21,00-21,49	**21,000**	25,000	20,700	312,000	56,000	219,100	210
21,50-21,99	**21,500**	25,000	21,200	317,000	56,000	224,200	215
22,00-22,49	**22,000**	25,000	21,700	323,000	56,000	229,300	220
22,50-22,99	**22,500**	25,000	22,200	329,000	56,000	234,400	225
23,00-23,49	**23,000**	25,000	22,700	335,000	56,000	239,500	230
23,50-23,99	**23,500**	25,000	23,200	341,000	56,000	244,600	235
24,00-24,49	**24,000**	25,000	23,700	347,000	56,000	249,700	240
24,50-24,99	**24,500**	25,000	24,200	352,000	56,000	254,800	245
25,00-25,49	**25,000**	25,000	24,700	359,000	56,000	259,900	250
25,50-25,99	**25,500**	32,000	25,200	369,000	60,000	265,000	255
26,00-26,49	**26,000**	32,000	25,700	377,000	60,000	270,000	260
26,50-26,99	**26,500**	32,000	26,200	382,000	60,000	275,000	265
27,00-27,49	**27,000**	32,000	26,700	388,000	60,000	280,100	270
27,50-27,99	**27,500**	32,000	27,200	394,000	60,000	285,200	275
28,00-28,49	**28,000**	32,000	27,700	400,000	60,000	290,300	280
28,50-28,99	**28,500**	32,000	28,200	405,000	60,000	295,400	285
29,00-29,49	**29,000**	32,000	28,700	412,000	60,000	300,500	290
29,50-29,99	**29,500**	32,000	29,200	418,000	60,000	305,600	295
30,00-30,49	**30,000**	32,000	29,700	424,000	60,000	310,600	300
30,50-30,99	**30,500**	32,000	30,200	429,000	60,000	315,700	305
31,00-31,49	**31,000**	32,000	30,700	435,000	60,000	320,800	310
31,50-31,99	**31,500**	32,000	31,200	441,000	60,000	325,900	315

Sistema di foratura SuperV

Inserti intercambiabili per SuperV-AP mini

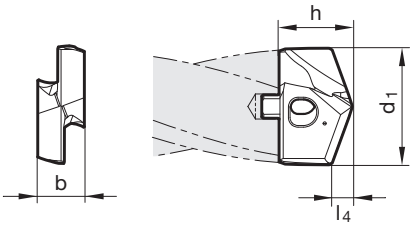
Catalogo n° 67011

SuperV-AP mini U | WN | VHM | TiAlN-nano | 140° | h7 | R

P	M	K	N	S	H
●		○			

Parametri di lav. ind. a pag. 36-44

- Assott. del nocc. ≥ Ø 11,000
- affilatura su piani
- tagliente principale forma diritta (dopo correzione)
- vite di serraggio catalogo-Nr. 77020 inclusa



d1 mm	d1 inch	Codice	l4 mm	b mm	h mm	Grandezza
11,000		**11,000**	2,100	4,500	7,500	110
11,200		**11,200**	2,100	4,500	7,500	110
11,500		**11,500**	2,100	4,500	7,500	115
11,510	29/64	**11,510**	2,100	4,500	7,500	115
11,700		**11,700**	2,200	4,500	7,500	115
11,800		**11,800**	2,200	4,500	7,500	115
11,910	15/32	**11,910**	2,200	4,500	7,500	115
12,000		**12,000**	2,200	5,000	7,700	120
12,100		**12,100**	2,300	5,000	7,700	120
12,200		**12,200**	2,300	5,000	7,700	120
12,300	31/64	**12,300**	2,300	5,000	7,700	120
12,500		**12,500**	2,300	5,000	7,700	125
12,600		**12,600**	2,300	5,000	7,700	125
12,700	1/2	**12,700**	2,400	5,000	7,700	125
12,800		**12,800**	2,400	5,000	7,700	125
12,900		**12,900**	2,400	5,000	7,700	125
13,000		**13,000**	2,400	5,500	8,500	130
13,100	33/64	**13,100**	2,400	5,500	8,500	130
13,490	17/32	**13,490**	2,500	5,500	8,500	130
13,500		**13,500**	2,500	5,500	8,500	135
13,600		**13,600**	2,500	5,500	8,500	135
13,700		**13,700**	2,500	5,500	8,500	135
13,800		**13,800**	2,600	5,500	8,500	135
13,890	35/64	**13,890**	2,600	5,500	8,500	135
14,000		**14,000**	2,600	6,000	9,600	140
14,100		**14,100**	2,600	6,000	9,600	140
14,290	9/16	**14,290**	2,700	6,000	9,600	140
14,400		**14,400**	2,700	6,000	9,600	140
14,500		**14,500**	2,700	6,000	9,600	145
14,600		**14,600**	2,700	6,000	9,600	145
14,680	37/64	**14,680**	2,700	6,000	9,600	145
14,700		**14,700**	2,700	6,000	9,600	145
14,800		**14,800**	2,700	6,000	9,600	145
15,000		**15,000**	2,800	6,000	9,800	150
15,080	19/32	**15,080**	2,800	6,000	9,800	150
15,100		**15,100**	2,800	6,000	9,800	150
15,200		**15,200**	2,800	6,000	9,800	150
15,300		**15,300**	2,800	6,000	9,800	150
15,480	39/64	**15,480**	2,900	6,000	9,800	150
15,500		**15,500**	2,900	6,000	9,800	155
15,600		**15,600**	2,900	6,000	9,800	155
15,700		**15,700**	2,900	6,000	9,800	155
15,800		**15,800**	2,900	6,000	9,800	155
15,870	5/8	**15,870**	2,900	6,000	9,800	155
16,000		**16,000**	3,000	7,000	11,000	160
16,270	41/64	**16,270**	3,000	7,000	11,000	160
16,500		**16,500**	3,100	7,000	11,000	165
16,670	21/32	**16,670**	3,100	7,000	11,000	165

d1 mm	d1 inch	**Codice**	l4 mm	b mm	h mm	Grandezza
17,000		**17,000**	3,100	7,000	11,000	170
17,070	43/64	**17,070**	3,200	7,000	11,000	170
17,250		**17,250**	3,200	7,000	11,000	170
17,460	11/16	**17,460**	3,200	7,000	11,000	170
17,500		**17,500**	3,200	7,000	11,000	175
17,600		**17,600**	3,300	7,000	11,000	175
17,860	45/64	**17,860**	3,300	7,000	11,000	175
18,000		**18,000**	3,300	8,000	12,600	180
18,260	23/32	**18,260**	3,400	8,000	12,600	180
18,500		**18,500**	3,400	8,000	12,600	185
18,650	47/64	**18,650**	3,400	8,000	12,600	185
19,000		**19,000**	3,500	8,000	12,600	190
19,050	3/4	**19,050**	3,500	8,000	12,600	190
19,250		**19,250**	3,600	8,000	12,600	190
19,450	49/64	**19,450**	3,600	8,000	12,600	190
19,500		**19,500**	3,600	8,000	12,600	195
19,600		**19,600**	3,600	8,000	12,600	195
19,840	25/32	**19,840**	3,700	8,000	12,600	195
20,000		**20,000**	3,700	9,000	13,900	200
20,240	51/64	**20,240**	3,700	9,000	13,900	200
20,500		**20,500**	3,800	9,000	13,900	205
20,640	13/16	**20,640**	3,800	9,000	13,900	205
21,000		**21,000**	3,900	9,000	13,900	210
21,030	53/64	**21,030**	3,900	9,000	13,900	210
21,100		**21,100**	3,900	9,000	13,900	210
21,430	27/32	**21,430**	3,900	9,000	13,900	210
21,500		**21,500**	4,000	9,000	13,900	215
21,830	55/64	**21,830**	4,000	9,000	13,900	215
22,000		**22,000**	4,100	10,000	15,300	220
22,220	7/8	**22,220**	4,100	10,000	15,300	220
22,500		**22,500**	4,100	10,000	15,300	225
22,620	57/64	**22,620**	4,200	10,000	15,300	225
23,000		**23,000**	4,200	10,000	15,300	230
23,020	29/32	**23,020**	4,200	10,000	15,300	230
23,420	59/64	**23,420**	4,300	10,000	15,300	230
23,500		**23,500**	4,300	10,000	15,300	235
23,810	15/16	**23,810**	4,400	10,000	15,300	235
24,000		**24,000**	4,400	11,000	15,800	240
24,100		**24,100**	4,400	11,000	15,800	240
24,210	61/64	**24,210**	4,500	11,000	15,800	240
24,500		**24,500**	4,500	11,000	15,800	245
24,610	31/32	**24,610**	4,500	11,000	15,800	245
25,000	63/64	**25,000**	4,600	11,000	15,800	250
25,250		**25,250**	4,600	11,000	15,800	250
25,400	1	**25,400**	4,700	11,000	15,800	250
25,500		**25,500**	4,700	11,000	15,800	255
25,650		**25,650**	4,700	11,000	15,800	255
25,670		**25,670**	4,700	11,000	15,800	255
25,700		**25,700**	4,700	11,000	15,800	255
25,810		**25,810**	4,700	11,000	15,800	255
26,000		**26,000**	4,800	12,000	20,000	260
26,190	1 1/32	**26,190**	4,800	12,000	20,000	260
26,500		**26,500**	4,900	12,000	20,000	265
26,590	1 3/64	**26,590**	4,900	12,000	20,000	265
27,000		**27,000**	5,000	12,000	20,000	270
27,500		**27,500**	5,100	12,000	20,000	275
27,700		**27,700**	5,100	12,000	20,000	275
27,780	1 3/32	**27,780**	5,100	12,000	20,000	275
28,000		**28,000**	5,100	13,000	20,700	280
28,180	1 7/64	**28,180**	5,200	13,000	20,700	280
28,500		**28,500**	5,200	13,000	20,700	285
28,580		**28,580**	5,300	13,000	20,700	285
29,000		**29,000**	5,300	13,000	20,700	290
29,370	1 5/32	**29,370**	5,400	13,000	20,700	290
29,500		**29,500**	5,400	13,000	20,700	295
29,600		**29,600**	5,400	13,000	20,700	295
29,770	1 11/64	**29,770**	5,500	13,000	20,700	295
30,000		**30,000**	5,500	14,000	22,300	300
30,160	1 3/16	**30,160**	5,500	14,000	22,300	300
30,500		**30,500**	5,600	14,000	22,300	305
30,960	1 7/32	**30,960**	5,700	14,000	22,300	305
31,000		**31,000**	5,700	14,000	22,300	310

d1 mm	d1 inch	**Codice**	l4 mm	b mm	h mm	Grandezza
31,500		**31,500**	5,800	14,000	22,300	315
31,750	1 1/4	**31,750**	5,800	14,000	22,300	315
32,000		**32,000**	5,900	15,000	23,100	320
32,500		**32,500**	6,000	15,000	23,100	320
32,540	1 9/32	**32,540**	6,000	15,000	23,100	320
32,940	1 19/64	**32,940**	6,000	15,000	23,100	320
33,000		**33,000**	6,100	15,000	23,100	330
33,340	1 5/16	**33,340**	6,100	15,000	23,100	330
33,500		**33,500**	6,100	15,000	23,100	330
34,000		**34,000**	6,200	15,000	23,100	340
34,130	1 11/32	**34,130**	6,300	15,000	23,100	340
34,500		**34,500**	6,300	15,000	23,100	340
34,930		**34,930**	6,400	15,000	23,100	340
35,000		**35,000**	6,400	15,000	23,100	350
35,500		**35,500**	6,500	15,000	23,100	350
35,720	1 13/32	**35,720**	6,600	15,000	23,100	350
36,000		**36,000**	6,600	16,000	23,900	360
36,500		**36,500**	6,700	16,000	23,900	360
36,510	1 7/16	**36,510**	6,700	16,000	23,900	360
37,000		**37,000**	6,800	16,000	23,900	370
37,310	1 15/32	**37,310**	6,800	16,000	23,900	370
37,500		**37,500**	6,900	16,000	23,900	370
38,000		**38,000**	7,000	16,000	23,900	380
38,100	1 1/2	**38,100**	7,000	16,000	23,900	380
38,500	1 33/64	**38,500**	7,100	16,000	23,900	380
39,000		**39,000**	7,100	16,000	23,900	390
39,500		**39,500**	7,200	16,000	23,900	390
40,000		**40,000**	7,300	16,000	23,900	400

Sistema di foratura SuperV

Inserti intercambiabili per SuperV-AP mini

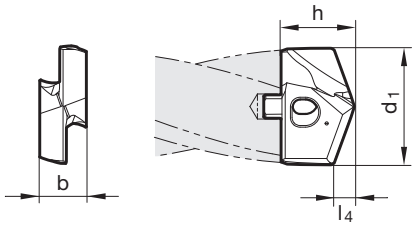
Catalogo n° 67012

SuperV-AP mini VA | WN | VHM | AlTiN nano | 140° | h7 | R

P	M	K	N	S	H
	●	○		○	

Parametri di lav. ind. a pag. 36-44

- Assott. del nocc. ≥ Ø 11,000
- spoglia sul cono tagliente
- tagliente principale forma diritta (dopo correzione)
- vite di serraggio catalogo-Nr. 77020 inclusa



d1 mm	d1 inch	Codice	l4 mm	b mm	h mm	Grandezza
11,000		**11,000**	2,100	4,500	7,500	110
11,200		**11,200**	2,100	4,500	7,500	110
11,500		**11,500**	2,100	4,500	7,500	115
11,510	29/64	**11,510**	2,100	4,500	7,500	115
11,700		**11,700**	2,200	4,500	7,500	115
11,800		**11,800**	2,200	4,500	7,500	115
11,910	15/32	**11,910**	2,200	4,500	7,500	115
12,000		**12,000**	2,200	5,000	7,700	120
12,100		**12,100**	2,300	5,000	7,700	120
12,200		**12,200**	2,300	5,000	7,700	120
12,300	31/64	**12,300**	2,300	5,000	7,700	120
12,500		**12,500**	2,300	5,000	7,700	125
12,600		**12,600**	2,300	5,000	7,700	125
12,700	1/2	**12,700**	2,400	5,000	7,700	125
12,800		**12,800**	2,400	5,000	7,700	125
12,900		**12,900**	2,400	5,000	7,700	125
13,000		**13,000**	2,400	5,500	8,500	130
13,100	33/64	**13,100**	2,400	5,500	8,500	130
13,490	17/32	**13,490**	2,500	5,500	8,500	130
13,500		**13,500**	2,500	5,500	8,500	135
13,600		**13,600**	2,500	5,500	8,500	135
13,700		**13,700**	2,500	5,500	8,500	135
13,800		**13,800**	2,600	5,500	8,500	135
13,890	35/64	**13,890**	2,600	5,500	8,500	135
14,000		**14,000**	2,600	6,000	9,600	140
14,100		**14,100**	2,600	6,000	9,600	140
14,290	9/16	**14,290**	2,700	6,000	9,600	140
14,400		**14,400**	2,700	6,000	9,600	140
14,500		**14,500**	2,700	6,000	9,600	145
14,600		**14,600**	2,700	6,000	9,600	145
14,700		**14,700**	2,700	6,000	9,600	145
14,800		**14,800**	2,700	6,000	9,600	145
15,000		**15,000**	2,800	6,000	9,800	150
15,080	19/32	**15,080**	2,800	6,000	9,800	150
15,100		**15,100**	2,800	6,000	9,800	150
15,200		**15,200**	2,800	6,000	9,800	150
15,300		**15,300**	2,800	6,000	9,800	150
15,500		**15,500**	2,900	6,000	9,800	155
15,600		**15,600**	2,900	6,000	9,800	155
15,700		**15,700**	2,900	6,000	9,800	155
15,800		**15,800**	2,900	6,000	9,800	155
15,870	5/8	**15,870**	2,900	6,000	9,800	155
16,000		**16,000**	3,000	7,000	11,000	160
16,270	41/64	**16,270**	3,000	7,000	11,000	160
16,500		**16,500**	3,100	7,000	11,000	165
16,670	21/32	**16,670**	3,100	7,000	11,000	165
17,000		**17,000**	3,100	7,000	11,000	170
17,070	43/64	**17,070**	3,200	7,000	11,000	170

d1 mm	d1 inch	**Codice**	l4 mm	b mm	h mm	Grandezza
17,250		**17,250**	3,200	7,000	11,000	170
17,460	11/16	**17,460**	3,200	7,000	11,000	170
17,500		**17,500**	3,200	7,000	11,000	175
17,600		**17,600**	3,300	7,000	11,000	175
17,860	45/64	**17,860**	3,300	7,000	11,000	175
18,000		**18,000**	3,300	8,000	12,600	180
18,260	23/32	**18,260**	3,400	8,000	12,600	180
18,500		**18,500**	3,400	8,000	12,600	185
18,650	47/64	**18,650**	3,400	8,000	12,600	185
19,000		**19,000**	3,500	8,000	12,600	190
19,050	3/4	**19,050**	3,500	8,000	12,600	190
19,250		**19,250**	3,600	8,000	12,600	190
19,450	49/64	**19,450**	3,600	8,000	12,600	190
19,500		**19,500**	3,600	8,000	12,600	195
19,600		**19,600**	3,600	8,000	12,600	195
19,840	25/32	**19,840**	3,700	8,000	12,600	195
20,000		**20,000**	3,700	9,000	13,900	200
20,240	51/64	**20,240**	3,700	9,000	13,900	200
20,500		**20,500**	3,800	9,000	13,900	205
20,640	13/16	**20,640**	3,800	9,000	13,900	205
21,000		**21,000**	3,900	9,000	13,900	210
21,030	53/64	**21,030**	3,900	9,000	13,900	210
21,100		**21,100**	3,900	9,000	13,900	210
21,430	27/32	**21,430**	3,900	9,000	13,900	210
21,500		**21,500**	4,000	9,000	13,900	215
21,830	55/64	**21,830**	4,000	9,000	13,900	215
22,000		**22,000**	4,100	10,000	15,300	220
22,220	7/8	**22,220**	4,100	10,000	15,300	220
22,500		**22,500**	4,100	10,000	15,300	225
22,620	57/64	**22,620**	4,200	10,000	15,300	225
23,000		**23,000**	4,200	10,000	15,300	230
23,020	29/32	**23,020**	4,200	10,000	15,300	230
23,420	59/64	**23,420**	4,300	10,000	15,300	230
23,500		**23,500**	4,300	10,000	15,300	235
23,810	15/16	**23,810**	4,400	10,000	15,300	235
24,000		**24,000**	4,400	11,000	15,800	240
24,100		**24,100**	4,400	11,000	15,800	240
24,210	61/64	**24,210**	4,500	11,000	15,800	240
24,500		**24,500**	4,500	11,000	15,800	245
24,610	31/32	**24,610**	4,500	11,000	15,800	245
25,000	63/64	**25,000**	4,600	11,000	15,800	250
25,250		**25,250**	4,600	11,000	15,800	250
25,400	1	**25,400**	4,700	11,000	15,800	250
25,500		**25,500**	4,700	11,000	15,800	255
25,650		**25,650**	4,700	11,000	15,800	255
25,670		**25,670**	4,700	11,000	15,800	255
25,700		**25,700**	4,700	11,000	15,800	255
26,000		**26,000**	4,800	12,000	20,000	260
26,190	1 1/32	**26,190**	4,800	12,000	20,000	260
26,500		**26,500**	4,900	12,000	20,000	265
27,000		**27,000**	5,000	12,000	20,000	270
27,500		**27,500**	5,100	12,000	20,000	275
27,700		**27,700**	5,100	12,000	20,000	275
27,780	1 3/32	**27,780**	5,100	12,000	20,000	275
28,000		**28,000**	5,100	13,000	20,700	280
28,180	1 7/64	**28,180**	5,200	13,000	20,700	280
28,500		**28,500**	5,200	13,000	20,700	285
28,580		**28,580**	5,300	13,000	20,700	285
29,000		**29,000**	5,300	13,000	20,700	290
29,370	1 5/32	**29,370**	5,400	13,000	20,700	290
29,500		**29,500**	5,400	13,000	20,700	295
29,600		**29,600**	5,400	13,000	20,700	295
30,000		**30,000**	5,500	14,000	22,300	300
30,160	1 3/16	**30,160**	5,500	14,000	22,300	300
30,500		**30,500**	5,600	14,000	22,300	305
30,960	1 7/32	**30,960**	5,700	14,000	22,300	305
31,000		**31,000**	5,700	14,000	22,300	310
31,500		**31,500**	5,800	14,000	22,300	315
31,750	1 1/4	**31,750**	5,800	14,000	22,300	315
32,000		**32,000**	5,900	15,000	23,100	320
32,500		**32,500**	6,000	15,000	23,100	320
32,540	1 9/32	**32,540**	6,000	15,000	23,100	320

d1 mm	d1 inch	**Codice**	l4 mm	b mm	h mm	Grandezza
33,000		**33,000**	6,100	15,000	23,100	330
33,340	1 5/16	**33,340**	6,100	15,000	23,100	330
33,500		**33,500**	6,100	15,000	23,100	330
34,000		**34,000**	6,200	15,000	23,100	340
34,130	1 11/32	**34,130**	6,300	15,000	23,100	340
34,500		**34,500**	6,300	15,000	23,100	340
34,930		**34,930**	6,400	15,000	23,100	340
35,000		**35,000**	6,400	15,000	23,100	350
35,500		**35,500**	6,500	15,000	23,100	350
35,720	1 13/32	**35,720**	6,600	15,000	23,100	350
36,000		**36,000**	6,600	16,000	23,900	360
36,500		**36,500**	6,700	16,000	23,900	360
36,510	1 7/16	**36,510**	6,700	16,000	23,900	360
37,000		**37,000**	6,800	16,000	23,900	370
37,310	1 15/32	**37,310**	6,800	16,000	23,900	370
37,500		**37,500**	6,900	16,000	23,900	370
38,000		**38,000**	7,000	16,000	23,900	380
38,100	1 1/2	**38,100**	7,000	16,000	23,900	380
38,500	1 33/64	**38,500**	7,100	16,000	23,900	380
39,000		**39,000**	7,100	16,000	23,900	390
39,500		**39,500**	7,200	16,000	23,900	390
40,000		**40,000**	7,300	16,000	23,900	400

Sistema di foratura SuperV

Inserti intercambiabili per SuperV-AP mini

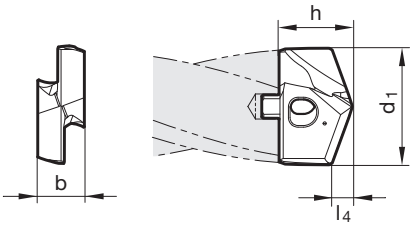
Catalogo n° 77012

SuperV-AP mini AL | WN | VHM | lucido | 140° | h7 | R

P	M	K	N	S	H
			●		

Parametri di lav. ind. a pag. 36-44

- Assott. del nocc. ≥ Ø 11,000
- spoglia sul cono tagliente
- tagliente principale forma concava
- vite di serraggio catalogo-Nr. 77020 inclusa



d1 mm	d1 inch	Codice	l4 mm	b mm	h mm	Grandezza
11,000		**11,000**	2,100	4,500	7,500	110
11,200		**11,200**	2,100	4,500	7,500	110
11,510	29/64	**11,510**	2,100	4,500	7,500	115
11,800		**11,800**	2,200	4,500	7,500	115
12,000		**12,000**	2,200	5,000	7,700	120
12,200		**12,200**	2,300	5,000	7,700	120
12,500		**12,500**	2,300	5,000	7,700	125
12,700	1/2	**12,700**	2,400	5,000	7,700	125
12,900		**12,900**	2,400	5,000	7,700	125
13,100	33/64	**13,100**	2,400	5,500	8,500	130
13,500		**13,500**	2,500	5,500	8,500	135
13,700		**13,700**	2,500	5,500	8,500	135
13,800		**13,800**	2,600	5,500	8,500	135
14,000		**14,000**	2,600	6,000	9,600	140
14,100		**14,100**	2,600	6,000	9,600	140
14,400		**14,400**	2,700	6,000	9,600	140
14,500		**14,500**	2,700	6,000	9,600	145
14,680	37/64	**14,680**	2,700	6,000	9,600	145
14,700		**14,700**	2,700	6,000	9,600	145
15,000		**15,000**	2,800	6,000	9,800	150
15,080	19/32	**15,080**	2,800	6,000	9,800	150
15,200		**15,200**	2,800	6,000	9,800	150
15,300		**15,300**	2,800	6,000	9,800	150
15,500		**15,500**	2,900	6,000	9,800	155
15,600		**15,600**	2,900	6,000	9,800	155
15,800		**15,800**	2,900	6,000	9,800	155
15,870	5/8	**15,870**	2,900	6,000	9,800	155
16,270	41/64	**16,270**	3,000	7,000	11,000	160
16,500		**16,500**	3,100	7,000	11,000	165
17,000		**17,000**	3,100	7,000	11,000	170
17,070	43/64	**17,070**	3,200	7,000	11,000	170
17,460	11/16	**17,460**	3,200	7,000	11,000	170
17,500		**17,500**	3,200	7,000	11,000	175
17,600		**17,600**	3,300	7,000	11,000	175
17,860	45/64	**17,860**	3,300	7,000	11,000	175
18,000		**18,000**	3,300	8,000	12,600	180
18,260	23/32	**18,260**	3,400	8,000	12,600	180
18,500		**18,500**	3,400	8,000	12,600	185
18,650	47/64	**18,650**	3,400	8,000	12,600	185
19,000		**19,000**	3,500	8,000	12,600	190
19,050	3/4	**19,050**	3,500	8,000	12,600	190
19,250		**19,250**	3,600	8,000	12,600	190
19,450	49/64	**19,450**	3,600	8,000	12,600	190
19,500		**19,500**	3,600	8,000	12,600	195
19,600		**19,600**	3,600	8,000	12,600	195
19,840	25/32	**19,840**	3,700	8,000	12,600	195
20,000		**20,000**	3,700	9,000	13,900	200
20,240	51/64	**20,240**	3,700	9,000	13,900	200

d1 mm	d1 inch	**Codice**	l4 mm	b mm	h mm	Grandezza
20,500		**20,500**	3,800	9,000	13,900	205
20,640	13/16	**20,640**	3,800	9,000	13,900	205
21,000		**21,000**	3,900	9,000	13,900	210
21,030	53/64	**21,030**	3,900	9,000	13,900	210
21,100		**21,100**	3,900	9,000	13,900	210
21,430	27/32	**21,430**	3,900	9,000	13,900	210
21,500		**21,500**	4,000	9,000	13,900	215
21,830	55/64	**21,830**	4,000	9,000	13,900	215
22,000		**22,000**	4,100	10,000	15,300	220
22,220	7/8	**22,220**	4,100	10,000	15,300	220
22,500		**22,500**	4,100	10,000	15,300	225
22,620	57/64	**22,620**	4,200	10,000	15,300	225
23,000		**23,000**	4,200	10,000	15,300	230
23,020	29/32	**23,020**	4,200	10,000	15,300	230
23,420	59/64	**23,420**	4,300	10,000	15,300	230
23,500		**23,500**	4,300	10,000	15,300	235
23,810	15/16	**23,810**	4,400	10,000	15,300	235
24,000		**24,000**	4,400	11,000	15,800	240
24,100		**24,100**	4,400	11,000	15,800	240
24,210	61/64	**24,210**	4,500	11,000	15,800	240
24,500		**24,500**	4,500	11,000	15,800	245
24,610	31/32	**24,610**	4,500	11,000	15,800	245
25,000	63/64	**25,000**	4,600	11,000	15,800	250
25,400	1	**25,400**	4,700	11,000	15,800	250
25,500		**25,500**	4,700	11,000	15,800	255
25,670		**25,670**	4,700	11,000	15,800	255
25,700		**25,700**	4,700	11,000	15,800	255
25,810		**25,810**	4,700	11,000	15,800	255
26,000		**26,000**	4,800	12,000	20,000	260
26,190	1 1/32	**26,190**	4,800	12,000	20,000	260
26,500		**26,500**	4,900	12,000	20,000	265
26,590	1 3/64	**26,590**	4,900	12,000	20,000	265
27,000		**27,000**	5,000	12,000	20,000	270
27,500		**27,500**	5,100	12,000	20,000	275
27,700		**27,700**	5,100	12,000	20,000	275
27,780	1 3/32	**27,780**	5,100	12,000	20,000	275
28,000		**28,000**	5,100	13,000	20,700	280
28,180	1 7/64	**28,180**	5,200	13,000	20,700	280
28,500		**28,500**	5,200	13,000	20,700	285
28,580		**28,580**	5,300	13,000	20,700	285
29,000		**29,000**	5,300	13,000	20,700	290
29,370	1 5/32	**29,370**	5,400	13,000	20,700	290
29,500		**29,500**	5,400	13,000	20,700	295
29,770	1 11/64	**29,770**	5,500	13,000	20,700	295
30,000		**30,000**	5,500	14,000	22,300	300
30,160	1 3/16	**30,160**	5,500	14,000	22,300	300
30,500		**30,500**	5,600	14,000	22,300	305
30,960	1 7/32	**30,960**	5,700	14,000	22,300	305
31,000		**31,000**	5,700	14,000	22,300	310
31,500		**31,500**	5,800	14,000	22,300	315
31,750	1 1/4	**31,750**	5,800	14,000	22,300	315
32,000		**32,000**	5,900	15,000	23,100	320
32,500		**32,500**	6,000	15,000	23,100	320
32,540	1 9/32	**32,540**	6,000	15,000	23,100	320
32,940	1 19/64	**32,940**	6,000	15,000	23,100	320
33,000		**33,000**	6,100	15,000	23,100	330
33,340	1 5/16	**33,340**	6,100	15,000	23,100	330
33,500		**33,500**	6,100	15,000	23,100	330
34,000		**34,000**	6,200	15,000	23,100	340
34,130	1 11/32	**34,130**	6,300	15,000	23,100	340
34,500		**34,500**	6,300	15,000	23,100	340
34,930		**34,930**	6,400	15,000	23,100	340
35,000		**35,000**	6,400	15,000	23,100	350
35,500		**35,500**	6,500	15,000	23,100	350
35,720	1 13/32	**35,720**	6,600	15,000	23,100	350
36,000		**36,000**	6,600	16,000	23,900	360
36,500		**36,500**	6,700	16,000	23,900	360
36,510	1 7/16	**36,510**	6,700	16,000	23,900	360
37,000		**37,000**	6,800	16,000	23,900	370
37,310	1 15/32	**37,310**	6,800	16,000	23,900	370
37,500		**37,500**	6,900	16,000	23,900	370
38,000		**38,000**	7,000	16,000	23,900	380

d1 mm	d1 inch	**Codice**	l4 mm	b mm	h mm	Grandezza
38,100	1 1/2	**38,100**	7,000	16,000	23,900	380
38,500	1 33/64	**38,500**	7,100	16,000	23,900	380
39,000		**39,000**	7,100	16,000	23,900	390
39,500		**39,500**	7,200	16,000	23,900	390
40,000		**40,000**	7,300	16,000	23,900	400

Sistema di foratura SuperV

Inserti intercambiabili per SuperV-AP mini

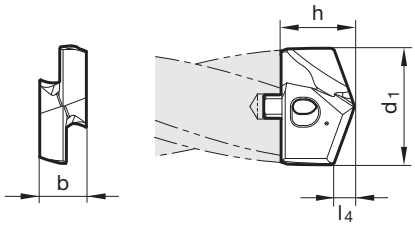
Catalogo n° 77011

SuperV-AP mini NC | WN | VHM | AlTiN nano | 145° | m7 | R

P	M	K	N	S	H
●	●	●	●	○	

Parametri di lav. ind. a pag. 36

- Assott. del nocc. ≥ Ø 11,000
- affilatura su piani
- 4 fasi di guida
- tagliente principale forma diritta (dopo correzione)
- vite di serraggio catalogo-Nr. 77020 inclusa
- specialmente per applicazioni con catalogo-Nr. 77007



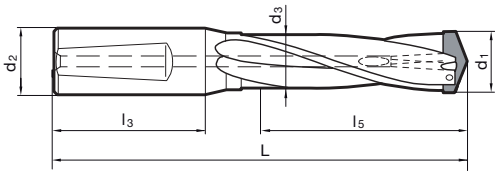
d1 mm	d1 inch	Codice	l4 mm	b mm	h mm	Grandezza
11,000		**11,000**	1,800	4,500	7,200	110
11,200		**11,200**	1,800	4,500	7,200	110
11,510	29/64	**11,510**	1,900	4,500	7,200	110
11,800		**11,800**	1,900	4,500	7,200	110
12,000		**12,000**	1,900	5,000	7,400	120
12,200		**12,200**	2,000	5,000	7,400	120
12,500		**12,500**	2,000	5,000	7,400	120
12,700	1/2	**12,700**	2,100	5,000	7,400	120
12,900		**12,900**	2,100	5,000	7,400	120
13,100	33/64	**13,100**	2,100	5,500	8,200	130
13,500		**13,500**	2,200	5,500	8,200	130
13,700		**13,700**	2,200	5,500	8,200	130
13,800		**13,800**	2,200	5,500	8,200	130
14,000		**14,000**	2,300	6,000	9,400	140
14,100		**14,100**	2,300	6,000	9,400	140
14,400		**14,400**	2,300	6,000	9,400	140
14,500		**14,500**	2,300	6,000	9,400	140
14,680	37/64	**14,680**	2,400	6,000	9,400	140
14,700		**14,700**	2,400	6,000	9,400	140
15,000		**15,000**	2,400	6,000	9,400	140
15,080	19/32	**15,080**	2,400	6,000	9,400	140
15,200		**15,200**	2,400	6,000	9,400	140
15,300		**15,300**	2,500	6,000	9,400	140
15,500		**15,500**	2,500	6,000	9,400	140
15,600		**15,600**	2,500	6,000	9,400	140
15,800		**15,800**	2,500	6,000	9,400	140
15,870	5/8	**15,870**	2,600	6,000	9,400	140
16,270	41/64	**16,270**	2,600	7,000	10,600	160
16,500		**16,500**	2,700	7,000	10,600	160
17,000		**17,000**	2,700	7,000	10,600	160
17,070	43/64	**17,070**	2,700	7,000	10,600	160
17,460	11/16	**17,460**	2,800	7,000	10,600	160
17,500		**17,500**	2,800	7,000	10,600	160
17,600		**17,600**	2,800	7,000	10,600	160
17,860	45/64	**17,860**	2,900	7,000	10,600	160
18,000		**18,000**	2,900	8,000	12,100	180
18,260	23/32	**18,260**	2,900	8,000	12,100	180
18,500		**18,500**	3,000	8,000	12,100	180
18,650	47/64	**18,650**	3,000	8,000	12,100	180
19,000		**19,000**	3,000	8,000	12,100	180
19,050	3/4	**19,050**	3,100	8,000	12,100	180
19,450	49/64	**19,450**	3,100	8,000	12,100	180
19,500		**19,500**	3,100	8,000	12,100	180
19,600		**19,600**	3,100	8,000	12,100	180
19,840	25/32	**19,840**	3,200	8,000	12,100	180
20,000		**20,000**	3,200	9,000	13,300	200
20,240	51/64	**20,240**	3,200	9,000	13,300	200
20,500		**20,500**	3,300	9,000	13,300	200

d1 mm	d1 inch	**Codice**	l4 mm	b mm	h mm	Grandezza
20,640	13/16	**20,640**	3,300	9,000	13,300	200
21,000		**21,000**	3,400	9,000	13,300	200
21,030	53/64	**21,030**	3,400	9,000	13,300	200
21,100		**21,100**	3,400	9,000	13,300	200
21,500		**21,500**	3,400	9,000	13,300	200
22,000		**22,000**	3,500	10,000	14,800	220
22,500		**22,500**	3,600	10,000	14,800	220
23,000		**23,000**	3,700	10,000	14,800	220
23,420	59/64	**23,420**	3,700	10,000	14,800	220
23,810	15/16	**23,810**	3,800	10,000	14,800	220
24,100		**24,100**	3,800	11,000	15,300	240
24,500		**24,500**	3,900	11,000	15,300	240
25,000	63/64	**25,000**	4,000	11,000	15,300	240
25,500		**25,500**	4,100	11,000	15,300	240
25,700		**25,700**	4,100	11,000	15,300	240
26,190	1 1/32	**26,190**	4,200	12,000	19,400	260
26,500		**26,500**	4,200	12,000	19,400	260
27,500		**27,500**	4,400	12,000	19,400	260
27,700		**27,700**	4,400	12,000	19,400	260
28,000		**28,000**	4,500	13,000	20,100	280
28,180	1 7/64	**28,180**	4,500	13,000	20,100	280
28,580		**28,580**	4,600	13,000	20,100	280
29,000		**29,000**	4,600	13,000	20,100	280
29,500		**29,500**	4,700	13,000	20,100	280
30,000		**30,000**	4,800	14,000	21,700	300
30,500		**30,500**	4,900	14,000	21,700	300
30,960	1 7/32	**30,960**	4,900	14,000	21,700	300
31,500		**31,500**	5,000	14,000	21,700	300
31,750	1 1/4	**31,750**	5,100	14,000	21,700	300
32,500		**32,500**	5,200	15,000	22,400	320
32,540	1 9/32	**32,540**	5,200	15,000	22,400	320
33,340	1 5/16	**33,340**	5,300	15,000	22,400	320
33,500		**33,500**	5,300	15,000	22,400	320
34,000		**34,000**	5,400	15,000	22,400	320
34,130	1 11/32	**34,130**	5,400	15,000	22,400	320
34,500		**34,500**	5,500	15,000	22,400	320
34,930		**34,930**	5,600	15,000	22,400	320
35,000		**35,000**	5,600	15,000	22,400	320
35,500		**35,500**	5,600	15,000	22,400	320
36,000		**36,000**	5,700	16,000	23,200	360
36,500		**36,500**	5,800	16,000	23,200	360
36,510	1 7/16	**36,510**	5,800	16,000	23,200	360
37,000		**37,000**	5,900	16,000	23,200	360
37,310	1 15/32	**37,310**	5,900	16,000	23,200	360
37,500		**37,500**	6,000	16,000	23,200	360
38,000		**38,000**	6,000	16,000	23,200	360
38,100	1 1/2	**38,100**	6,100	16,000	23,200	360
38,500	1 33/64	**38,500**	6,100	16,000	23,200	360
39,000		**39,000**	6,200	16,000	23,200	360
39,500		**39,500**	6,300	16,000	23,200	360
40,000		**40,000**	6,400	16,000	23,200	360

Sistema di foratura SuperV

Porta utensili SuperV-AP maxi

Catalogo n° 76000



SuperV-APmaxi | 3xD | WN | nichelato | R | HE

Parametri di lav. ind. a pag. 46

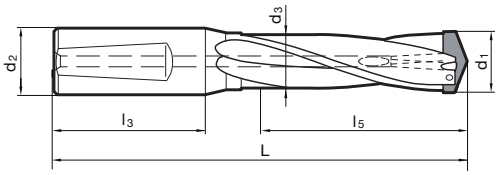
- codolo rinforzato
- inserti intercambiabili, possono essere cambiati in macchina
- vite di serraggio catalogo n° 76020 inclusa
- cacciavite catalogo-Nr. 76021 incluso

d1 mm	**Codice**	d2 mm	d3 mm	L mm	l3 mm	l5 mm	Grandezza
16,00-17,00	**17,000**	20,000	15,700	128,400	50,000	53,000	0.1
17,01-17,99	**17,990**	20,000	16,700	128,400	50,000	53,000	0.2
18,00-19,00	**19,000**	20,000	17,700	136,700	50,000	53,000	1.1
19,01-20,00	**20,000**	20,000	18,700	136,700	50,000	58,000	1.2
20,01-21,00	**21,000**	25,000	19,700	151,600	56,000	58,000	2.1
21,01-22,50	**22,500**	25,000	20,700	151,600	56,000	63,000	2.2
22,51-24,00	**24,000**	25,000	22,200	159,400	56,000	63,000	3.1
24,01-25,50	**25,500**	25,000	23,700	168,400	56,000	68,000	3.2
25,51-27,50	**27,500**	32,000	25,200	180,000	60,000	68,000	4.1
27,51-29,50	**29,500**	32,000	27,200	188,000	60,000	68,000	4.2
29,51-32,00	**32,000**	32,000	29,200	195,600	60,000	75,000	5.1
32,01-34,50	**34,500**	32,000	31,700	203,600	60,000	75,000	5.2
34,51-37,50	**37,500**	32,000	34,000	215,100	60,000	75,000	6.1
37,51-40,50	**40,500**	32,000	37,000	228,100	60,000	120,000	6.2

Sistema di foratura SuperV

Porta utensili SuperV-AP maxi

Catalogo n° 76001



SuperV-APmaxi | 5xD | WN | niche-lato | R | HE

Parametri di lav. ind. a pag. 48

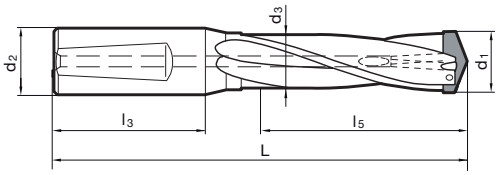
- codolo rinforzato
- inserti intercambiabili, possono essere cambiati in macchina
- vite di serraggio catalogo n° 76020 inclusa
- cacciavite catalogo-Nr. 76021 incluso

d1 mm	**Codice**	d2 mm	d3 mm	L mm	l3 mm	l5 mm	Grandezza
16,00-17,00	**17,000**	20,000	15,700	164,400	50,000	90,000	0.1
17,01-17,99	**17,990**	20,000	16,700	164,400	50,000	90,000	0.2
18,00-19,00	**19,000**	20,000	17,700	176,700	50,000	100,000	1.1
19,01-20,00	**20,000**	20,000	18,700	176,700	50,000	100,000	1.2
20,01-21,00	**21,000**	25,000	19,700	195,600	56,000	110,000	2.1
21,01-22,50	**22,500**	25,000	20,700	195,600	56,000	110,000	2.2
22,51-24,00	**24,000**	25,000	22,200	207,400	56,000	120,000	3.1
24,01-25,50	**25,500**	25,000	23,700	220,400	56,000	130,000	3.2
25,51-27,50	**27,500**	32,000	25,200	236,000	60,000	140,000	4.1
27,51-29,50	**29,500**	32,000	27,200	248,000	60,000	150,000	4.2
29,51-32,00	**32,000**	32,000	29,200	259,600	60,000	160,000	5.1
32,01-34,50	**34,500**	32,000	31,700	271,600	60,000	170,000	5.2
34,51-37,50	**37,500**	32,000	34,000	289,100	60,000	190,000	6.1
37,51-40,50	**40,500**	32,000	37,000	308,100	60,000	200,000	6.2

Sistema di foratura SuperV

Porta utensili SuperV-AP maxi

Catalogo n° 76003



SuperV-APmaxi | 7xD | WN | nichelato | R | HE

Parametri di lav. ind. a pag. 50

- codolo rinforzato
- inserti intercambiabili, possono essere cambiati in macchina
- vite di serraggio catalogo n° 76020 inclusa
- cacciavite catalogo-Nr. 76021 incluso

d1 mm	**Codice**	d2 mm	d3 mm	L mm	l3 mm	l5 mm	Grandezza
16,00-17,00	**17,000**	20,000	15,700	194,000	50,000	126,000	0.1
17,01-17,99	**17,990**	20,000	16,700	194,000	50,000	126,000	0.2
18,00-19,00	**19,000**	20,000	17,700	210,000	50,000	140,000	1.1
19,01-20,00	**20,000**	20,000	18,700	210,000	50,000	140,000	1.2
20,01-21,00	**21,000**	25,000	19,700	232,200	56,000	154,000	2.1
21,01-22,50	**22,500**	25,000	20,700	232,200	56,000	154,000	2.2
22,51-24,00	**24,000**	25,000	22,200	247,000	56,000	168,000	3.1
24,01-25,50	**25,500**	25,000	23,700	264,000	56,000	182,000	3.2
25,51-27,50	**27,500**	32,000	25,200	282,400	60,000	196,000	4.1
27,51-29,50	**29,500**	32,000	27,200	298,400	60,000	210,000	4.2
29,51-32,00	**32,000**	32,000	29,200	312,400	60,000	224,000	5.1
32,01-34,50	**34,500**	32,000	31,700	328,400	60,000	238,000	5.2
34,51-37,50	**37,500**	32,000	34,000	350,000	60,000	266,000	6.1
37,51-40,50	**40,500**	32,000	37,000	375,000	60,000	280,000	6.2

Sistema di foratura SuperV

Inserti intercambiabili per SuperV-AP maxi

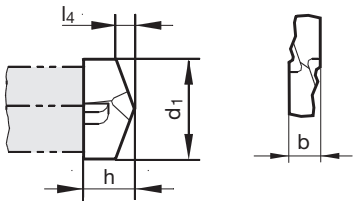
Catalogo n° 76011

SuperV-APmaxi | WN | VHM | TiN | 140° | h7 | R

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 46-50

- spoglia sul cono tagliente
- tagliente principale forma concava
- vite di serraggio catalogo n° 76020 inclusa



d1 mm	d1 inch	Codice	l4 mm	b mm	h mm	Grandezza
16,000		**16,000**	3,000	4,500	8,000	0.1
16,500		**16,500**	3,100	4,500	8,000	0.1
17,000		**17,000**	3,100	4,500	8,000	0.1
17,500		**17,500**	3,200	4,500	8,000	0.2
18,000		**18,000**	3,300	5,000	8,000	1.1
18,500		**18,500**	3,400	5,000	8,000	1.1
19,000		**19,000**	3,500	5,000	8,000	1.1
19,500		**19,500**	3,600	5,000	8,000	1.2
20,000		**20,000**	3,700	5,000	8,000	1.2
20,500		**20,500**	3,800	5,500	8,800	2.1
21,000		**21,000**	3,900	5,500	8,800	2.1
21,500		**21,500**	4,000	5,500	8,800	2.2
22,000		**22,000**	4,100	5,500	8,800	2.2
22,500		**22,500**	4,100	5,500	8,800	2.2
23,000		**23,000**	4,200	6,300	10,000	3.1
23,500		**23,500**	4,300	6,300	10,000	3.1
24,000		**24,000**	4,400	6,300	10,000	3.1
24,500		**24,500**	4,500	6,300	10,000	3.2
25,000	63/64	**25,000**	4,600	6,300	10,000	3.2
25,500		**25,500**	4,700	6,300	10,000	3.2
26,000		**26,000**	4,800	7,300	11,600	4.1
26,500		**26,500**	4,900	7,300	11,600	4.1
27,000		**27,000**	5,000	7,300	11,600	4.1
27,500		**27,500**	5,100	7,300	11,600	4.1
28,000		**28,000**	5,100	7,300	11,600	4.2
28,500		**28,500**	5,200	7,300	11,600	4.2
29,000		**29,000**	5,300	7,300	11,600	4.2
29,500		**29,500**	5,400	7,300	11,600	4.2
30,000		**30,000**	5,500	8,500	13,600	5.1
30,500		**30,500**	5,600	8,500	13,600	5.1
31,000		**31,000**	5,700	8,500	13,600	5.1
31,500		**31,500**	5,800	8,500	13,600	5.1
32,000		**32,000**	5,900	8,500	13,600	5.1
32,500		**32,500**	6,000	8,500	13,600	5.2
33,000		**33,000**	6,100	8,500	13,600	5.2
33,500		**33,500**	6,100	8,500	13,600	5.2
34,000		**34,000**	6,200	8,500	13,600	5.2
34,500		**34,500**	6,300	8,500	13,600	5.2
35,000		**35,000**	6,400	10,000	16,000	6.1
36,000		**36,000**	6,600	10,000	16,000	6.1
37,000		**37,000**	6,800	10,000	16,000	6.1
37,500		**37,500**	6,900	10,000	16,000	6.1
38,000		**38,000**	7,000	10,000	16,000	6.2
39,000		**39,000**	7,100	10,000	16,000	6.2
40,000		**40,000**	7,300	10,000	16,000	6.2
40,500		**40,500**	7,400	10,000	16,000	6.2

Sistema di foratura SuperV

Inserti intercambiabili per SuperV-AP maxi

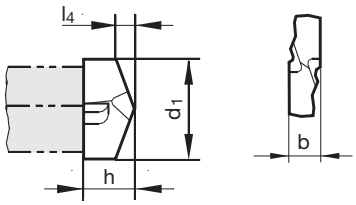
Catalogo n° 56011

SuperV-APmaxi | WN | VHM | TiAlN | 140° | h7 | R

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 46-50

- spoglia sul cono tagliente
- tagliente principale forma concava
- massima resistenza all'usura
- vite di serraggio catalogo n° 76020 inclusa



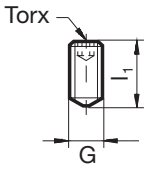
d1 mm	d1 inch	Codice	l4 mm	b mm	h mm	Grandezza
16,000		**16,000**	3,000	4,500	8,000	0.1
16,500		**16,500**	3,100	4,500	8,000	0.1
17,000		**17,000**	3,100	4,500	8,000	0.1
17,500		**17,500**	3,200	4,500	8,000	0.2
18,000		**18,000**	3,300	5,000	8,000	1.1
18,500		**18,500**	3,400	5,000	8,000	1.1
19,000		**19,000**	3,500	5,000	8,000	1.1
19,500		**19,500**	3,600	5,000	8,000	1.2
20,000		**20,000**	3,700	5,000	8,000	1.2
20,500		**20,500**	3,800	5,500	8,800	2.1
21,000		**21,000**	3,900	5,500	8,800	2.1
21,500		**21,500**	4,000	5,500	8,800	2.2
22,000		**22,000**	4,100	5,500	8,800	2.2
22,500		**22,500**	4,100	5,500	8,800	2.2
23,000		**23,000**	4,200	6,300	10,000	3.1
23,500		**23,500**	4,300	6,300	10,000	3.1
24,000		**24,000**	4,400	6,300	10,000	3.1
24,500		**24,500**	4,500	6,300	10,000	3.2
25,000	63/64	**25,000**	4,600	6,300	10,000	3.2
25,500		**25,500**	4,700	6,300	10,000	3.2
26,000		**26,000**	4,800	7,300	11,600	4.1
26,500		**26,500**	4,900	7,300	11,600	4.1
27,000		**27,000**	5,000	7,300	11,600	4.1
27,500		**27,500**	5,100	7,300	11,600	4.1
28,000		**28,000**	5,100	7,300	11,600	4.2
28,500		**28,500**	5,200	7,300	11,600	4.2
29,000		**29,000**	5,300	7,300	11,600	4.2
29,500		**29,500**	5,400	7,300	11,600	4.2
30,000		**30,000**	5,500	8,500	13,600	5.1
30,500		**30,500**	5,600	8,500	13,600	5.1
31,000		**31,000**	5,700	8,500	13,600	5.1
31,500		**31,500**	5,800	8,500	13,600	5.1
32,000		**32,000**	5,900	8,500	13,600	5.1
32,500		**32,500**	6,000	8,500	13,600	5.2
33,000		**33,000**	6,100	8,500	13,600	5.2
33,500		**33,500**	6,100	8,500	13,600	5.2
34,000		**34,000**	6,200	8,500	13,600	5.2
34,500		**34,500**	6,300	8,500	13,600	5.2
35,000		**35,000**	6,400	10,000	16,000	6.1
36,000		**36,000**	6,600	10,000	16,000	6.1
37,000		**37,000**	6,800	10,000	16,000	6.1
37,500		**37,500**	6,900	10,000	16,000	6.1
38,000		**38,000**	7,000	10,000	16,000	6.2
39,000		**39,000**	7,100	10,000	16,000	6.2
40,000		**40,000**	7,300	10,000	16,000	6.2
40,500		**40,500**	7,400	10,000	16,000	6.2

Sistema di foratura SuperV

Viti di serraggio

WN

Catalogo n° 76020



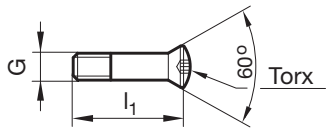
G	l1 mm	Torx	Codice
M 3X0,35	7,000	T6	**3,000**
M 3X0,35	6,000	T6	**3,006**
M 3,5X0,35	8,000	T7	**3,500**
M 4X0,5	9,000	T8	**4,000**
M 4,5X0,5	10,000	T8	**4,500**
M 5X0,5	11,000	T10	**5,000**

Sistema di foratura SuperV

Viti di serraggio

WN

Catalogo n° 77020



G	l1 mm	Torx	Codice
M 2,2	9,500	T7	**2,200**
M 2,2	10,500	T7	**2,201**
M 2,5	11,400	T8	**2,500**
M 3	12,100	T9	**3,000**
M 3	13,100	T9	**3,001**
M 3,5	14,250	T10	**3,500**
M 4	16,000	T15	**4,000**
M 4,5	18,000	T15	**4,500**
M 5	19,750	T20	**5,000**
M 5	21,750	T20	**5,001**
M 5	23,400	T20	**5,003**
M 6	27,000	T25	**6,000**
M 6	28,500	T25	**6,001**
M 6	32,500	T25	**6,002**

Sistema di foratura SuperV

Chiavi dinamometriche

Catalogo n° 77022

Tipo	**Codice**	Torx	L mm	Mom. torcente Nm
A	**2,000**	1/4”	160,000	0,8...2
A	**5,001**	1/4”	160,000	1...5
A	**8,000**	1/4”	160,000	2...8

Sistema di foratura SuperV

Spine Torx

Catalogo n° 77021

Torx	L mm	 kg	**Codice**
T6	25,000	0,040	**6,000**
T8	25,000	0,071	**8,000**
T10	25,000	0,112	**10,000**
T20	25,000	0,045	**20,000**

Sistema di foratura SuperV

Giravite Torx

Catalogo n° 76021

Torx	**Codice**	L mm
T6	**6,000**	42,000
T7	**7,001**	150,000
T8	**8,000**	48,000
T8	**8,001**	150,000
T9	**9,001**	150,000
T10	**10,001**	170,000
T15	**15,000**	54,000
T15	**15,001**	190,000
T20	**20,000**	57,000
T20	**20,001**	205,000
T25	**25,000**	60,000
T25	**25,001**	207,000

Punte in metallo duro

Punte elicoidali, extra corte

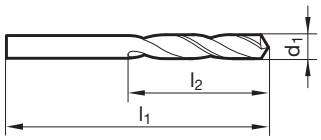
Catalogo n° 71184

N	~3xD	DIN 6539	VHM	118°	h7	R	Cyl

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 52

- Assott. del nocc. ≥ Ø 2,100
- affilatura su piani
- forma del tagliente principale diritta



d1 mm	inch	l1 mm	l2 mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,780	7/64	46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
3,970	5/32	55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000

d1 mm	inch	l1 mm	l2 mm
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000

d1		l1	l2
mm	inch	mm	mm
9,500		84,000	40,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,100		89,000	43,000
10,200		89,000	43,000
10,300		89,000	43,000
10,500		89,000	43,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000

d1		l1	l2
mm	inch	mm	mm
11,500		95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
13,000		102,000	51,000
15,000		111,000	56,000

Punte in metallo duro

Punte elicoidali, extra corte

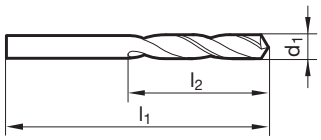
Catalogo n° 51184

N	~3xD	DIN 6539	VHM	118°	h7	R	Cyl

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 52

- Assott. del nocc. ≥ Ø 2,100
- affilatura su piani
- forma del tagliente principale diritta
- massima resistenza all'usura



d1 mm	inch	l1 mm	l2 mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000

d1 mm	inch	l1 mm	l2 mm
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000
10,500		89,000	43,000
11,000		95,000	47,000
11,500		95,000	47,000
12,000		102,000	51,000

Punte in metallo duro

Punte elicoidali, corte

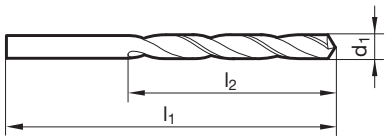
Catalogo n° 71290

N | ~5xD | WN | VHM | 118° | h7 | R | Cyl

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 52

- Assott. del nocc. ≥ Ø 2,100
- affilatura su piani
- forma del tagliente principale diritta



d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000

d1 mm	inch	l1 mm	l2 mm
5,100		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000

d1		l1	l2
mm	inch	mm	mm
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,500		133,000	87,000

d1		l1	l2
mm	inch	mm	mm
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,500		142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000

Punte in metallo duro

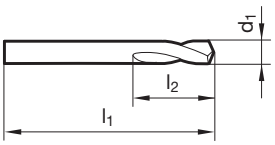
Punte cilindriche per centri CN

Catalogo n° 71190

N	WN	VHM	lucido	90°	h6	R	HA

P	M	K	N	S	H
●	●	●	●	●	

- affilatura su piani
- adatte solo per centrare



d1 **mm**	l1 mm	l2 mm
5,000	62,000	14,000
6,000	66,000	16,000
8,000	79,000	21,000
10,000	89,000	25,000
12,000	102,000	30,000
16,000	115,000	37,500

d1 **mm**	l1 mm	l2 mm
20,000	131,000	45,000

Punte in metallo duro

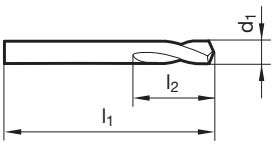
Punte cilindriche per centri CN

Catalogo n° 71191

N	WN	VHM	lucido	120°	h6	R	HA

P	M	K	N	S	H
●	●	●	●	●	

- affilatura su piani
- adatte solo per centrare



d1 mm	l1 mm	l2 mm
5,000	62,000	14,000
6,000	66,000	16,000
8,000	79,000	21,000
10,000	89,000	25,000
12,000	102,000	30,000
16,000	115,000	37,500

d1 mm	l1 mm	l2 mm
20,000	131,000	45,000

Punte in metallo duro

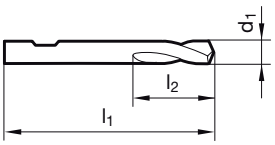
Punte cilindriche per centri CN

Catalogo n° 71189

N	WN	VHM	lucido	142°	h6	R	HB

P	M	K	N	S	H
●	●	●	●	●	

- affilatura su piani
- adatte solo per centrare
- da gambo Ø 6 mm con dispositivo di bloccaggio



d1 **mm**	l1 mm	l2 mm
4,000	55,000	12,000
5,000	62,000	14,000
6,000	66,000	16,000
8,000	79,000	21,000
10,000	89,000	25,000
12,000	102,000	30,000

d1 **mm**	l1 mm	l2 mm
16,000	115,000	37,500
20,000	131,000	45,000

Punte in metallo duro

Punte speciali, con taglienti in MD

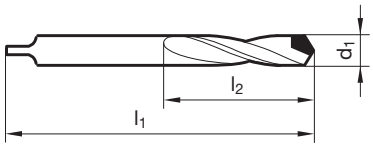
Catalogo n° 71180

N	DIN 8037	HM	lucido	118°	h8	R	Cyl

P	M	K	N	S	H
○		○	○		

Parametri di lav. ind. a pag. 52

- Assott. del nocc. ≥ Ø 3,000
- affilatura su piani
- con riporti in MD



d1 mm	l1 mm	l2 mm
3,000	50,000	20,000
3,500	56,000	25,000
4,000	56,000	25,000
4,500	63,000	28,000
5,000	63,000	28,000
5,500	71,000	32,000
6,000	71,000	32,000
6,500	71,000	32,000
7,000	80,000	40,000
7,500	80,000	40,000
8,000	80,000	40,000
8,500	90,000	50,000
9,000	90,000	50,000
9,500	90,000	50,000
10,000	100,000	56,000
10,500	100,000	56,000
11,000	100,000	56,000
11,500	112,000	63,000

d1 mm	l1 mm	l2 mm
12,000	112,000	63,000
13,000	112,000	63,000
14,000	125,000	71,000
14,500	125,000	71,000
15,000	125,000	71,000
16,000	140,000	80,000
20,000	160,000	90,000

Punte in metallo duro

Punte speciali, con taglienti in MD

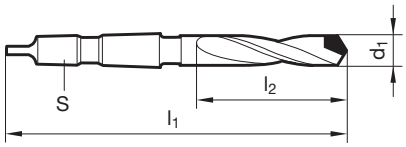
Catalogo n° 71380

N	DIN 8041	HM	lucido	118°	h8	R	MK

P	M	K	N	S	H
○		●	○	○	○

Parametri di lav. ind. a pag. 52

- Assott. del nocc. ≥ Ø 11,000
- affilatura su piani
- con riporti in MD



d1 mm	S	l1 mm	l2 mm
11,000	MK-1	140,000	50,000
12,500	MK-1	146,000	56,000
13,000	MK-1	146,000	56,000
13,500	MK-2	168,000	63,000
14,000	MK-2	168,000	63,000
15,000	MK-2	168,000	63,000
15,500	MK-2	175,000	70,000
16,000	MK-2	175,000	70,000
17,000	MK-2	175,000	70,000
17,500	MK-2	185,000	80,000
18,000	MK-2	185,000	80,000
20,000	MK-3	215,000	90,000

d1 mm	S	l1 mm	l2 mm
21,000	MK-3	215,000	90,000
22,000	MK-3	215,000	90,000
28,000	MK-4	260,000	110,000
30,000	MK-4	275,000	125,000
33,000	MK-4	290,000	140,000

Punte a centrare VHM

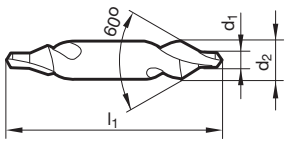
Punte a centrare senza piano

Catalogo n° 71616

N	WN	VHM	luci-do	118°	R

P	M	K	N	S	H
●	○	●	●	○	

- Assott. del nocc. ≥ Ø 2,000
- spoglia sul cono tagliente
- per fori a centrare secondo DIN 332, foglio 1, forma A



d1 **mm**	d2 mm	l1 mm
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000
3,150	8,000	50,000

d1 **mm**	d2 mm	l1 mm
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente SuperT-AL

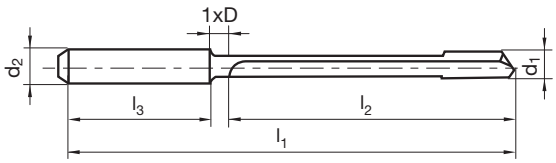
Catalogo n° 55027

SuperT-AL | 25xD | WN | VHM | AlTiN nano | h5 | R | HA

P	M	K	N	S	H
●	●	●	●	●	

Parametri di lav. ind. a pag. 56

- forma tagliente G
- punta in metallo duro con attacco in metallo duro integrale e parte terminale conica MMS da d1 =3 mm e d2 = 6 mm
- uso universale



d1 **mm**	d2 mm	l1 mm	l2 mm	l3 mm	Codice
2,380	4,000	100,000	70,000	28,000	2,380
2,500	4,000	115,000	85,000	28,000	2,500
2,780	4,000	115,000	85,000	28,000	2,780
3,000	6,000	145,000	105,000	36,000	3,000
3,170	6,000	145,000	105,000	36,000	3,170
3,500	6,000	145,000	105,000	36,000	3,500
3,970	6,000	160,000	120,000	36,000	3,970
4,000	6,000	160,000	120,000	36,000	4,000
5,000	6,000	220,000	180,000	36,000	5,000
5,560	6,000	220,000	180,000	36,000	5,560
6,000	6,000	220,000	180,000	36,000	6,000
6,350	8,000	260,000	210,000	36,000	6,350
7,000	8,000	260,000	210,000	36,000	7,000
7,140	8,000	285,000	240,000	36,000	7,140
8,000	8,000	285,000	240,000	36,000	8,000
9,000	10,000	350,000	300,000	40,000	9,000
10,000	10,000	350,000	300,000	40,000	10,000
11,000	12,000	420,000	360,000	45,000	11,000
12,000	12,000	420,000	360,000	45,000	12,000

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente SuperT-AL

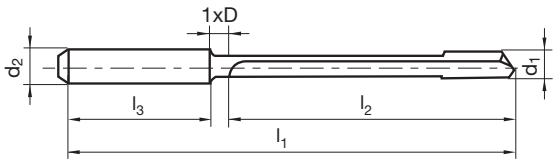
Catalogo n° 55028

SuperT-AL | 50xD | WN | VHM | AlTiN nano | h5 | R | HA

P	M	K	N	S	H
●	●	●	●	●	

Parametri di lav. ind. a pag. 56

- forma tagliente G
- punta in metallo duro con attacco in metallo duro integrale e parte terminale conica MMS da d1 =3 mm e d2 = 6 mm
- uso universale



d1 **mm**	d2 mm	l1 mm	l2 mm	l3 mm	Codice
2,380	4,000	160,000	130,000	28,000	2,380
2,500	4,000	185,000	155,000	28,000	2,500
2,780	4,000	185,000	155,000	28,000	2,780
3,000	6,000	230,000	190,000	36,000	3,000
3,170	6,000	230,000	190,000	36,000	3,170
3,500	6,000	230,000	190,000	36,000	3,500
3,970	6,000	260,000	220,000	36,000	3,970
4,000	6,000	260,000	220,000	36,000	4,000
5,000	6,000	370,000	330,000	36,000	5,000
5,560	6,000	370,000	330,000	36,000	5,560
6,000	6,000	370,000	330,000	36,000	6,000
6,350	8,000	430,000	385,000	36,000	6,350
7,000	8,000	430,000	385,000	36,000	7,000
7,140	8,000	485,000	440,000	36,000	7,140
8,000	8,000	485,000	440,000	36,000	8,000

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente SuperT-AL

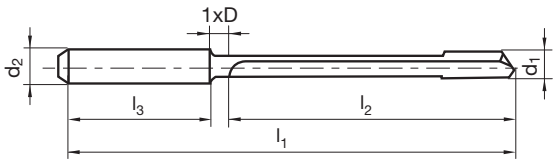
Catalogo n° 55029

SuperT-AL | 75xD | WN | VHM | AlTiN nano | h5 | R | HA

P	M	K	N	S	H
●	●	●	●	●	

Parametri di lav. ind. a pag. 56

- forma tagliente G
- punta in metallo duro con attacco in metallo duro integrale e parte terminale conica MMS da d1 =3 mm e d2 = 6 mm
- uso universale



d1 **mm**	d2 mm	l1 mm	l2 mm	l3 mm	Codice
2,380	4,000	220,000	190,000	28,000	2,380
2,500	4,000	255,000	220,000	28,000	2,500
2,780	4,000	255,000	220,000	28,000	2,780
3,000	6,000	320,000	280,000	36,000	3,000
3,170	6,000	320,000	280,000	36,000	3,170
3,500	6,000	320,000	280,000	36,000	3,500
3,970	6,000	360,000	320,000	36,000	3,970
4,000	6,000	360,000	320,000	36,000	4,000
5,000	6,000	525,000	485,000	36,000	5,000
5,560	6,000	525,000	485,000	36,000	5,560
6,000	6,000	525,000	485,000	36,000	6,000

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente SuperT-N

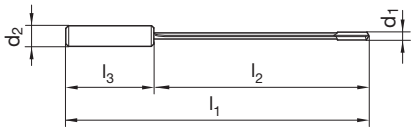
Catalogo n° 75018

SuperT-N	20xD	WN	HM	TiN	h5	R	HA

P	M	K	N	S	H
•	•	•	•		

Parametri di lav. ind. a pag. 56

- con rompitruciolo
- forma tagliente G



d1 **mm**	d2 mm	l1 mm	l2 mm	l3 mm	Codice
4,000	12,000	150,000	100,000	45,000	4,000
4,200	12,000	160,000	110,000	45,000	4,200
4,500	12,000	170,000	120,000	45,000	4,500
5,000	16,000	180,000	130,000	48,000	5,000
5,500	16,000	190,000	140,000	48,000	5,500
6,000	16,000	210,000	160,000	48,000	6,000
6,500	16,000	220,000	170,000	48,000	6,500
7,000	16,000	235,000	185,000	48,000	7,000
8,000	16,000	260,000	210,000	48,000	8,000
9,000	16,000	280,000	230,000	48,000	9,000
10,000	20,000	320,000	260,000	50,000	10,000
12,000	20,000	370,000	310,000	50,000	12,000

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente SuperT-N

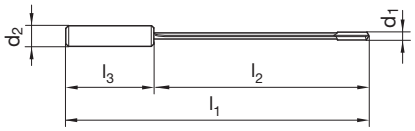
Catalogo n° 75017

SuperT-N	30xD	WN	HM	TiN	h5	R	HA

P	M	K	N	S	H
•	•	•	•		

Parametri di lav. ind. a pag. 56

- con rompitruciolo
- forma tagliente G



d1 **mm**	d2 mm	l1 mm	l2 mm	l3 mm	Codice
4,000	12,000	200,000	155,000	45,000	4,000
4,200	12,000	210,000	165,000	45,000	4,200
4,500	12,000	220,000	175,000	45,000	4,500
5,000	16,000	230,000	182,000	48,000	5,000
5,500	16,000	245,000	197,000	48,000	5,500
6,000	16,000	260,000	212,000	48,000	6,000
6,500	16,000	275,000	227,000	48,000	6,500
7,000	16,000	290,000	242,000	48,000	7,000
8,000	16,000	320,000	272,000	48,000	8,000
9,000	16,000	350,000	302,000	48,000	9,000
10,000	20,000	400,000	350,000	50,000	10,000
12,000	20,000	450,000	400,000	50,000	12,000

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente SuperT-N

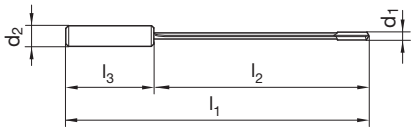
Catalogo n° 75022

SuperT-N	40xD	WN	HM	TiN	h5	R	HA

P	M	K	N	S	H
•	•	•	•		

Parametri di lav. ind. a pag. 56

- con rompitruciolo
- forma tagliente G



d1 **mm**	d2 mm	l1 mm	l2 mm	l3 mm	Codice
4,000	12,000	230,000	185,000	45,000	4,000
4,200	12,000	240,000	195,000	45,000	4,200
4,500	12,000	250,000	205,000	45,000	4,500
5,000	16,000	280,000	232,000	48,000	5,000
5,500	16,000	300,000	252,000	48,000	5,500
6,000	16,000	320,000	272,000	48,000	6,000
6,500	16,000	340,000	292,000	48,000	6,500
7,000	16,000	370,000	322,000	48,000	7,000
8,000	16,000	420,000	372,000	48,000	8,000
9,000	16,000	450,000	402,000	48,000	9,000
10,000	20,000	510,000	460,000	50,000	10,000
12,000	20,000	600,000	550,000	50,000	12,000

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente SuperT-N

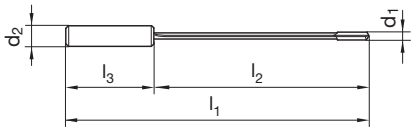
Catalogo n° 75023

SuperT-N | 80xD | WN | HM | TiN | h5 | R | HA

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 56

- con rompitruciolo
- forma tagliente G
- profondità di foratura massima per ogni utensile 40xD, per profondità di foratura maggiori utilizzare prima le punte a catalogo-Nr. 75022
- per materiali a truciolo lungo



d1 **mm**	d2 mm	l1 mm	l2 mm	l3 mm	Codice
4,950	16,000	480,000	432,000	48,000	4,950
5,950	16,000	560,000	512,000	48,000	5,950
7,950	16,000	740,000	692,000	48,000	7,950
9,950	20,000	910,000	860,000	50,000	9,950
11,950	20,000	1080,000	1030,000	50,000	11,950

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente SuperT-NX

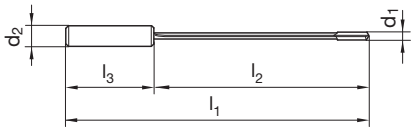
Catalogo n° 55018

SuperT-NX | 20xD | WN | HM | TiCN | h5 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 56

- forma tagliente G
- per acciai legati e altamente legati



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Codice
3,970	10,000	150,000	100,000	40,000	3,970
4,000	12,000	150,000	100,000	45,000	4,000
5,000	16,000	180,000	130,000	48,000	5,000
5,156	16,000	180,000	130,000	48,000	5,156
6,000	16,000	210,000	160,000	48,000	6,000
6,350	16,000	220,000	170,000	48,000	6,350
7,000	16,000	235,000	185,000	48,000	7,000
7,938	16,000	260,000	210,000	48,000	7,938
8,000	16,000	260,000	210,000	48,000	8,000
9,000	16,000	280,000	230,000	48,000	9,000
9,525	16,000	290,000	240,000	48,000	9,525
10,000	20,000	320,000	260,000	50,000	10,000
11,000	20,000	340,000	290,000	50,000	11,000
11,113	20,000	340,000	290,000	50,000	11,113
12,000	20,000	370,000	310,000	50,000	12,000
12,700	20,000	385,000	330,000	50,000	12,700

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente SuperT-NX

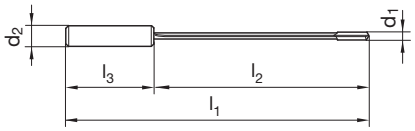
Catalogo n° 55017

SuperT-NX | 30xD | WN | HM | TiCN | h5 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 56

- forma tagliente G
- per acciai legati e altamente legati



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Codice
3,970	10,000	200,000	155,000	40,000	3,970
4,000	12,000	200,000	155,000	45,000	4,000
5,000	16,000	230,000	182,000	48,000	5,000
5,156	16,000	230,000	182,000	48,000	5,156
6,000	16,000	260,000	212,000	48,000	6,000
6,350	16,000	275,000	227,000	48,000	6,350
7,000	16,000	290,000	242,000	48,000	7,000
7,938	16,000	320,000	272,000	48,000	7,938
8,000	16,000	320,000	272,000	48,000	8,000
9,000	16,000	350,000	302,000	48,000	9,000
9,525	16,000	380,000	330,000	48,000	9,525
10,000	20,000	400,000	350,000	50,000	10,000
11,000	20,000	430,000	380,000	50,000	11,000
11,113	20,000	430,000	380,000	50,000	11,113
12,000	20,000	450,000	400,000	50,000	12,000
12,700	20,000	500,000	450,000	50,000	12,700

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente SuperT-NX

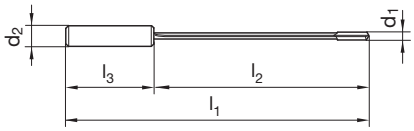
Catalogo n° 55022

SuperT-NX	40xD	WN	HM	TiCN	h5	R	HA

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 56

- forma tagliente G
- per acciai legati e altamente legati



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Codice
3,970	10,000	230,000	185,000	40,000	3,970
4,000	12,000	230,000	185,000	45,000	4,000
5,000	16,000	280,000	232,000	48,000	5,000
5,156	16,000	280,000	232,000	48,000	5,156
6,000	16,000	320,000	272,000	48,000	6,000
6,350	16,000	340,000	292,000	48,000	6,350
7,000	16,000	370,000	322,000	48,000	7,000
7,938	16,000	420,000	372,000	48,000	7,938
8,000	16,000	420,000	372,000	48,000	8,000
9,000	16,000	450,000	402,000	48,000	9,000
9,525	16,000	480,000	432,000	48,000	9,525
10,000	20,000	510,000	460,000	50,000	10,000
11,000	20,000	550,000	500,000	50,000	11,000
11,113	20,000	550,000	500,000	50,000	11,113
12,000	20,000	600,000	550,000	50,000	12,000
12,700	20,000	635,000	585,000	50,000	12,700

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente SuperT-NX

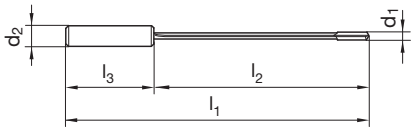
Catalogo n° 55023

SuperT-NX | 80xD | WN | HM | TiCN | h5 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 56

- forma tagliente G
- profondità di foratura massima per ogni utensile 40xD, per profondità di foratura maggiori utilizzare prima le punte a catalogo-Nr. 75022
- per acciai legati e altamente legati



d1 **mm**	d2 mm	l1 mm	l2 mm	l3 mm	Codice
4,950	16,000	480,000	432,000	48,000	4,950
5,106	16,000	480,000	432,000	48,000	5,106
5,950	16,000	560,000	512,000	48,000	5,950
6,300	16,000	590,000	542,000	48,000	6,300
6,950	16,000	650,000	602,000	48,000	6,950
7,888	16,000	740,000	692,000	48,000	7,888
7,950	16,000	740,000	692,000	48,000	7,950
8,950	16,000	820,000	772,000	48,000	8,950
9,475	16,000	870,000	822,000	48,000	9,475
9,950	20,000	910,000	860,000	50,000	9,950
10,950	20,000	995,000	945,000	50,000	10,950
11,063	20,000	995,000	945,000	50,000	11,063
11,950	20,000	1080,000	1030,000	50,000	11,950
12,650	20,000	1140,000	1090,000	50,000	12,650

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente TBE-VHM

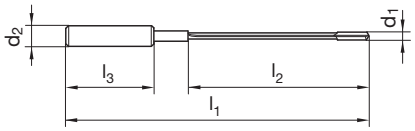
Catalogo n° 75024

TBE-VHM | WN | VHM | lucido | h5 | R | HA

P	M	K	N	S	H
●	●	●	●	○	

Parametri di lav. ind. a pag. 56

- lunghezza elica 45 mm
- forma tagliente G
- uso universale



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Codice
1,200	4,000	90,000	45,000	28,000	1,200
1,500	4,000	90,000	45,000	28,000	1,500
1,600	4,000	90,000	45,000	28,000	1,600
2,000	4,000	90,000	45,000	28,000	2,000
2,500	10,000	100,000	45,000	40,000	2,500
2,700	10,000	100,000	45,000	40,000	2,700
3,000	10,000	100,000	45,000	40,000	3,000
3,200	10,000	100,000	45,000	40,000	3,200

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente TBE-VHM

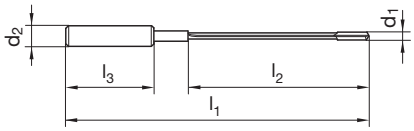
Catalogo n° 55024

TBE-VHM	WN	VHM	Al-TiN+	h5	R	HA

P	M	K	N	S	H
●	●	●	●	○	

Parametri di lav. ind. a pag. 56

- lunghezza elica 45 mm
- forma tagliente G
- per acciai legati e altamente legati



d1 **mm**	d2 mm	l1 mm	l2 mm	l3 mm	Codice
2,000	4,000	90,000	45,000	28,000	2,000
2,500	10,000	100,000	45,000	40,000	2,500
2,700	10,000	100,000	45,000	40,000	2,700
3,000	10,000	100,000	45,000	40,000	3,000
3,200	10,000	100,000	45,000	40,000	3,200

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente TBE-VHM

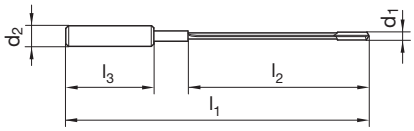
Catalogo n° 75020

TBE-VHM	WN	VHM	luci-do	h5	R	HA

P	M	K	N	S	H
●	●	○	○	○	

Parametri di lav. ind. a pag. 56

- lunghezza elica 80 mm
- forma tagliente G
- uso universale



d1 **mm**	d2 mm	l1 mm	l2 mm	l3 mm	Codice
1,200	4,000	125,000	80,000	28,000	1,200
1,500	4,000	125,000	80,000	28,000	1,500
1,600	4,000	125,000	80,000	28,000	1,600
2,000	4,000	125,000	80,000	28,000	2,000
2,500	10,000	135,000	80,000	40,000	2,500
2,700	10,000	135,000	80,000	40,000	2,700
3,000	10,000	135,000	80,000	40,000	3,000
3,200	10,000	135,000	80,000	40,000	3,200
3,500	10,000	135,000	80,000	40,000	3,500
4,000	10,000	135,000	80,000	40,000	4,000
4,200	10,000	135,000	80,000	40,000	4,200
4,500	10,000	135,000	80,000	40,000	4,500
5,000	10,000	135,000	80,000	40,000	5,000

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente TBE-VHM

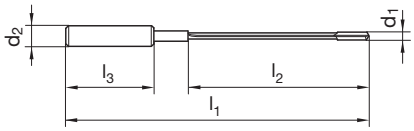
Catalogo n° 55020

TBE-VHM	WN	VHM	Al-TiN+	h5	R	HA

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 56

- lunghezza elica 80 mm
- forma tagliente G
- per acciai legati e altamente legati



d1 **mm**	d2 mm	l1 mm	l2 mm	l3 mm	Codice
2,000	4,000	125,000	80,000	28,000	2,000
2,500	10,000	135,000	80,000	40,000	2,500
2,700	10,000	135,000	80,000	40,000	2,700
3,000	10,000	135,000	80,000	40,000	3,000
3,200	10,000	135,000	80,000	40,000	3,200
3,500	10,000	135,000	80,000	40,000	3,500
4,000	10,000	135,000	80,000	40,000	4,000
4,200	10,000	135,000	80,000	40,000	4,200
4,500	10,000	135,000	80,000	40,000	4,500
5,000	10,000	135,000	80,000	40,000	5,000

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente TBE-VHM

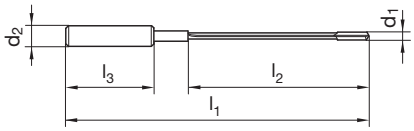
Catalogo n° 75026

TBE-VHM | WN | VHM | lucido | h5 | R | HA

P	M	K	N	S	H
●	●	○	●	○	

Parametri di lav. ind. a pag. 56

- lunghezza elica 120 mm
- forma tagliente G
- uso universale



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Codice
1,500	4,000	165,000	120,000	28,000	1,500
1,600	4,000	165,000	120,000	28,000	1,600
2,000	4,000	165,000	120,000	28,000	2,000
2,500	10,000	175,000	120,000	40,000	2,500
2,700	10,000	175,000	120,000	40,000	2,700
3,000	10,000	175,000	120,000	40,000	3,000
3,200	10,000	175,000	120,000	40,000	3,200
3,500	10,000	175,000	120,000	40,000	3,500
4,000	10,000	175,000	120,000	40,000	4,000
4,200	10,000	175,000	120,000	40,000	4,200
4,500	10,000	175,000	120,000	40,000	4,500
5,000	10,000	175,000	120,000	40,000	5,000

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente TBE-VHM

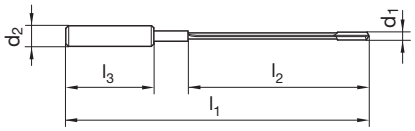
Catalogo n° 55026

TBE-VHM | WN | VHM | Al-TiN+ | h5 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 56

- lunghezza elica 120 mm
- forma tagliente G
- per acciai legati e altamente legati



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Codice
2,000	4,000	165,000	120,000	28,000	2,000
2,500	10,000	175,000	120,000	40,000	2,500
2,700	10,000	175,000	120,000	40,000	2,700
3,000	10,000	175,000	120,000	40,000	3,000
3,200	10,000	175,000	120,000	40,000	3,200
3,500	10,000	175,000	120,000	40,000	3,500
4,000	10,000	175,000	120,000	40,000	4,000
4,200	10,000	175,000	120,000	40,000	4,200
4,500	10,000	175,000	120,000	40,000	4,500
5,000	10,000	175,000	120,000	40,000	5,000

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente TBE-VHM

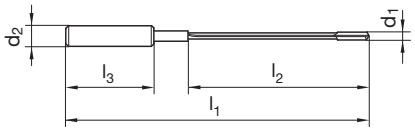
Catalogo n° 75021

TBE-VHM | WN | VHM | lucido | h5 | R | HA

P	M	K	N	S	H
●	●	○	●	○	

Parametri di lav. ind. a pag. 56

- lunghezza elica 160 mm
- forma tagliente G
- uso universale



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Codice
1,500	4,000	205,000	160,000	28,000	1,500
1,600	4,000	205,000	160,000	28,000	1,600
2,000	4,000	205,000	160,000	28,000	2,000
2,500	10,000	215,000	160,000	40,000	2,500
2,700	10,000	215,000	160,000	40,000	2,700
3,000	10,000	215,000	160,000	40,000	3,000
3,200	10,000	215,000	160,000	40,000	3,200
3,500	10,000	215,000	160,000	40,000	3,500
4,000	10,000	215,000	160,000	40,000	4,000
4,200	10,000	215,000	160,000	40,000	4,200
4,500	10,000	215,000	160,000	40,000	4,500
5,000	10,000	215,000	160,000	40,000	5,000
6,000	16,000	225,000	160,000	48,000	6,000
8,000	16,000	225,000	160,000	48,000	8,000

Punte a cannone ad 1 tagliente

Punte a cannone ad 1 tagliente TBE-VHM

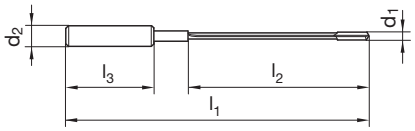
Catalogo n° 55021

TBE-VHM | WN | VHM | Al-TiN+ | h5 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 56

- lunghezza elica 160 mm
- forma tagliente G
- per acciai legati e altamente legati



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Codice
2,000	4,000	205,000	160,000	28,000	2,000
2,500	10,000	215,000	160,000	40,000	2,500
2,700	10,000	215,000	160,000	40,000	2,700
3,000	10,000	215,000	160,000	40,000	3,000
3,200	10,000	215,000	160,000	40,000	3,200
3,500	10,000	215,000	160,000	40,000	3,500
4,000	10,000	215,000	160,000	40,000	4,000
4,200	10,000	215,000	160,000	40,000	4,200
4,500	10,000	215,000	160,000	40,000	4,500
5,000	10,000	215,000	160,000	40,000	5,000
6,000	16,000	225,000	160,000	48,000	6,000
8,000	16,000	225,000	160,000	48,000	8,000

HSS

PUNTE ELICOIDALI

CODICI ISO

P	acciaio, acciaio legato in alta percentuale
M	acciaio inossidabile
K	ghisa grigia, ghisa sferoidale e ghisa malleabile
N	alluminio ed altri metalli non ferrosi
S	leghe speciali, superleghe e leghe di titanio
H	acciaio temprato e ghisa temprata

Nelle pagine successive, contenenti programma, trovate per ciascun utensile consigli sull'idoneità in base ai seguenti gruppi di impiego:

● Idoneità ottima

○ Idoneità limitata

LEGENDA DEI PITTOGRAMMI

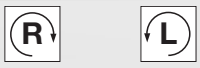
MATERIALE TAGLIENTE

TRATT. DI SUPERFICIE

TOLLERANZA SUL Ø

PROFONDITÀ DI FORO

DIREZIONE DI TAGLIO



a destra a sinistra

FORMA DEL CODOLO

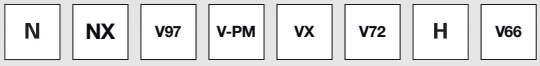
Conico Morse

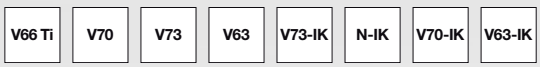
ANGOLI DI AFFILATURA

NORMA

Norma di fabricca

TIPO





Punte elicoidali, extra corte

P	M	K	N	S	H	Tipo	Direzione di taglio	Angolo di affilatura °	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina
														
•		•	•			N	destra	118	HSS	lucido	DIN 1897	0,500 - 32,000	**71110**	190
														
•		•	•			N	sinistra	118	HSS	lucido	DIN 1897	0,500 - 32,000	**71111**	192
														
•		•	•			N	destra	118	HSS	trattati a vapore	DIN 1897	2,000 - 27,000	**71108**	194
														
•		•	•			N	sinistra	118	HSS	trattati a vapore	DIN 1897	2,600 - 26,500	**71109**	196
														
•		•	○			N	destra	118	HSS	TiN	DIN 1897	1,000 - 13,100	**61118**	197
														
•	•	•	•	•	○	N	destra	135	M42	lucido	DIN 1897	1,000 - 10,000	**71106**	199
														
•	•	•	•			NX	destra	118	HSS-Co	lucido	DIN 1897	1,000 - 14,000	**71220**	200
														
•	•	•	•			NX	destra	118	HSS-Co	TiN	DIN 1897	1,000 - 14,000	**61220**	202
														
•	•	○	○			V97	destra	130	HSS-Co	TiAlN nano	DIN 1897	2,000 - 16,000	**51159**	204
														
•	•	•	○			V-PM	destra	130	HSS-E-PM	TiN	DIN 1897	1,000 - 14,000	**61131**	205
														
•	•	•	○	○		VX	destra	118	HSS-Co	trattati a vapore	DIN 1897	1,000 - 10,000	**71112**	206
														
•	•	•	○	○		VX	destra	118	HSS-Co	TiN	DIN 1897	1,000 - 12,500	**61112**	207
														
•		•	•			V72	destra	118	HSS	lucido	Norma di fab.	1,000 - 16,000	**71114**	209
														
•		•	•			V72	sinistra	118	HSS	lucido	Norma di fab.	1,000 - 16,000	**71113**	210

Punte elicoidali, corte

														
•		•	•			N	destra	118	HSS	lucido	DIN 338	0,200 - 16,000	**71116**	212

Punte elicoidali, corte

P	M	K	N	S	H	Tipo	Direzione di taglio	Angolo di affilatura °	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina
														
•		•	•			N	sinistra	118	HSS	lucido	DIN 338	2,800 - 13,500	**71119**	214
														
•		•	•			N	destra	118	HSS	trattati a vapore	DIN 338	2,000 - 20,000	**71115**	215
														
•		•	○			N	destra	118	HSS	TiN	DIN 338	1,000 - 16,000	**61116**	218
														
•		•	○			N	destra	118	HSS	TiN - testa	DIN 338	1,000 - 16,000	**61115**	220
														
•	•	•	○			N	destra	118	HSS-Co	trattati a vapore	DIN 338	1,000 - 15,000	**71149**	222
														
•	•	•	•	•	○	N	destra	135	M42	lucido	DIN 338	1,000 - 16,000	**71148**	224
														
			○			H	destra	118	HSS	lucido	DIN 338	1,000 - 12,000	**71117**	226
														
•	•	•	•			NX	destra	118	HSS-Co	lucido	DIN 338	1,000 - 14,000	**71221**	228
														
•	•	•	•			NX	destra	118	HSS-Co	TiN	DIN 338	1,000 - 14,000	**61221**	230
														
•	○			○		V66	destra	130	HSS-Co	fasi nitrurate	DIN 338	0,800 - 13,500	**71123**	232
														
○	•			•		V66 Ti	destra	130	HSS-Co	lucido	DIN 338	1,000 - 16,000	**71122**	234
														
	•			○		V66 Ti	destra	130	HSS-Co	TiN	DIN 338	1,000 - 13,500	**61223**	236
														
○	•			○		V66 Ti	destra	130	HSS-Co	TiAlN nano	DIN 338	2,000 - 13,000	**51122**	238
														
•		○	•			V70	destra	130	HSS	lucido	DIN 338	1,500 - 15,500	**71124**	239
														
•		○	•			V70	sinistra	130	HSS	lucido	DIN 338	1,500 - 16,000	**71126**	241
														
•		•	○			V70	destra	130	HSS	TiN	DIN 338	1,500 - 16,000	**61124**	243

P	M	K	N	S	H	Tipo	Direzione di taglio	Angolo di affilatura °	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Punte elicoidali, corte

●		●	○			V70	destra	130	HSS-Co	fasi nitrurate	DIN 338	1,500 - 13,000	**71158**	245

●		●	○			V63	destra	130	HSS-Co	TiN	DIN 338	1,500 - 13,000	**61158**	247

●		○	●			V72	destra	118	HSS	lucido	DIN 338	0,550 - 13,000	**71128**	248

●		○	●			V72	sinistra	118	HSS	lucido	DIN 338	0,500 - 12,800	**71129**	250

●	○	○	○			V97	destra	130	HSS-Co	TiAlN nano	DIN 338	1,000 - 13,000	**51158**	251

○	○	●	○			V-PM	destra	130	HSS-E-PM	TiN	DIN 338	1,000 - 14,000	**61232**	253

Serie di punte

●	●	●	●			NX	destra	118	HSS-Co	lucido	DIN 338		**79012**	254

●		●	●			N	destra	118	HSS	trattati a vapore	DIN 338		**78879**	254

○		●	○			N	destra	118	HSS	TiN - testa	DIN 338		**78880**	255

P	M	K	N	S	H	Tipo	Direzione di taglio	Angolo di affilatura °	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Serie di punte

											Norma di fab.		**78877**	256

											Norma di fab.		**78878**	256

Punte con codolo rinforzato

•	•	•	•			NX	destra	118	**HSS-Co**	TiN	Norma di fab.	2,000 - 20,000	**61120**	257

•	•	•	•			NX	destra	118	**HSS-Co**	TiN	Norma di fab.	2,000 - 20,000	**61121**	259

•		•		○		V-PM	destra	130	**HSS-E-PM**	TiAlN nano	Norma di fab.	2,000 - 13,000	**51132**	261

Punte corte, con codolo cil. Ø 16,0 mm

						V72	destra	118	**HSS-Co**	lucido	Norma di fab.	16,000 - 30,000	**71168**	262

Punte corte, con codolo cil. Ø 25,4 mm

						V72	destra	118	**HSS-Co**	lucido	Norma di fab.	28,000 - 40,000	**71169**	263

Punte per foratura con bussola di guida

•		•	•			N	destra	118	**HSS**	trattati a vapore	DIN 339	1,000 - 19,500	**71130**	264

P	M	K	N	S	H	Tipo	Direzione di taglio	Angolo di affilatura °	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina
Punte elicoidali, lunghe														
														
•		•	•			N	destra	118	HSS	lucido	DIN 340	0,500 - 16,500	**71136**	265
														
•		•	•			N	destra	118	HSS	trattati a vapore	DIN 340	1,800 - 20,000	**71135**	266
														
•		•	○			N	destra	118	HSS	TiN	DIN 340	1,000 - 16,000	**61136**	268
														
•	•	•	•			NX	destra	118	HSS-Co	lucido	DIN 340	1,000 - 14,000	**71222**	270
														
•	•	•	•			NX	destra	118	HSS-Co	TiN	DIN 340	1,000 - 14,000	**61222**	272
														
•	•		•	•		V66	destra	130	HSS-Co	lucido	DIN 340	1,000 - 13,000	**71225**	274
														
•		•	○			V70	destra	130	HSS	lucido	DIN 340	1,500 - 12,000	**71150**	275
														
•		•	○			V70	sinistra	130	HSS	lucido	DIN 340	1,500 - 13,000	**71152**	276
														
•		•	○			V70	destra	130	HSS	TiN	DIN 340	2,000 - 12,000	**61150**	277
														
•		•	○			V73	destra	130	HSS	fasi nitrurate	DIN 340	1,500 - 12,700	**71154**	278
														
•	○	•	○			V73	destra	130	HSS-Co	fasi nitrurate	DIN 340	1,500 - 13,000	**71156**	280
Punte elicoidali in lunghezze speciali, grandezza 1														
														
•		•	•			V63	destra	130	HSS	fasi nitrurate	DIN 1869	2,000 - 13,000	**71145**	282
														
•	○	•	•			V63	destra	130	HSS-Co	fasi nitrurate	DIN 1869	3,000 - 12,700	**71192**	284
Punte elicoidali in lunghezze speciali, grandezza 2														
														
•		•	•			V63	destra	130	HSS	fasi nitrurate	DIN 1869	3,000 - 13,000	**71146**	285

P	M	K	N	S	H	Tipo	Direzione di taglio	Angolo di affilatura °	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina
Punte elicoidali in lunghezze speciali, grandezza 2														
														
•	○	•	•			V63	destra	130	**HSS-Co**	fasi nitrurate	DIN 1869	3,000 - 12,000	**71193**	286
Punte elicoidali in lunghezze speciali, grandezza 3														
														
•		•	•			V63	destra	130	**HSS**	fasi nitrurate	DIN 1869	3,500 - 13,000	**71147**	287
Punte elicoidali, extra lunghe														
														
•		•	•			V63	destra	130	**HSS**	fasi nitrurate	Norma di fab.	6,000 - 12,000	**71195**	288
														
•		•	•			V63	destra	130	**HSS**	lucido	Norma di fab.	8,000 - 12,000	**71196**	289
Punte con fori di refrigerazione														
														
•		•	•			V73-IK	destra	130	**HSS**	lucido	Norma di fab.	3,000 - 13,000	**71584**	290
Micropunte														
•	•	•	•			N	destra	118	**HSS-E-PM**	lucido	DIN 1899	0,050 - 1,450	**71187**	291
Punte cilindriche per centri CN														
														
•	•	•	•	•		N	destra	90	**HSS**	lucido	Norma di fab.	3,000 - 25,400	**71175**	293
														
•	•	•	•	•		N	destra	90	**HSS**	TiN	Norma di fab.	3,000 - 25,000	**61175**	294
														
•	•	•	•	•		N	destra	120	**HSS**	lucido	Norma di fab.	3,000 - 25,400	**71176**	295

P	M	K	N	S	H	Tipo	Direzione di taglio	Angolo di affilatura °	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Punte elicoidali, corte

●	●	○		○	○	N	destra	130	HSS-Co8	lucido	Norma di fab.	10,000 - 25,500	**71303**	296

●	●	○		○	○	N	destra	130	HSS-Co8	lucido	Norma di fab.	12,000 - 30,000	**71304**	297

Punte elicoidali

●		●	●			N	destra	118	HSS	trattati a vapore	DIN 345	3,750 - 68,000	**71300**	298

●	○	●				N	destra	118	HSS-Co	trattati a vapore	DIN 345	5,000 - 33,000	**71416**	301

●		●	●			V70	destra	130	HSS	lucido	DIN 345	7,940 - 32,000	**71305**	302

●	●	●		●		V66 Ti	destra	130	HSS-Co	lucido	DIN 345	8,500 - 32,000	**71312**	303

●	●	●		●		V66 Ti	destra	130	HSS-Co	lucido	DIN 346	11,000 - 29,000	**71313**	304

Punte per foratura con bussola di guida

●		●				N	destra	118	HSS	trattati a vapore	DIN 341	6,000 - 45,000	**71320**	305

●		●	●			V70	destra	130	HSS	lucido	DIN 341	8,000 - 44,000	**71322**	306

Punte elicoidali in lunghezze speciali, grandezza 1

●		●	●			V63	destra	130	HSS	fasi nitrurate	DIN 1870	8,000 - 30,000	**71325**	307

Punte elicoidali in lunghezze speciali, grandezza 2

●		●	●			V63	destra	130	HSS	fasi nitrurate	DIN 1870	8,000 - 43,000	**71326**	308

P	M	K	N	S	H	Tipo	Direzione di taglio	Angolo di affilatura °	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Punte con fori di refrigerazione

●	○	●	○			N-IK	destra	118	**HSS**	trattati a vapore	Norma di fab.	10,000 - 40,000	**71554**	309

Punte elicoidali lunghe con refrigerazione interna

●		●	●			V70-IK	destra	130	**HSS-Co**	trattati a vapore	Norma di fab.	14,500 - 32,000	**71550**	310

●		●	●			V70-IK	destra	130	**HSS-Co**	trattati a vapore	Norma di fab.	8,000 - 31,500	**71553**	311

Punta per fori prof. con tagl. a spirale extra lungo con raffr. int.

●	○	●	○	○		V63-IK	destra	130	**HSS-Co**	trattati a vapore	Norma di fab.	14,500 - 31,500	**71565**	312

●	○	●	○	○		V63-IK	destra	130	**HSS-Co**	trattati a vapore	Norma di fab.	8,000 - 14,000	**71567**	313

●	○	●	○	○		V63-IK	destra	130	**HSS-Co**	trattati a vapore	Norma di fab.	14,500 - 32,000	**71566**	314

●	○	●	○	○		V63-IK	destra	130	**HSS-Co**	trattati a vapore	Norma di fab.	8,000 - 31,500	**71568**	315

Alimentatori per punte con fori di refrigerazione

											Norma di fab.		**71560**	316

P	M	K	N	S	H	Tipo	Direzione di taglio	Angolo di svasatura °	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Punte a gradino ad eliche indipendenti, cil.

•		•				N	destra	90	HSS	trattati a vapore	DIN 8374	6,000 - 19,000	**71501**	317

•		•				N	destra	90	HSS	trattati a vapore	DIN 8378	3,400 - 13,500	**71503**	318

•		•				N	destra	180	HSS	trattati a vapore	DIN 8376	6,000 - 18,000	**71500**	319

Punte a gradino ad eliche indipendenti, CM

•		•				N	destra	90	HSS	trattati a vapore	DIN 8379	9,000 - 22,000	**71523**	320

•		•				N	destra	180	HSS	trattati a vapore	DIN 8377	11,000 - 26,000	**71520**	321

P	M	K	N	S	H	Tipo	Direzione di taglio	Forma	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina
Punte a centrare senza piano														
														
•	•	•	•	○		N	destra	A	**HSS**	lucido	DIN 333	0,500 - 12,500	**71600**	322
														
•	•	•	•	○		N	sinistra	A	**HSS**	lucido	DIN 333	0,500 - 8,000	**71601**	323
														
•	•	•	•	○		N	destra	R	**HSS**	lucido	DIN 333	0,500 - 10,000	**71602**	324
														
•	•	•	•	•		N	destra	R	**HSS**	TiN	DIN 333	0,800 - 6,300	**61602**	325
														
•	•	•	•	○		N	destra	A	**HSS**	lucido	DIN 333	1,000 - 6,300	**71605**	326
														
•	•	•	•	○		N	destra	B	**HSS**	lucido	DIN 333	1,000 - 6,300	**71604**	327
Punte a centrare con piano														
														
•	•	•	•	○		N	destra	A	**HSS**	lucido	DIN 333	1,600 - 6,300	**71607**	328
														
•	•	•	•	○		N	destra	R	**HSS**	lucido	DIN 333	1,600 - 8,000	**71609**	329

P	M	K	N	S	H	Tipo	Direzione di taglio	Angolo di affilatura °	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Allargatori cilindrici

•		•				N	destra	120	**HSS**	trattati a vapore	DIN 344	4,800 - 16,000	**72200**	330

Allargatori con attacco cono morse

•		•				N	destra	120	**HSS**	trattati a vapore	DIN 343	9,000 - 48,600	**72210**	331

Parametri di lavoro indicativi per punte

Serie d'avanzamento

Avanzamenti f (mm/giri)

Diametro utensile mm	Lettera d'identi. A	B	C	D	E	F	G	H	I
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Con le lettere d'identificazione d'avanzamento stampate in grassetto, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

R a destra
(tutti gli articoli con questo simbolo sono destri)

L a sinistra

Impiego del refrigerante:

Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria ⊡

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⊡
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

≤3×D Prof. di foro

Catalogo n°	71108 71109 L	71110 71111 L	71114 71113 L
Mat. da taglio	HSS	HSS	HSS
Superficie	luc./vap.	lucida	lucida
DIN/Forma	1897	1897	a norma
Tipo	N	N	V72
Pagina	194/196	190/192	209/210

Catalogo n°	61118
Mat. da taglio	HSS
Superficie	TiN
DIN/Forma	1897
Tipo	N
Pagina	197

Catalogo n°	71112	71168	71169	71303 71304	71106
Mat. da taglio	HSS-Co	HSS-Co	HSS-Co	HSS-Co8	M42
Superficie	luc./vap.	lucida	lucida	lucida	lucida
DIN/Forma	1897	a norma	a norma	a norma	1897
Tipo	VX	V72	V72	N	N
Pagina	206	262	263	296/297	199

v_c m/min	Codice d'avanzamento				v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanzamento				
27	**F**	**F**	F		30	**F**	35	E				E
22	**E**	**E**	E		24	**E**	30	E				E
30	**F**	**F**	**F**		33	**F**	40	E				E
30	E	E	E		33	E	40	**E**	**E**	**E**		E
25	**E**	**E**	**E**		28	**E**	40	E				E
25	**E**	**E**	**E**		28	**E**	40	E				E
					25	D	35	**D**	**D**	**D**	**D**	D
					22	D	20	**D**	D	D	**D**	D
							16	**C**	C	C	**C**	C
30	**F**	**F**	F		33	**F**	36	F				F
					20	D	20	**D**	D	D	**D**	C
							15	**C**	C	C	**C**	C
					14	D	16	D	D	D	**D**	
							12	C	C	C	**C**	C
16	D	D			18	D	15	**D**	D	D	**D**	C
							12	**C**	C	C	**C**	C
							15	C	C	C	**C**	C
							8	**B**	B	B	**B**	**B**
							4	A			A	A
							18	D	D	D		C
							14	C	C	C	C	C
							16	C	C	C	C	C
30	**F**	**F**	F		33	**F**	35	**F**				E
30	F	F	F		33	F	30	**F**				E
25	**F**	**F**	F		28	**F**	30	F				E
20	F	F	F		22	F	25	**F**				E
							10	C			C	C
							8	A	A	A	**A**	A
							10	B			**B**	**B**
							6	B			**B**	**B**
70			G				90					G
70			G				90					G
50	G	G	**G**				80					G
50	F	F	**F**				70					F
70	F	F	F		80	F	70					F
60	E	E	**E**		65	**E**	40					E
					75	E	60					E
40	E	E	**E**		45	**E**	40					E
30	D	D	**D**		33	**D**	35	D				D
25	D	D	D		27	D	30	**D**				D
15	D	D	D		16	**D**	20	D				D
					15	D	15	D				D
18	D	D	**D**		22	**D**	20	D	D	D		
28	E	E	E		36	**E**	30					D

Parametri di lavoro indicativi per punte

Serie d'avanzamento

Avanzamenti f (mm/giri)

Diametro utensile mm	A	B	C	D	E	F	G	H	I
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Serie d'avanzamento per 71187

Avanzamenti f (mm/giri)

Diametro utensile mm									
0,10	0,002	0,003	0,003	0,004	0,006	0,007	0,010	0,013	0,016
0,16	0,002	0,003	0,004	0,005	0,007	0,009	0,012	0,016	0,022
0,25	0,003	0,004	0,005	0,007	0,009	0,011	0,014	0,019	0,024
0,30	0,004	0,005	0,007	0,009	0,011	0,015	0,019	0,025	0,033
0,50	0,005	0,007	0,008	0,011	0,014	0,019	0,024	0,031	0,041
0,63	0,007	0,009	0,012	0,015	0,020	0,026	0,034	0,044	0,057
0,80	0,010	0,013	0,016	0,020	0,024	0,031	0,038	0,048	0,060
1,00	0,020	0,024	0,029	0,035	0,041	0,050	0,060	0,072	0,086
1,50	0,030	0,035	0,040	0,046	0,052	0,060	0,069	0,080	0,092

Con le lettere d'identificazione d'avanzamento stampate in grassetto, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

Impiego del refrigerante:

- Olio da taglio, attivo ■
- Emulsione ■
- senza lubrificante □
- solo refrigerazione ad aria [!]

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

≤3×D Prof. di foro

Catalogo n°	61112	51159	61120	71220	61220	61131	71187
Mat. da taglio	HSS-Co	HSS-Co	HSS-Co	HSS-Co	HSS-Co	HSS-E-PM	HSS-E-PM
Superficie	TiN	TiAlN	TiN	lucida	TiN	TiN	lucida
DIN/Forma	1897	1897	a norma	1897	1897	1897	1899
Tipo	VX	V97	NX	NX	NX	V-PM	N
Pagina	207	204	257	200	202	205	291







v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.
38	E	42	F	45	**F**	35	**F**	45	**F**	40	F	21	F
33	D	36	E	35	**E**	30	**E**	35	**E**	32	E	18	E
44	E	48	**G**	50	**F**	40	**F**	50	**F**	45	**F**	18	F
38	E	42	**F**	40	**F**	30	**F**	40	**F**	40	E	16	E
44	E	48	F	40	**F**	32	**F**	44	**F**	42	F	20	E
44	E	48	F	44	**F**	28	**F**	44	**F**	40	E	18	E
38	**D**	42	E	40	**E**	20	**E**	40	**E**	28	**D**	14	**D**
27	**D**	30	E	27	D	15	D	27	D	25	D	14	**D**
22	**C**	24	D	22	C	13	C	22	C	20	**C**	12	C
44	D	48	D	44	**F**	30	**F**	44	**F**	40	D	18	F
22	**D**	24	E	22	D	16	D	22	D	22	**D**	14	**D**
18	**C**	20	D	18	C	12	C	18	C	18	**C**	12	C
22	**D**	24	E	22	D	15	D	22	D	20	**D**	14	**D**
18	**C**	20	D	16	C	10	C	16	C	15	**C**	12	C
19	**D**	21	E	20	**D**	15	D	20	**D**	21	**D**	16	**D**
14	**C**	16	D	15	C	10	C	15	C	16	**C**	14	C
14	**C**	17	D	13	C	10	C	13	C	15	**C**	14	C
9	**B**	11	C							12	**B**	8	B
4	A												
20	D	17	**D**	20	**D**	14	**D**	20	**D**	15	D	18	D
15	**C**	12	C	16	**D**	10	**D**	16	**D**	10	C	14	C
18	**C**	14	C	18	**D**	12	**D**	18	**D**	12	C	16	C
40	F	50	G	45	**F**	36	**F**	45	**F**	50	**F**	26	F
35	**F**	45	G	40	**F**	30	**F**	40	**F**	40	**F**	22	**F**
33	F	36	G	40	**F**	30	**F**	40	**F**	44	**F**	18	F
27	F	29	G	30	**F**	22	**F**	30	**F**	32	**F**	22	**F**
12	C	10	D							8	C		
6	B												
11	B												
7	B												
				70	G	50	**G**	70	G				
				70	G	50	**G**	70	G				
				85	G	65	**G**	85	G			26	G
				70	F	60	**F**	70	F			18	F
				80	F	60	F	80	F			75	F
		96	F	80	**E**	70	**E**	80	**E**	80	E	42	E
		84	F	77	**E**	45	**E**	77	**E**				
		48	F	44	**E**	30	**E**	44	**E**	60	E	22	E
45	E	50	E	50	**D**	36	**D**	50	**D**	50	E	22	D
40	**D**	45	E	40	**D**	30	**D**	40	**D**	45	D	18	D
23	D	25	E	32	**D**	30	**D**	32	**D**	40	D	13	D
17	D	20	E	28	**D**	25	**D**	28	**D**	32	D		
		24	E	25	**D**	20	**D**	25	**D**	25	**D**	16	D
		30	E	25	**D**	15	**D**	25	**D**			18	D

Parametri di lavoro indicativi per punte

Serie d'avanzamento

Avanzamenti f (mm/giri)

Diametro utensile mm	Lettera d'identi. A	B	C	D	E	F	G	H	I
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Con le lettere d'identificazione d'avanzamento stampate in grassetto, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

R a destra
(tutti gli articoli con questo simbolo sono destri)

L a sinistra

Impiego del refrigerante:
Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria ⊡

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⊡
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

≤5×D Prof. di foro

Catalogo n°	71116 71119 L	71115	71300	71117	71124 71126 L	71305	71128 71129 L
Mat. da taglio	HSS	HSS	HSS	HSS	HSS	HSS	HSS
Superficie	lucida	luc./vap.	vap.	lucida	lucida	lucida	lucida
DIN/Forma	338	338	345	338	338	345	338
Tipo	N	N	N	H	V70	V70	V72
Pagina	212/214	215	298	226	239/241	302	248/250

Catalogo n°	61116	61124
Mat. da taglio	HSS	HSS
Superficie	TiN	TiN
DIN/Forma	338	338
Tipo	N	V70
Pagina	218	243

Catalogo n°	61115
Mat. da taglio	HSS
Superficie	testa TiN
DIN/Forma	338
Tipo	N
Pagina	220

Catalogo n°	61223
Mat. da taglio	HSS-Co
Superficie	TiN
DIN/Forma	338
Tipo	V66 Ti
Pagina	236

v_c m/min	Codice d'avanzamento						
27	F	**F**	**F**		**F**	**F**	**F**
22	**E**	**E**	**E**		**E**	**E**	**E**
30	F	**F**	**F**		**F**	**F**	**F**
30	E	E	E		**E**	**E**	E
25	E	**E**	**E**		**E**	**E**	**E**
25	E	E	**E**		**E**	**E**	**E**
30	F	F	F		**F**	**F**	F
16		D	D		D	D	
30	F	**F**	**F**		G	G	F
30	F	F	F		F	F	F
25	F	F	F		F	F	F
25	F	F	F		F	F	F
80					**G**	**G**	G
80					G	G	G
70	**G**	G	G		**G**	**G**	**G**
70	**F**	F	F		**F**	**F**	**F**
50	F	F	F	F	F	F	F
50	E	E	E		**F**	**F**	**E**
70				**F**			
40	E	E	E		**F**	**F**	**E**
30	D	D	D	D			D
25	D	D	D				D
15	D	D	D		D	D	D
18	D	D	D	D	**D**	**D**	**D**
28	E	E	E	**E**			E

v_c m/min	Codice d'avanzamento	
30	**F**	**F**
24	**E**	**E**
33	**F**	**F**
33	E	E
28	**E**	**E**
28	**E**	**E**
25	D	D
22	D	D
33	**F**	**F**
20	D	D
14	D	D
18	D	D
33	F	G
33	F	F
28	**F**	F
22	F	F
80	F	**F**
65	E	**E**
75	E	E
45	E	**E**
33	**D**	**D**
27	**D**	**D**
16	**D**	**D**
15	**D**	**D**
22	D	D
36	E	

v_c m/min	Codice d'avanz.
30	**F**
24	**E**
33	**F**
33	E
28	**E**
28	**E**
25	D
22	D
33	**F**
20	D
14	D
18	D
33	F
33	F
28	**F**
22	F
80	F
65	E
75	E
45	E
33	**D**
27	**D**
16	**D**
15	**D**
22	D
36	E

v_c m/min	Codice d'avanz.
22	C
14	C
9	**B**
20	D
15	**C**
18	**C**
12	**C**
6	**B**
11	**B**
7	**B**
17	D

Parametri di lavoro indicativi per punte

Serie d'avanzamento

Avanzamenti f (mm/giri)

Diametro utensile mm	A	B	C	D	E	F	G	H	I
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Con le lettere d'identificazione d'avanzamento stampate in grassetto, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

Impiego del refrigerante:
Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria ▣

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		▣
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

≤5×D Prof. di foro

Catalogo n°	71416	71149	71158	71123	71122	71312	71313	71148	71221	61221
Mat. da taglio	HSS-Co	HSS-Co	HSS-Co	HSS-Co	HSS-Co	HSS-Co	HSS-Co	M42	HSS-Co	HSS-Co
Superficie	vap.	luc./vap.	fase nitr.	luc./fase nitr.	lucida	lucida	lucida	lucida	lucida	TiN
DIN/Forma	345	338	338	338	338	345	346	338	338	338
Tipo	N	N	V70	V66	V66 Ti	V66 Ti	V66 Ti	N	NX	NX
Pagina	301	222	245	232	234	303	304	224	228	230

v_c m/min	Codice d'avanzamento								v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.
35	E	E						E	35	**F**	45	**F**
30	E	E						E	30	**E**	35	**E**
40	E	E						E	40	**F**	50	**F**
40	E	E	E					E	30	**F**	40	**F**
40	E	E						E	32	**F**	44	**F**
40	E	E	E					E	28	**F**	44	**F**
35	**D**	**D**	D					E	20	**E**	40	**E**
20	**D**	**D**	**D**					D	15	D	27	D
16	C	C	C	C	C	C	C	C	13	C	22	C
36	F	F		F	F	F	F	F	30	**F**	44	**F**
20	**D**	**D**	D					C	16	D	22	D
15	C	C	C	C	C	C	C	C	12	C	18	C
16	**D**	**D**	D					C	15	D	22	D
12	C	C	C	C	C	C	C	C	10	C	16	C
15	**D**	**D**	D					C	15	D	20	D
12	C	**C**	C	C	C	C	C	C	10	C	15	C
15	C	C	C	C	C	C	C	C	10	C	13	C
8	B	**B**		**B**	**B**	**B**	**B**	**B**				
4								**A**				
18	D	D	**D**	D	D	D	D	C	14	**D**	20	**D**
14	C	C		**C**	**C**	**C**	**C**		10	**D**	16	**D**
16	C	C	C	**C**	**C**	**C**	**C**	C	12	**D**	18	**D**
35	F	F	F					E	36	**F**	45	**F**
30	**F**	**F**	**F**					E	30	**F**	40	**F**
30	F	F	F					E	30	**F**	40	**F**
28	**F**	**F**	**F**					E	22	**F**	30	**F**
10	C	C	C	C	C	C	C	**C**				
8				A	A	A	A	**A**				
10				**B**	**B**	**B**	**B**	B				
6				**B**	**B**	**B**	**B**	B				
90								G	50	**G**	70	G
90								G	50	**G**	70	G
80			G					G	65	**G**	85	G
70			F					F	60	**F**	70	F
70								F	60	F	70	F
40	E	**E**	E					E	25	**E**	80	**E**
60								E	70	**E**	77	**E**
40	E	E	E					E	30	**E**	44	**E**
35	D	**D**						D	36	**D**	50	**D**
33	D	**D**						D	30	**D**	40	**D**
20	D	D	D					D	30	**D**	32	**D**
15	D	D	D					D	25	**D**	28	**D**
20	D	D	D						20	**D**	25	**D**
									15	**D**	27	**D**

Parametri di lavoro indicativi per punte

Serie d'avanzamento

Avanzamenti f (mm/giri)

Diametro utensile mm	Lettera d'identi. A	B	C	D	E	F	G	H	I
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Con le lettere d'identificazione d'avanzamento stampate in grassetto, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

Impiego del refrigerante:

Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria [!]

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

≤5×D Prof. di foro

≤10×D

Catalogo n°	61121	61158	61232	51132	51158	51122	71222	61222
Mat. da taglio	HSS-Co	HSS-Co	HSS-E-PM	HSS-E-PM	HSS-Co	HSS-Co	HSS-Co	HSS-Co
Superficie	TiN	TiN	TiN	TiAlN	TiAlN	TiAlN	lucida	TiN
DIN/Forma	a norma	338	338	a norma	338	338	340	340
Tipo	NX	V70	V-PM	V-PM	V97	V66 Ti	NX	NX
Pagina	259	247	253	261	251	238	270	272








v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.
38	**F**	38	F	40	F	42	F	42	F	29	**E**	32	**F**
33	**E**	33	E	32	E	37	E	36	E	22	**D**	25	**E**
44	**F**	44	E	45	F	47	F	48	F	32	**G**	25	**F**
40	**E**	38	**E**	40	E	44	F	42	**F**	25	**G**	28	**E**
44	**F**			42	F	47	F			25	**F**	28	**F**
44	**F**	44	E	40	E	47	F	48	F	22	**G**	25	**F**
40	**E**	38	D	28	**D**	44	**E**	42	E	13	**E**	15	**E**
27	D	27	D	25	D	30	D	30	**E**	12	D	12	D
22	C	22	**C**	20	**C**	25	**C**	34	**D** D	11	C	12	C
44	**F**	44	D	40	D	47	C	48	F	25	**F**	28	**F**
22	D	22	D	22	**D**	25	**D**	24	E	12	D	14	D
18	C	18	**C**	18	**C**	20	**C**	20	**D**	11	C	12	C
22	D	22	D	20	**D**	25	**D**	24	E	12	D	13	D
16	C	18	**C**	15	**C**	18	**D**	20	**D**	7	C	8	C
20	D	19	**D**	25	**D**	22	**E**	21	E	12	D	13	D
15	C	14	**C**	15	**C**	17	**D**	16	**D**	9	C	10	C
13	C	14	**C**	15	**C**	14	**D**	17	**D** D	9	C	10	C
9	B			10	**B**	12	**B**	11	C **B**				
								6	A				
20	**D**	20	**D**	15	D	22	D	22	**E** E	12	**D**	13	**D**
16	**D**			10	C	18	C	17	D **C**	7	**D**	8	**D**
18	**D**	18	C	12	C	20	C	20	D **D**	11	**D**	12	**D**
45	**F**	40	F	50	**F**	50	**G**	45	G	29	F	32	**F**
40	**F**	35	F	40	**F**	40	**G**	40	G	23	F	26	**F**
40	**F**	33	F	45	**F**	44	**G**	36	G	25	F	28	**F**
30	**F**	27	F	32	**F**	33	**G**	29	G	18	F	20	**F**
				8	C	16	D	14	D **C**				
						6	B	7	**B**				
								12	**B**				
								8	**B**				
										45	**G**	50	**G**
										45	**G**	50	**G**
								85	H	54	**G**	60	**G**
								72	G	45	**F**	50	**F**
80	F									48	F	50	F
88	**E**	88	E	50	E	50	E	96	F	50	**E**	70	**E**
77	**E**									40	**E**	50	**E**
44	**E**			60	E					25	**E**	28	**E**
45	**D**			50	E	50	E			31	**D**	35	**D**
40	**D**			45	D	44	E			22	**D**	25	**D**
30	**D**	22	D	40	D	33	E	25	E	22	**D**	24	**D**
25	**D**	17	**D**	32	D	28	E	20	**E** D	18	**D**	20	**D**
22	**D**	22	D	25	**D**	25	**D**	24	E	16	**D**	18	**D**
27	**D**									11	**D**	12	**D**

Parametri di lavoro indicativi per punte

Serie d'avanzamento

Avanzamenti f (mm/giri)

Diametro utensile mm	Lettera d'identi. A	B	C	D	E	F	G	H	I
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Con le lettere d'identificazione d'avanzamento stampate in grassetto, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

R a destra
(tutti gli articoli con questo simbolo sono destri)

L a sinistra

Impiego del refrigerante:
Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria ▣

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		▣
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

≤10×D Prof. di foro

Catalogo n°	71136	71130	71135	71320	71150 71152 L	71322	71154	71584	61136	61150	71225	71156	71550 71553
Mat. da taglio	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS-Co		HSS-Co
Superficie	lucida	luc./vap.		vap.	lucida	lucida	fase nitr.	lucida	TiN	TiN	lucida	fase nitr.	vap.
DIN/Forma	340	339	340	341	340	341	340	a norma	340	340	340	340	a norma
Tipo	N	N	N	N	V70	V70	V73	V73-IK	N	V70	V66	V73	V70-IK
Pagina	265	264	266	305	275/276	306	278	290	268	277	274	280	310/311

v_c m/min	Codice d'avanzamento							v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.		v_c m/min	Codice d'avanz.		v_c m/min	Codice d'avanz.
24	F	F	F	F	**F**	**F**	**F**	26	F	28	F	**F**				26	**F**
20	E	E	E	E	**E**	**E**	**E**	22	E	22	E	**E**				22	**E**
27	F	F	F	F	**F**	**F**	**F**	30	F	30	F	**F**				30	**F**
27	E	E	E	E	**E**	**E**	**E**	30	**E**	30	E	**E**	24		**E**	30	**E**
22	E	E	E	E	**E**	**E**	**E**	24	**E**	25	E	**E**				24	**E**
22	E	E	E	E	**E**	**E**	**E**	24	**E**	25	E	**E**	24		E	24	**E**
								22	D	22	D	D	16		**D**	22	**D**
								20	D	18	D	D	16		**D**	20	**D**
								14	C				14	C	**C**	14	**C**
27		F	F	F	**F**	**F**	**F**	30	**F**	30	F	**F**				30	**F**
								17	D	14	D	D	14		**D**	17	**D**
								12	C				10		**C**	12	**C**
								14	D	12	D	D	12		**D**	14	**D**
								10	C				8		**C**	10	**C**
14		D	D	D	D	D	D	15	**D**	16	D	D	16		**D**	15	**D**
								10	C	10	C	C	8		**C**	10	**C**
								10	C				8		**C**	10	**C**
								7	B				6		B	7	B
12					D								12	D	**D**		
													8	**C**	A		
													10	**C**	C		
27	F	F	F	F	**G**	**G**	F	30	**F**	30	F	**F**	30		F	30	**F**
27	F	F	F	F	F	F	F	30	F	30	F	F	24		F	30	**F**
22	F	F	F	F	F	F	F	24	**F**	24	F	**F**	24		F	24	**F**
18	F	F	F	F	F	F	F	20	F	20	F	F	20		F	20	**F**
								7	C				6	C		7	C
													5	A			
													8	**B**			
													5	**B**			
70					**G**	**G**											
70					G	G		80	**F**							80	**F**
45	G	G	G	G	**G**	**G**	**G**	50	**G**	50	G	**G**	60		G	50	**G**
45	F	F	F	F	**F**	**F**	**F**	50	**F**	50	F	**F**	50		F	50	**F**
63	F	F	F	F	F	F				70	F		60	E			
54	E	E	E	E	**F**	**F**	**F**	60	**E**	60	E	**E**	30		E	60	**E**
36	E	E	E	E	F	F	**F**	40	**E**	40	E	**E**	38		E	40	E
28	D	D	D	D						30	**D**						
22	D	D	D	D				24	**D**	25	**D**					24	**D**
22	D	D	D	D	D	D	**D**	24	**D**	14	D	**D**	24		D	24	**D**
								22	D	12	D	D	13	D	**D**	22	**D**
14	D	D	D	D	**D**	**D**	**D**			18	D	**D**	16		D		
22	E	E	E	E				24	**E**	32	E		26	D		24	**E**

Parametri di lavoro indicativi per punte

Serie d'avanzamento

Avanzamenti f (mm/giri)

Diametro utensile mm	Lettera d'identi. A	B	C	D	E	F	G	H	I
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250

Con le lettere d'identificazione d'avanzamento stampate in grassetto, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

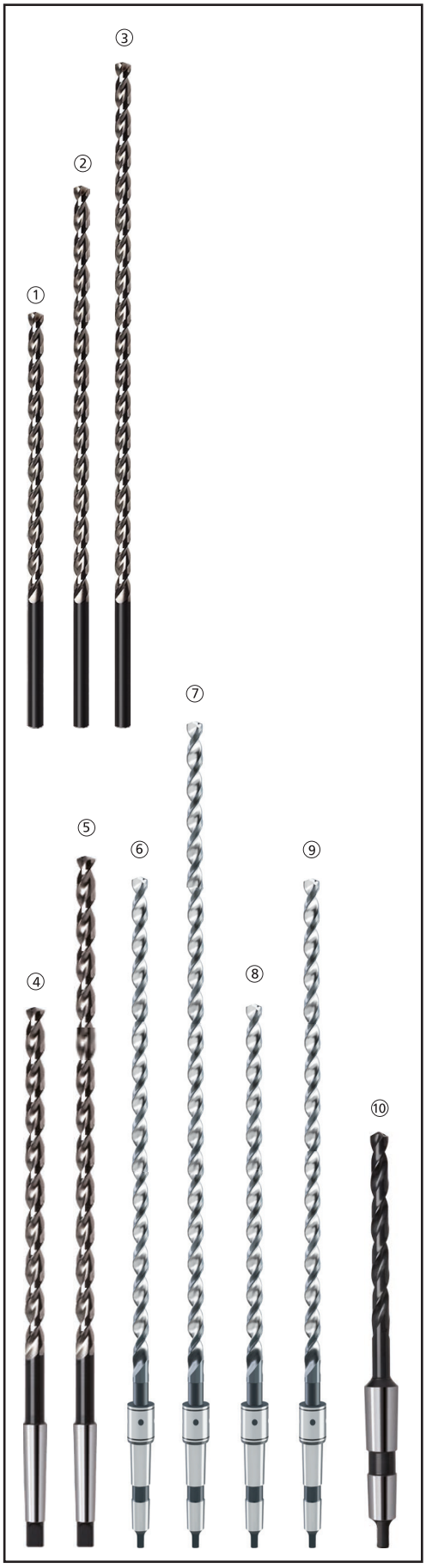
Impiego del refrigerante:
Olio da taglio, attivo ■
Emulsione ■
senza lubrificante □
solo refrigerazione ad aria [!]

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

≥10×D Prof. di foro

Catalogo n°	71145 ① 71146 ② 71147 ③	71195 ① 71196 ②	71325 ④ 71326 ⑤	71192 ① 71193 ②	71565 ⑥ 71566 ⑦ 71567 ⑧ 71568 ⑨	71554 ⑩
Mat. da taglio	HSS	HSS	HSS	HSS-Co	HSS-Co	HSS
Superficie	luc./f. nitr.	fase nitr.	f. nitr./vap.	fase nitr.	vap.	vap.
DIN/Forma	1869	a norma	1870	1869	a norma	a norma
Tipo	V63	V63	V63	V63	V63-IK	N-IK
Pagina	282/285/287	288/289	307/308	284/286	312/314/313/315	309

v_c m/min	Codice d'avanzamento			v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.
22	**E**	**E**	**E**	30	D	30	**E**	26	F
18	**D**	**D**	**D**	25	D	25	**D**	22	E
22	**E**	**E**	**E**	33	D	30	**E**	30	F
18	D	D	D	30	**D**	25	**D**	30	**E**
22	**D**	**D**	**D**	33	D	30	**D**	24	**E**
18	**D**	**D**	**D**	33	D	25	**D**	24	**E**
				20	**C**	18	**C**	22	D
				14	**C**	16	**C**	20	D
				10	**B**	12	**B**	14	C
22	**E**	**E**	**E**	29	D	30	**E**	30	**F**
				14	**C**	14	**C**	17	D
				10	**B**	12	**B**	12	C
				10	**C**	12	**C**	14	D
				8	**B**	8	**B**	10	C
12	C	C	C	11	**C**	16	**C**	15	**D**
6	B	B	B	8	**B**	8	**B**	10	C
				8	**B**	8	**B**	10	C
				5	**A**	6	**A**	7	B
				3	A	3	**A**		
				10	**C**	12	**C**		
				8	**B**	8	**B**		
				10	**B**	12	**B**		
22	**E**	**E**	**E**			30	**E**	30	**F**
18	E	E	E	20	**E**	25	**E**	30	F
20	**E**	**E**	**E**			28	**E**	24	**F**
14	E	E	E	16	**E**	20	**E**	20	F
				5	B	6	**B**	7	C
				6	**A**	6	**A**		
				6	**A**	8	**B**		
				5	**A**	6	**B**		
45	**F**	**F**	**F**	50	F	63	**F**	50	**G**
36	**E**	**E**	**E**	40	E	50	**E**	50	**F**
55	**E**	**E**	**E**						
22	**D**	**D**	**D**	30	D	30	**D**	60	**E**
				45	D				
28	**D**	**D**	**D**	30	D	40	**D**	40	**E**
22	C	C	C	25	D				
20	**C**	**C**	**C**	20	D	28	**D**	24	**D**
18	**C**	**C**	**C**	16	C	25	**D**	24	**D**
				10	**C**	20	**D**	22	D
12	**C**	**C**	**C**	14	C				
18	D	D	D	20	C	25	**D**	24	**E**



Punte cilindriche

Punte elicoidali, extra corte

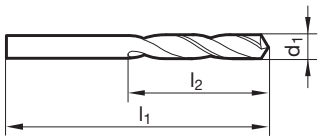
Catalogo n° 71110

N | ~3xD | DIN 1897 | HSS | lucido | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 176

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- per torni automatici/revolver
- anche per trapani a mano



d1 mm	inch	l1 mm	l2 mm
0,500		20,000	3,000
0,600		21,000	3,500
0,700		23,000	4,500
0,750		23,000	4,500
0,800		24,000	5,000
0,900		25,000	5,500
1,000		26,000	6,000
1,050		26,000	6,000
1,100		28,000	7,000
1,150		28,000	7,000
1,200		30,000	8,000
1,250		30,000	8,000
1,300		30,000	8,000
1,350		32,000	9,000
1,400		32,000	9,000
1,450		32,000	9,000
1,500		32,000	9,000
1,550		34,000	10,000
1,600		34,000	10,000
1,650		34,000	10,000
1,700		34,000	10,000
1,750		36,000	11,000
1,800		36,000	11,000
1,900		36,000	11,000
1,950		38,000	12,000
2,000		38,000	12,000
2,050		38,000	12,000
2,100		38,000	12,000
2,150		40,000	13,000
2,200		40,000	13,000
2,250		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,450		43,000	14,000
2,500		43,000	14,000
2,550		43,000	14,000
2,600		43,000	14,000
2,650		43,000	14,000
2,700		46,000	16,000
2,750		46,000	16,000
2,800		46,000	16,000
2,850		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,250		49,000	18,000

d1 mm	inch	l1 mm	l2 mm
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,750		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,150		62,000	26,000
5,200		62,000	26,000
5,250		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,750		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,200		74,000	34,000
7,250		74,000	34,000

d1		l1	l2
mm	inch	mm	mm
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,750		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,250		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,750		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,200		84,000	40,000
9,250		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,600		89,000	43,000
9,700		89,000	43,000
9,750		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,100		89,000	43,000
10,200		89,000	43,000
10,250		89,000	43,000
10,300		89,000	43,000
10,400		89,000	43,000
10,500		89,000	43,000
10,750		95,000	47,000
11,000		95,000	47,000
11,500		95,000	47,000

d1		l1	l2
mm	inch	mm	mm
12,000		102,000	51,000
12,500		102,000	51,000
12,750		102,000	51,000
13,000		102,000	51,000
13,500		107,000	54,000
14,000		107,000	54,000
14,500		111,000	56,000
15,000		111,000	56,000
15,500		115,000	58,000
16,000		115,000	58,000
16,500		119,000	60,000
17,000		119,000	60,000
17,500		123,000	62,000
18,000		123,000	62,000
18,500		127,000	64,000
19,000		127,000	64,000
19,500		131,000	66,000
20,000		131,000	66,000
20,500		136,000	68,000
21,000		136,000	68,000
21,500		141,000	70,000
22,000		141,000	70,000
22,500		146,000	72,000
23,000		146,000	72,000
24,000		151,000	75,000
25,000	63/64	151,000	75,000
26,000		156,000	78,000
28,000		162,000	81,000
29,000		168,000	84,000
30,000		168,000	84,000
31,000		174,000	87,000
32,000		180,000	90,000

Punte cilindriche

Punte elicoidali, extra corte

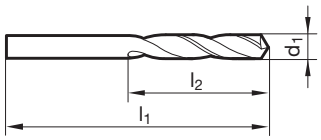
Catalogo n° 71111

N | ~3xD | DIN 1897 | HSS | lucido | 118° | h8 | L | Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 176

- Assott. del nocc. ≥ Ø 14,300
- spoglia sul cono tagliente
- per torni automatici/revolver
- anche per trapani a mano



d1 mm	inch	l1 mm	l2 mm
0,500		20,000	3,000
0,550		21,000	3,500
0,600		21,000	3,500
0,650		22,000	4,000
0,700		23,000	4,500
0,750		23,000	4,500
0,800		24,000	5,000
0,850		24,000	5,000
0,900		25,000	5,500
0,950		25,000	5,500
1,000		26,000	6,000
1,050		26,000	6,000
1,100		28,000	7,000
1,150		28,000	7,000
1,200		30,000	8,000
1,250		30,000	8,000
1,300		30,000	8,000
1,350		32,000	9,000
1,400		32,000	9,000
1,450		32,000	9,000
1,500		32,000	9,000
1,550		34,000	10,000
1,600		34,000	10,000
1,650		34,000	10,000
1,700		34,000	10,000
1,750		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,050		38,000	12,000
2,100		38,000	12,000
2,150		40,000	13,000
2,200		40,000	13,000
2,250		40,000	13,000
2,300		40,000	13,000
2,350		40,000	13,000
2,400		43,000	14,000
2,450		43,000	14,000
2,500		43,000	14,000
2,550		43,000	14,000
2,600		43,000	14,000
2,650		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,850		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000

d1 mm	inch	l1 mm	l2 mm
3,000		46,000	16,000
3,100		49,000	18,000
3,150		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,450		52,000	20,000
3,500		52,000	20,000
3,550		52,000	20,000
3,600		52,000	20,000
3,650		52,000	20,000
3,700		52,000	20,000
3,750		52,000	20,000
3,800		55,000	22,000
3,850		55,000	22,000
3,900		55,000	22,000
3,950		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,750		58,000	24,000
4,800		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,750		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
6,200		70,000	31,000
6,250		70,000	31,000
6,300		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000

d1 mm	inch	l1 mm	l2 mm
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,750		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,250		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,750		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,200		84,000	40,000
9,250		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,600		89,000	43,000
9,700		89,000	43,000
9,750		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000
10,300		89,000	43,000
10,500		89,000	43,000
10,700		95,000	47,000
10,800		95,000	47,000
11,000		95,000	47,000
11,100		95,000	47,000
11,300		95,000	47,000
11,600		95,000	47,000
11,750		95,000	47,000
11,900		102,000	51,000
12,000		102,000	51,000

d1 mm	inch	l1 mm	l2 mm
12,100		102,000	51,000
12,300	31/64	102,000	51,000
12,400		102,000	51,000
12,750		102,000	51,000
12,900		102,000	51,000
13,000		102,000	51,000
13,100	33/64	102,000	51,000
13,200		102,000	51,000
13,250		107,000	54,000
13,300		107,000	54,000
13,600		107,000	54,000
13,750		107,000	54,000
13,800		107,000	54,000
13,900		107,000	54,000
14,300		111,000	56,000
14,400		111,000	56,000
14,800		111,000	56,000
14,900		111,000	56,000
15,000		111,000	56,000
15,300		115,000	58,000
15,400		115,000	58,000
15,750		115,000	58,000
15,800		115,000	58,000
15,900		115,000	58,000
16,000		115,000	58,000
16,250		119,000	60,000
16,300		119,000	60,000
16,900		119,000	60,000
17,250		123,000	62,000
17,400		123,000	62,000
17,600		123,000	62,000
18,600		127,000	64,000
18,750		127,000	64,000
18,800		127,000	64,000
19,000		127,000	64,000
21,500		141,000	70,000
29,000		168,000	84,000
30,000		168,000	84,000
32,000		180,000	90,000

Punte cilindriche

Punte elicoidali, extra corte

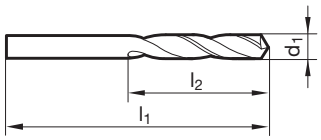
Catalogo n° 71108

N | ~3xD | DIN 1897 | HSS | trattati a vapore | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 176

- Assott. del nocc. ≥ Ø 2,000
- spoglia sul cono tagliente
- per torni automatici/revolver
- anche per trapani a mano
- lucida < 2,36 mm



d1 mm	inch	l1 mm	l2 mm
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,550		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,250		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,250		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000

d1 mm	inch	l1 mm	l2 mm
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,750		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,100		89,000	43,000
10,200		89,000	43,000
10,500		89,000	43,000
11,000		95,000	47,000
11,500		95,000	47,000
12,000		102,000	51,000
12,500		102,000	51,000
13,000		102,000	51,000
13,500		107,000	54,000
14,000		107,000	54,000

d1		l1	l2
mm	inch	mm	mm
14,500		111,000	56,000
15,000		111,000	56,000
16,000		115,000	58,000
17,000		119,000	60,000
18,000		123,000	62,000
19,500		131,000	66,000

d1		l1	l2
mm	inch	mm	mm
20,000		131,000	66,000
20,500		136,000	68,000
25,000	63/64	151,000	75,000
27,000		162,000	81,000

Punte cilindriche

Punte elicoidali, extra corte

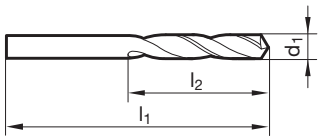
Catalogo n° 71109

N	~3xD	DIN 1897	HSS	trattati a vapore	118°	h8	L	Cyl

P	M	K	N	S	H
•		•	•		

Parametri di lav. ind. a pag. 176

- Assott. del nocc. ≥ Ø 14,500
- spoglia sul cono tagliente
- per torni automatici/revolver
- lucida < 6,00 mm



d1 mm	inch	l1 mm	l2 mm
2,600		43,000	14,000
2,750		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,900		62,000	26,000
5,000		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
6,000		66,000	28,000
6,200		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,900		74,000	34,000
7,000		74,000	34,000
7,200		74,000	34,000

d1 mm	inch	l1 mm	l2 mm
7,500		74,000	34,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,300		79,000	37,000
8,700		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,100		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,700		89,000	43,000
10,200		89,000	43,000
10,750		95,000	47,000
11,000		95,000	47,000
11,500		95,000	47,000
12,500		102,000	51,000
13,250		107,000	54,000
14,500		111,000	56,000
15,500		115,000	58,000
15,750		115,000	58,000
16,000		115,000	58,000
17,000		119,000	60,000
17,500		123,000	62,000
21,000		136,000	68,000
22,000		141,000	70,000
24,000		151,000	75,000
26,500		156,000	78,000

Punte cilindriche

Punte elicoidali, extra corte

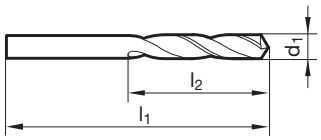
Catalogo n° 61118

N	~3xD	DIN 1897	HSS	TiN	118°	h8	R	Cyl

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 176

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- per torni automatici/revolver
- anche per trapani a mano
- maggiore protezione contro l'usura



d1 mm	inch	l1 mm	l2 mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000

d1 mm	inch	l1 mm	l2 mm
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,100		89,000	43,000
10,200		89,000	43,000
10,300		89,000	43,000
10,400		89,000	43,000
10,500		89,000	43,000

d1 mm	inch	l1 mm	l2 mm
10,600		89,000	43,000
10,800		95,000	47,000
11,000		95,000	47,000
11,500		95,000	47,000
12,000		102,000	51,000
12,500		102,000	51,000
13,000		102,000	51,000
13,100	33/64	102,000	51,000

Punte cilindriche

Punte elicoidali, extra corte

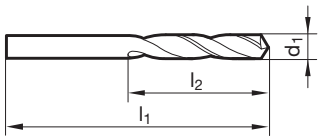
Catalogo n° 71106

N	~3xD	DIN 1897	M42	luci-do	135°	h8	R	Cyl

P	M	K	N	S	H
●	●	●	●	●	○

Parametri di lav. ind. a pag. 176

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- con alta perc. di CoMo
- specialmente per resistenza all'usura



d1 mm	inch	l1 mm	l2 mm
1,000		26,000	6,000
1,500		32,000	9,000
2,000		38,000	12,000
2,500		43,000	14,000
3,000		46,000	16,000
3,300		49,000	18,000
3,500		52,000	20,000
4,000		55,000	22,000
4,200		55,000	22,000
4,500		58,000	24,000
5,000		62,000	26,000
5,500		66,000	28,000

d1 mm	inch	l1 mm	l2 mm
6,000		66,000	28,000
6,500		70,000	31,000
6,800		74,000	34,000
7,000		74,000	34,000
7,500		74,000	34,000
8,000		79,000	37,000
8,500		79,000	37,000
9,000		84,000	40,000
9,500		84,000	40,000
10,000		89,000	43,000

Punte cilindriche

Punte elicoidali, extra corte

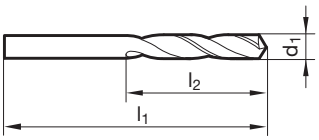
Catalogo n° 71220

NX | ~3xD | DIN 1897 | HSS-Co | lucido | 118° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 178

- Assott. del nocc. ≥ Ø 1,000
- affilatura su piani
- è necess. una limitata forza di avanz.
- è necess. un limitato momento torcente
- uso universale



d1 mm	inch	l1 mm	l2 mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000

d1 mm	inch	l1 mm	l2 mm
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,100		89,000	43,000
10,200		89,000	43,000
10,300		89,000	43,000
10,400		89,000	43,000
10,500		89,000	43,000

d1 mm	inch	l1 mm	l2 mm
11,000		95,000	47,000
11,500		95,000	47,000
12,000		102,000	51,000
12,500		102,000	51,000
13,000		102,000	51,000
13,500		107,000	54,000

d1 mm	inch	l1 mm	l2 mm
14,000		107,000	54,000

Punte cilindriche

Punte elicoidali, extra corte

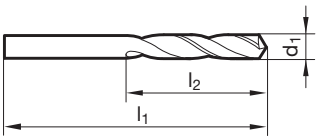
Catalogo n° 61220

NX | ~3xD | DIN 1897 | HSS-Co | TiN | 118° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 178

- Assott. del nocc. ≥ Ø 1,000
- affilatura su piani
- è necess. una limitata forza di avanz.
- è necess. un limitato momento torcente
- uso universale
- maggiore protezione contro l'usura



d1 mm	inch	l1 mm	l2 mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000

d1 mm	inch	l1 mm	l2 mm
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,100		89,000	43,000
10,200		89,000	43,000
10,300		89,000	43,000
10,400		89,000	43,000
10,500		89,000	43,000

d1 mm	inch	l1 mm	l2 mm
11,000		95,000	47,000
11,500		95,000	47,000
12,000		102,000	51,000
12,500		102,000	51,000
13,000		102,000	51,000
13,500		107,000	54,000

d1 mm	inch	l1 mm	l2 mm
14,000		107,000	54,000

Punte cilindriche

Punte elicoidali, extra corte

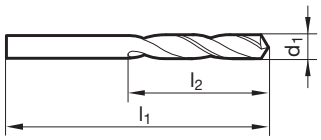
Catalogo n° 51159

V97 | ~3xD | DIN 1897 | HSS-Co | TiAlN nano | 130° | h8 | R | Cyl

P	M	K	N	S	H
●	●	○	○		

Parametri di lav. ind. a pag. 178

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- massima resistenza all'usura



d1 mm	inch	l1 mm	l2 mm
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,700		70,000	31,000
6,800		74,000	34,000

d1 mm	inch	l1 mm	l2 mm
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,500		84,000	40,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000
10,500		89,000	43,000
10,800		95,000	47,000
11,000		95,000	47,000
11,500		95,000	47,000
11,800		95,000	47,000
12,000		102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
13,000		102,000	51,000
13,500		107,000	54,000
14,000		107,000	54,000
14,500		111,000	56,000
15,000		111,000	56,000
15,500		115,000	58,000
16,000		115,000	58,000

Punte cilindriche

Punte elicoidali, extra corte

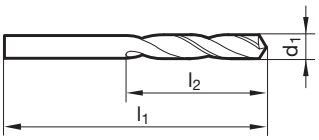
Catalogo n° 61131

V-PM | ~3xD | DIN 1897 | HSS-E-PM | TiN | 130° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	○		

Parametri di lav. ind. a pag. 178

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- scanalature larghe
- specialmente per resistenza all'usura
- stabilità elevata



d1 mm	inch	l1 mm	l2 mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000

d1 mm	inch	l1 mm	l2 mm
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,800		84,000	40,000
9,000		84,000	40,000
9,300		84,000	40,000
9,500		84,000	40,000
9,800		89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000
10,500		89,000	43,000
11,000		95,000	47,000
11,500		95,000	47,000
12,000		102,000	51,000
12,500		102,000	51,000
13,000		102,000	51,000
13,500		107,000	54,000
14,000		107,000	54,000

Punte cilindriche

Punte elicoidali, extra corte

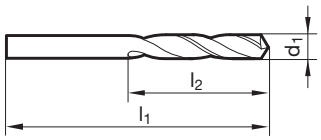
Catalogo n° 71112

vx | ~3xD | DIN 1897 | HSS-Co | trattati a vapore | 118° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 176

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- lucida < 2,36 mm



d1 mm	inch	l1 mm	l2 mm
1,000		26,000	6,000
1,100		28,000	7,000
1,150		28,000	7,000
1,200		30,000	8,000
1,250		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,550		34,000	10,000
1,600		34,000	10,000
1,650		34,000	10,000
1,700		34,000	10,000
1,750		36,000	11,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,050		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,250		40,000	13,000
2,300		40,000	13,000
2,350		40,000	13,000
2,400		43,000	14,000
2,450		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,650		43,000	14,000
2,700		46,000	16,000
2,750		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,750		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000

d1 mm	inch	l1 mm	l2 mm
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,750		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,200		74,000	34,000
7,250		74,000	34,000
7,300		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,800		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,700		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,250		84,000	40,000
9,300		84,000	40,000
9,700		89,000	43,000
9,800		89,000	43,000
10,000		89,000	43,000

Punte cilindriche

Punte elicoidali, extra corte

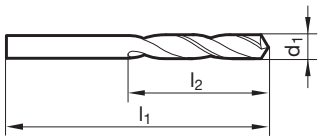
Catalogo n° 61112

VX	~3xD	DIN 1897	HSS-Co	TiN	118°	h8	R	Cyl

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 178

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- massima resistenza all'usura



d1 mm	inch	l1 mm	l2 mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000

d1 mm	inch	l1 mm	l2 mm
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,800		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,100		89,000	43,000
10,200		89,000	43,000
10,500		89,000	43,000
11,000		95,000	47,000
11,500		95,000	47,000
12,000		102,000	51,000

d1 mm	inch	l1 mm	l2 mm
12,300	31/64	102,000	51,000
12,500		102,000	51,000

d1 mm	inch	l1 mm	l2 mm

Punte cilindriche

Punte elicoidali, extra corte

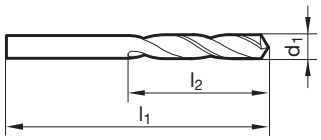
Catalogo n° 71114

V72 | WN | HSS | lucido | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 176

- senza assottigliamento dell'apice della punta
- spoglia sul cono tagliente
- ideali per torni



d1 mm	inch	l1 mm	l2 mm
1,000		28,000	8,000
1,050		28,000	8,000
1,100		30,000	9,000
1,150		30,000	9,000
1,250		32,000	10,000
1,300		32,000	10,000
1,450		35,000	12,000
1,650		37,000	13,000
1,700		37,000	13,000
1,750		39,000	14,000
1,800		39,000	14,000
1,850		39,000	14,000
1,900		39,000	14,000
1,950		42,000	16,000
2,000		42,000	16,000
2,050		42,000	16,000
2,150		44,000	17,000
2,200		44,000	17,000
2,300		44,000	17,000
2,350		44,000	17,000
2,400		47,000	18,000
2,450		47,000	18,000
2,500		47,000	18,000
2,550		47,000	18,000
2,600		47,000	18,000
2,700		51,000	21,000
2,750		51,000	21,000
2,800		51,000	21,000
2,900		51,000	21,000
2,950		51,000	21,000
3,100		54,000	23,000
3,150		54,000	23,000
3,200		54,000	23,000
3,250		54,000	23,000
3,300		54,000	23,000
3,350		54,000	23,000
3,400		58,000	26,000
3,550		58,000	26,000
3,600		58,000	26,000
3,650		58,000	26,000
3,700		58,000	26,000
3,750		58,000	26,000
3,800		62,000	29,000
3,850		62,000	29,000
3,900		62,000	29,000
3,950		62,000	29,000
4,000		62,000	29,000
4,050		62,000	29,000

d1 mm	inch	l1 mm	l2 mm
4,100		62,000	29,000
4,150		62,000	29,000
4,350		65,000	31,000
4,400		65,000	31,000
4,450		65,000	31,000
4,500		65,000	31,000
4,600		65,000	31,000
4,650		65,000	31,000
4,700		65,000	31,000
4,800		70,000	34,000
4,850		70,000	34,000
4,900		70,000	34,000
4,950		70,000	34,000
5,400		74,000	36,000
5,500		74,000	36,000
5,600		74,000	36,000
5,700		74,000	36,000
5,800		74,000	36,000
5,900		74,000	36,000
6,000		74,000	36,000
6,200		79,000	40,000
6,300		79,000	40,000
6,600		79,000	40,000
6,700		79,000	40,000
6,900		84,000	44,000
7,000		84,000	44,000
7,100		84,000	44,000
8,000		90,000	48,000
8,500		90,000	48,000
9,000		96,000	52,000
9,100		96,000	52,000
9,500		96,000	52,000
10,000		102,000	56,000
11,500		109,000	61,000
13,000		117,000	66,000
14,000		122,000	70,000
14,500		128,000	73,000
15,000		128,000	73,000
15,500		132,000	75,000
16,000		132,000	75,000

Punte cilindriche

Punte elicoidali, extra corte

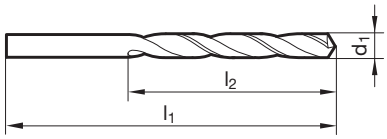
Catalogo n° 71113

V72 | WN | HSS | lucido | 118° | h8 | L | Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 176

- senza assottigliamento dell'apice della punta
- spoglia sul cono tagliente
- ideali per torni



d1 mm	inch	l1 mm	l2 mm
1,000		28,000	8,000
1,100		30,000	9,000
1,250		32,000	10,000
1,300		32,000	10,000
1,350		35,000	12,000
1,400		35,000	12,000
1,600		37,000	13,000
1,650		37,000	13,000
1,700		37,000	13,000
1,750		39,000	14,000
1,800		39,000	14,000
1,900		39,000	14,000
1,950		42,000	16,000
2,000		42,000	16,000
2,050		42,000	16,000
2,100		42,000	16,000
2,150		44,000	17,000
2,200		44,000	17,000
2,300		44,000	17,000
2,350		44,000	17,000
2,400		47,000	18,000
2,550		47,000	18,000
2,600		47,000	18,000
2,650		47,000	18,000
2,700		51,000	21,000
2,800		51,000	21,000
2,850		51,000	21,000
2,900		51,000	21,000
3,100		54,000	23,000
3,200		54,000	23,000
3,300		54,000	23,000
3,400		58,000	26,000
3,500		58,000	26,000
3,550		58,000	26,000
3,600		58,000	26,000
3,700		58,000	26,000
3,900		62,000	29,000
3,950		62,000	29,000
4,100		62,000	29,000
4,200		62,000	29,000
4,250		62,000	29,000
4,300		65,000	31,000
4,400		65,000	31,000
4,600		65,000	31,000
4,700		65,000	31,000
4,900		70,000	34,000
4,950		70,000	34,000
5,200		70,000	34,000

d1 mm	inch	l1 mm	l2 mm
5,300		70,000	34,000
5,500		74,000	36,000
5,600		74,000	36,000
5,700		74,000	36,000
5,800		74,000	36,000
5,900		74,000	36,000
6,200		79,000	40,000
6,300		79,000	40,000
6,500		79,000	40,000
6,700		79,000	40,000
6,900		84,000	44,000
7,100		84,000	44,000
7,200		84,000	44,000
7,300		84,000	44,000
7,400		84,000	44,000
7,500		84,000	44,000
7,600		90,000	48,000
7,700		90,000	48,000
7,800		90,000	48,000
7,900		90,000	48,000
8,000		90,000	48,000
8,300		90,000	48,000
8,500		90,000	48,000
8,600		96,000	52,000
8,700		96,000	52,000
8,800		96,000	52,000
8,900		96,000	52,000
9,100		96,000	52,000
9,200		96,000	52,000
9,300		96,000	52,000
9,500		96,000	52,000
9,600		102,000	56,000
9,700		102,000	56,000
9,800		102,000	56,000
9,900		102,000	56,000
10,400		102,000	56,000
10,500		102,000	56,000
10,800		109,000	61,000
10,900		109,000	61,000
11,200		109,000	61,000
11,300		109,000	61,000
11,400		109,000	61,000
11,500		109,000	61,000
11,800		109,000	61,000
12,200		117,000	66,000
12,250		117,000	66,000
12,300	31/64	117,000	66,000
12,600		117,000	66,000

d1 mm	inch	l1 mm	l2 mm
13,500		122,000	70,000
14,500		128,000	73,000
14,750		128,000	73,000
15,000		128,000	73,000
15,500		132,000	75,000
16,000		132,000	75,000

d1 mm	inch	l1 mm	l2 mm

Punte cilindriche

Punte elicoidali, corte

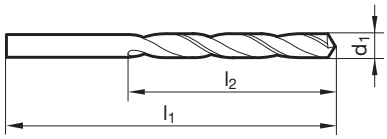
Catalogo n° 71116

N | ~5xD | DIN 338 | HSS | lucido | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 180

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente



d1 mm	inch	l1 mm	l2 mm
0,200		19,000	2,500
0,250		19,000	3,000
0,290		19,000	3,000
0,300		19,000	3,000
0,330		19,000	4,000
0,340		19,000	4,000
0,350		19,000	4,000
0,390		20,000	5,000
0,400		20,000	5,000
0,450		20,000	5,000
0,500		22,000	6,000
0,540		24,000	7,000
0,550		24,000	7,000
0,580		24,000	7,000
0,600		24,000	7,000
0,630		26,000	8,000
0,660		26,000	8,000
0,680		28,000	9,000
0,700		28,000	9,000
0,740		28,000	9,000
0,760		30,000	10,000
0,770		30,000	10,000
0,780		30,000	10,000
0,800		30,000	10,000
0,850		30,000	10,000
0,860		32,000	11,000
0,870		32,000	11,000
0,880		32,000	11,000
0,900		32,000	11,000
0,940		32,000	11,000
0,950		32,000	11,000
0,960		34,000	12,000
1,000		34,000	12,000
1,050		34,000	12,000
1,060		34,000	12,000
1,080		36,000	14,000
1,100		36,000	14,000
1,110		36,000	14,000
1,120		36,000	14,000
1,130		36,000	14,000
1,150		36,000	14,000
1,160		36,000	14,000
1,170		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,230		38,000	16,000
1,250		38,000	16,000
1,300		38,000	16,000

d1 mm	inch	l1 mm	l2 mm
1,320		38,000	16,000
1,340		40,000	18,000
1,360		40,000	18,000
1,380		40,000	18,000
1,400		40,000	18,000
1,430		40,000	18,000
1,450		40,000	18,000
1,500		40,000	18,000
1,560		43,000	20,000
1,570		43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,650		43,000	20,000
1,660		43,000	20,000
1,670		43,000	20,000
1,680		43,000	20,000
1,700		43,000	20,000
1,710		46,000	22,000
1,730		46,000	22,000
1,750		46,000	22,000
1,800		46,000	22,000
1,810		46,000	22,000
1,850		46,000	22,000
1,870		46,000	22,000
1,900		46,000	22,000
1,950		49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,050		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000

d1 mm	inch	l1 mm	l2 mm
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,500		109,000	69,000
7,700		117,000	75,000
7,800		117,000	75,000

d1 mm	inch	l1 mm	l2 mm
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,800		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,500		133,000	87,000
10,700		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,500		142,000	94,000
11,900		151,000	101,000
12,000		151,000	101,000
12,200		151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000
14,000		160,000	108,000
14,500		169,000	114,000
15,000		169,000	114,000
15,500		178,000	120,000
16,000		178,000	120,000

Punte cilindriche

Punte elicoidali, corte

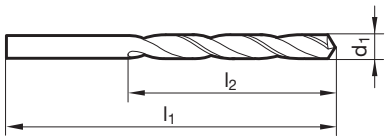
Catalogo n° 71119

N	~5xD	DIN 338	HSS	luci-do	118°	h8	L	Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 180

- Assott. del nocc. ≥ Ø 14,010
- spoglia sul cono tagliente



d1 mm	inch	l1 mm	l2 mm
2,800		61,000	33,000
2,900		61,000	33,000
3,600		70,000	39,000
4,300		80,000	47,000
4,600		80,000	47,000
5,200		86,000	52,000
5,400		93,000	57,000
5,600		93,000	57,000
6,000		93,000	57,000
7,000		109,000	69,000
7,250		109,000	69,000
7,300		109,000	69,000

d1 mm	inch	l1 mm	l2 mm
7,800		117,000	75,000
8,000		117,000	75,000
8,800		125,000	81,000
9,000		125,000	81,000
9,500		125,000	81,000
13,500		160,000	108,000

Punte cilindriche

Punte elicoidali, corte

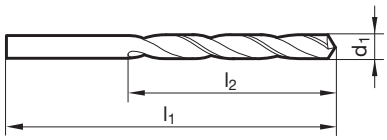
Catalogo n° 71115

N | ~5xD | DIN 338 | HSS | trattati a vapore | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 180

- Assott. del nocc. ≥ Ø 2,180
- spoglia sul cono tagliente
- lucida < 2,36 mm



d1 mm	inch	l1 mm	l2 mm
2,000		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,350		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,440		57,000	30,000
2,450		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,850		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000

d1 mm	inch	l1 mm	l2 mm
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,850		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,550		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,950		86,000	52,000
5,000		86,000	52,000
5,050		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000

d1 mm	inch	l1 mm	l2 mm
5,200		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,350		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,500		93,000	57,000
5,550		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,650		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,050		101,000	63,000
6,100		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,450		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,650		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,850		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,050		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,250		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,650		117,000	75,000
7,700		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
7,850		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,050		117,000	75,000
8,100		117,000	75,000
8,150		117,000	75,000
8,200		117,000	75,000
8,250		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,550		125,000	81,000
8,600		125,000	81,000
8,650		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,750		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,050		125,000	81,000
9,100		125,000	81,000

d1 mm	inch	l1 mm	l2 mm
9,130	23/64	125,000	81,000
9,150		125,000	81,000
9,200		125,000	81,000
9,250		125,000	81,000
9,300		125,000	81,000
9,350		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,650		133,000	87,000
9,700		133,000	87,000
9,750		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,250		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000
10,600		133,000	87,000
10,700		142,000	94,000
10,750		142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,200		142,000	94,000
11,250		142,000	94,000
11,300		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,600		142,000	94,000
11,700		142,000	94,000
11,750		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,250		151,000	101,000
12,300	31/64	151,000	101,000
12,400		151,000	101,000
12,500		151,000	101,000
12,600		151,000	101,000
12,700	1/2	151,000	101,000
12,750		151,000	101,000
12,800		151,000	101,000
12,900		151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,200		151,000	101,000
13,250		160,000	108,000
13,300		160,000	108,000
13,400		160,000	108,000
13,500		160,000	108,000
13,600		160,000	108,000
13,700		160,000	108,000
13,750		160,000	108,000
13,800		160,000	108,000
13,900		160,000	108,000
14,000		160,000	108,000
14,100		169,000	114,000
14,200		169,000	114,000
14,250		169,000	114,000
14,300		169,000	114,000
14,400		169,000	114,000
14,500		169,000	114,000

d1 mm	inch	l1 mm	l2 mm
14,700		169,000	114,000
14,750		169,000	114,000
14,800		169,000	114,000
14,900		169,000	114,000
15,000		169,000	114,000
15,100		178,000	120,000
15,200		178,000	120,000
15,250		178,000	120,000
15,300		178,000	120,000
15,400		178,000	120,000
15,500		178,000	120,000
15,600		178,000	120,000
15,700		178,000	120,000
15,750		178,000	120,000
15,800		178,000	120,000
15,900		178,000	120,000
16,000		178,000	120,000
16,100		184,000	125,000
16,200		184,000	125,000
16,250		184,000	125,000
16,500		184,000	125,000
16,700		184,000	125,000
17,000		184,000	125,000
17,250		191,000	130,000
17,500		191,000	130,000
17,750		191,000	130,000
18,000		191,000	130,000
18,250		198,000	135,000
18,500		198,000	135,000
18,750		198,000	135,000
19,000		198,000	135,000
19,050	3/4	205,000	140,000
19,500		205,000	140,000
19,750		205,000	140,000
20,000		205,000	140,000

Punte cilindriche

Punte elicoidali, corte

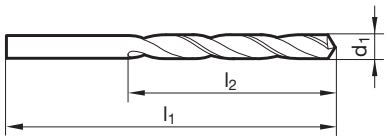
Catalogo n° 61116

N | ~5xD | DIN 338 | HSS | TiN | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 180

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- massima resistenza all'usura



d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000

d1 mm	inch	l1 mm	l2 mm
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
10,800		142,000	94,000
11,000		142,000	94,000

d1 mm	inch	l1 mm	l2 mm
11,500		142,000	94,000
11,800		142,000	94,000
12,000		151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
13,000		151,000	101,000

d1 mm	inch	l1 mm	l2 mm
13,500		160,000	108,000
14,000		160,000	108,000
14,500		169,000	114,000
15,000		169,000	114,000
15,500		178,000	120,000
16,000		178,000	120,000

Punte cilindriche

Punte elicoidali, corte

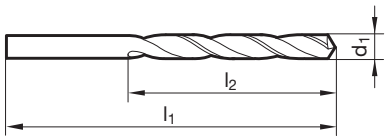
Catalogo n° 61115

N | ~5xD | DIN 338 | HSS | TiN - testa | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 180

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente



d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000

d1 mm	inch	l1 mm	l2 mm
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000

d1		l1	l2
mm	inch	mm	mm
10,600		133,000	87,000
10,700		142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,200		142,000	94,000
11,300		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,600		142,000	94,000
11,700		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
12,000		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,400		151,000	101,000

d1		l1	l2
mm	inch	mm	mm
12,500		151,000	101,000
12,600		151,000	101,000
12,800		151,000	101,000
12,900		151,000	101,000
13,000		151,000	101,000
13,200		151,000	101,000
13,300		160,000	108,000
13,400		160,000	108,000
13,500		160,000	108,000
13,600		160,000	108,000
13,700		160,000	108,000
13,800		160,000	108,000
13,900		160,000	108,000
14,000		160,000	108,000
14,500		169,000	114,000
15,000		169,000	114,000
15,500		178,000	120,000
16,000		178,000	120,000

Punte cilindriche

Punte elicoidali, corte

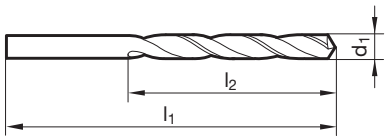
Catalogo n° 71149

N	~5xD	DIN 338	HSS-Co	trattati a vapore	118°	h8	R	Cyl

P	M	K	N	S	H
●	●	●	○		

Parametri di lav. ind. a pag. 182

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- lucida < 2,36 mm



d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000

d1 mm	inch	l1 mm	l2 mm
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
11,000		142,000	94,000
11,500		142,000	94,000
12,000		151,000	101,000
12,500		151,000	101,000

d1 mm	inch	l1 mm	l2 mm
12,700	1/2	151,000	101,000
13,000		151,000	101,000
13,500		160,000	108,000
14,000		160,000	108,000
15,000		169,000	114,000

d1 mm	inch	l1 mm	l2 mm

Punte cilindriche

Punte elicoidali, corte

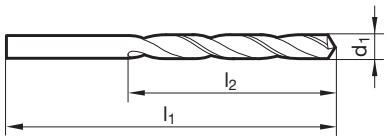
Catalogo n° 71148

N	~5xD	DIN 338	M42	luci-do	135°	h8	R	Cyl

P	M	K	N	S	H
●	●	●	●	●	○

Parametri di lav. ind. a pag. 182

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- con alta perc. di CoMo
- specialmente per resistenza all'usura



d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000

d1 mm	inch	l1 mm	l2 mm
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
11,000		142,000	94,000
11,500		142,000	94,000
12,000		151,000	101,000
12,500		151,000	101,000

d1		l1	l2
mm	inch	mm	mm
12,700	1/2	151,000	101,000
13,000		151,000	101,000
13,500		160,000	108,000
14,000		160,000	108,000
14,500		169,000	114,000
15,000		169,000	114,000

d1		l1	l2
mm	inch	mm	mm
15,500		178,000	120,000
16,000		178,000	120,000

Punte cilindriche

Punte elicoidali, corte

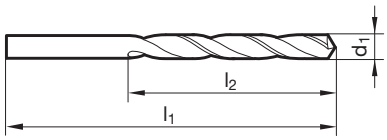
Catalogo n° 71117

H | ~5xD | DIN 338 | HSS | lucido | 118° | h8 | R | Cyl

P	M	K	N	S	H
			○		

Parametri di lav. ind. a pag. 180

- spoglia sul cono tagliente
- per materiali duri e friabili



d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,050		34,000	12,000
1,100		36,000	14,000
1,150		36,000	14,000
1,200		38,000	16,000
1,250		38,000	16,000
1,300		38,000	16,000
1,350		40,000	18,000
1,400		40,000	18,000
1,450		40,000	18,000
1,500		40,000	18,000
1,550		43,000	20,000
1,600		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,500		57,000	30,000
2,550		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,850		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,750		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000

d1 mm	inch	l1 mm	l2 mm
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000

d1 mm	inch	l1 mm	l2 mm
9,700		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
11,500		142,000	94,000
12,000		151,000	101,000

d1 mm	inch	l1 mm	l2 mm

Punte cilindriche

Punte elicoidali, corte

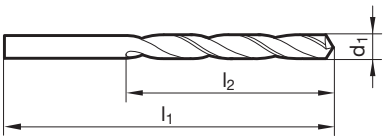
Catalogo n° 71221

NX | ~5xD | DIN 338 | HSS-Co | lucido | 118° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 182

- Assott. del nocc. ≥ Ø 1,000
- affilatura su piani
- è necess. una limitata forza di avanz.
- è necess. un limitato momento torcente
- uso universale



d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000

d1 mm	inch	l1 mm	l2 mm
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000

d1 mm	inch	l1 mm	l2 mm
11,000		142,000	94,000
11,500		142,000	94,000
12,000		151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000
13,500		160,000	108,000

d1 mm	inch	l1 mm	l2 mm
14,000		160,000	108,000

Punte cilindriche

Punte elicoidali, corte

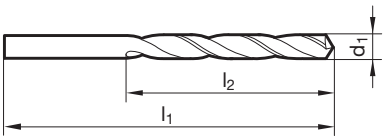
Catalogo n° 61221

NX | ~5xD | DIN 338 | HSS-Co | TiN | 118° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 182

- Assott. del nocc. ≥ Ø 1,000
- affilatura su piani
- è necess. una limitata forza di avanz.
- è necess. un limitato momento torcente
- massima resistenza all'usura
- uso universale



d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000

d1 mm	inch	l1 mm	l2 mm
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000

d1 mm	inch	l1 mm	l2 mm
11,000		142,000	94,000
11,500		142,000	94,000
12,000		151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000
13,500		160,000	108,000

d1 mm	inch	l1 mm	l2 mm
14,000		160,000	108,000

Punte cilindriche

Punte elicoidali, corte

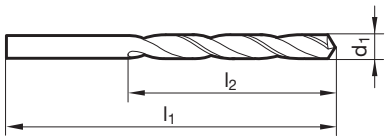
Catalogo n° 71123

V66 | ~5xD | DIN 338 | HSS-Co | fasi ni-trurate | 130° | h8 | R | Cyl

P	M	K	N	S	H
●	○			○	

Parametri di lav. ind. a pag. 182

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- lucida < 2,0 mm



d1 mm	inch	l1 mm	l2 mm
0,800		30,000	10,000
0,850		30,000	10,000
0,900		32,000	11,000
1,000		34,000	12,000
1,050		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,350		40,000	18,000
1,400		40,000	18,000
1,450		40,000	18,000
1,500		40,000	18,000
1,550		43,000	20,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
1,950		49,000	24,000
2,000		49,000	24,000
2,050		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,450		57,000	30,000
2,500		57,000	30,000
2,550		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,750		61,000	33,000
2,800		61,000	33,000
2,850		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000

d1 mm	inch	l1 mm	l2 mm
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000

d1 mm	inch	l1 mm	l2 mm
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
10,800		142,000	94,000
11,000		142,000	94,000
11,500		142,000	94,000
11,700		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
12,000		151,000	101,000

d1 mm	inch	l1 mm	l2 mm
12,100		151,000	101,000
12,200		151,000	101,000
12,400		151,000	101,000
12,500		151,000	101,000
12,600		151,000	101,000
12,800		151,000	101,000
13,000		151,000	101,000
13,500		160,000	108,000

Punte cilindriche

Punte elicoidali, corte

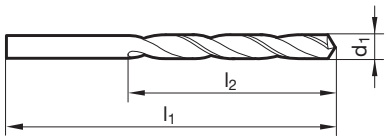
Catalogo n° 71122

V66 Ti | ~5xD | DIN 338 | HSS-Co | lucido | 130° | h8 | R | Cyl

P	M	K	N	S	H
○	●			●	

Parametri di lav. ind. a pag. 182

- Assott. del nocc. ≥ Ø 4,600
- spoglia sul cono tagliente



d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000

d1 mm	inch	l1 mm	l2 mm
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
11,000		142,000	94,000
11,500		142,000	94,000
12,000		151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000
13,500		160,000	108,000

d1 mm	inch	l1 mm	l2 mm
14,000		160,000	108,000
14,500		169,000	114,000
15,000		169,000	114,000
16,000		178,000	120,000

d1 mm	inch	l1 mm	l2 mm

Punte cilindriche

Punte elicoidali, corte

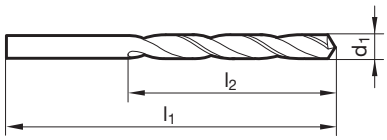
Catalogo n° 61223

V66 Ti | ~5xD | DIN 338 | HSS-Co | TiN | 130° | h8 | R | Cyl

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 180

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- massima resistenza all'usura



d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,050		34,000	12,000
1,100		36,000	14,000
1,150		36,000	14,000
1,200		38,000	16,000
1,250		38,000	16,000
1,300		38,000	16,000
1,350		40,000	18,000
1,400		40,000	18,000
1,500		40,000	18,000
1,550		43,000	20,000
1,600		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,750		46,000	22,000
1,800		46,000	22,000
1,900		46,000	22,000
1,950		49,000	24,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000

d1 mm	inch	l1 mm	l2 mm
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000

d1 mm	inch	l1 mm	l2 mm
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
11,000		142,000	94,000

d1 mm	inch	l1 mm	l2 mm
11,500		142,000	94,000
12,000		151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000
13,500		160,000	108,000

Punte cilindriche

Punte elicoidali, corte

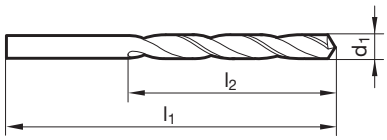
Catalogo n° 51122

V66 Ti | ~5xD | DIN 338 | HSS-Co | TiAlN nano | 130° | h8 | R | Cyl

P	M	K	N	S	H
○	●			○	

Parametri di lav. ind. a pag. 184

- Assott. del nocc. ≥ Ø 2,000
- spoglia sul cono tagliente
- massima resistenza all'usura



d1 mm	inch	l1 mm	l2 mm
2,000		49,000	24,000
2,500		57,000	30,000
3,000		61,000	33,000
3,500		70,000	39,000
4,000		75,000	43,000
4,200		75,000	43,000
4,500		80,000	47,000
5,000		86,000	52,000
5,500		93,000	57,000
6,000		93,000	57,000
6,500		101,000	63,000
6,800		109,000	69,000
7,000		109,000	69,000
7,500		109,000	69,000
8,000		117,000	75,000
8,500		117,000	75,000
9,000		125,000	81,000
9,500		125,000	81,000

d1 mm	inch	l1 mm	l2 mm
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
11,000		142,000	94,000
11,500		142,000	94,000
12,000		151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000

Punte cilindriche

Punte elicoidali, corte

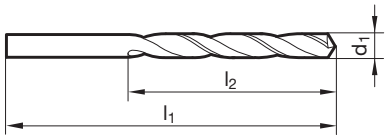
Catalogo n° 71124

V70 | ~5xD | DIN 338 | HSS | lucido | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		○	●		

Parametri di lav. ind. a pag. 180

- Assott. del nocc. ≥ Ø 1,500
- spoglia sul cono tagliente
- scanalature larghe



d1 mm	inch	l1 mm	l2 mm
1,500		40,000	18,000
1,570		43,000	20,000
1,600		43,000	20,000
1,700		43,000	20,000
1,750		46,000	22,000
1,780		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,930		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,050		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,180		53,000	27,000
2,200		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,370		57,000	30,000
2,400		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000

d1 mm	inch	l1 mm	l2 mm
3,910		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,300		80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,050		101,000	63,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000

d1 mm	inch	l1 mm	l2 mm
6,600		101,000	63,000
6,630		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,760		109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
6,910		109,000	69,000
7,000		109,000	69,000
7,040		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,350		125,000	81,000
9,500		125,000	81,000

d1 mm	inch	l1 mm	l2 mm
9,520	3/8	133,000	87,000
9,530		133,000	87,000
9,580		133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,080		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,260		133,000	87,000
10,300		133,000	87,000
10,400		133,000	87,000
10,490		133,000	87,000
10,500		133,000	87,000
10,600		133,000	87,000
10,720	27/64	142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,300		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
13,000		151,000	101,000
14,000		160,000	108,000
14,500		169,000	114,000
15,000		169,000	114,000
15,500		178,000	120,000

Punte cilindriche

Punte elicoidali, corte

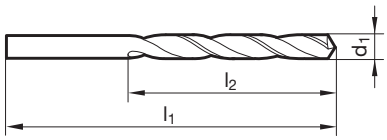
Catalogo n° 71126

V70 | ~5xD | DIN 338 | HSS | lucido | 130° | h8 | L | Cyl

P	M	K	N	S	H
●		○	●		

Parametri di lav. ind. a pag. 180

- Assott. del nocc. ≥ Ø 1,500
- spoglia sul cono tagliente
- scanalature larghe



d1 mm	inch	l1 mm	l2 mm
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,750		46,000	22,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000

d1 mm	inch	l1 mm	l2 mm
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000
10,600		133,000	87,000
10,700		142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,300		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,600		142,000	94,000
11,700		142,000	94,000

d1 mm	inch	l1 mm	l2 mm
11,800		142,000	94,000
11,900		151,000	101,000
12,000		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000

d1 mm	inch	l1 mm	l2 mm
14,000		160,000	108,000
14,500		169,000	114,000
15,000		169,000	114,000
16,000		178,000	120,000

Punte cilindriche

Punte elicoidali, corte

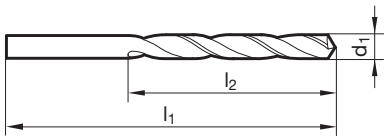
Catalogo n° 61124

V70 | ~5xD | DIN 338 | HSS | TiN | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 180

- Assott. del nocc. ≥ Ø 1,500
- spoglia sul cono tagliente
- scanalature larghe
- maggiore protezione contro l'usura



d1 mm	inch	l1 mm	l2 mm
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,100		49,000	24,000
2,180		53,000	27,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000

d1 mm	inch	l1 mm	l2 mm
5,700		93,000	57,000
5,800		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000

d1 mm	inch	l1 mm	l2 mm
10,100		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
10,600		133,000	87,000
10,720	27/64	142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,200		142,000	94,000
11,300		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,600		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000

d1 mm	inch	l1 mm	l2 mm
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
13,000		151,000	101,000
13,500		160,000	108,000
14,000		160,000	108,000
14,500		169,000	114,000
15,000		169,000	114,000
15,500		178,000	120,000
16,000		178,000	120,000

Punte cilindriche

Punte elicoidali, corte

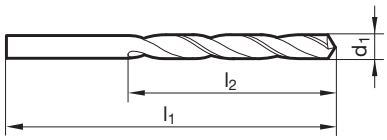
Catalogo n° 71158

V70 | ~5xD | DIN 338 | HSS-Co | fasi nitrurate | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 182

- Assott. del nocc. ≥ Ø 1,500
- spoglia sul cono tagliente
- scanalature larghe
- lucida < 2,36 mm



d1 mm	inch	l1 mm	l2 mm
1,500		40,000	18,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000

d1 mm	inch	l1 mm	l2 mm
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
10,800		142,000	94,000
11,000		142,000	94,000

d1		l1	l2
mm	inch	mm	mm
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,500		142,000	94,000
11,800		142,000	94,000
12,000		151,000	101,000
12,500		151,000	101,000

d1		l1	l2
mm	inch	mm	mm
12,700	1/2	151,000	101,000
13,000		151,000	101,000

Punte cilindriche

Punte elicoidali, corte

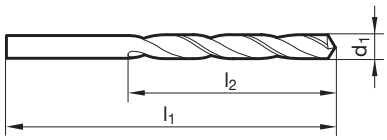
Catalogo n° 61158

V63 | ~5xD | DIN 338 | HSS-Co | TiN | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 184

- Assott. del nocc. ≥ Ø 1,500
- spoglia sul cono tagliente
- scanalature larghe
- massima resistenza all'usura
- specifiche per prof. di foro oltre 3xD



d1 mm	inch	l1 mm	l2 mm
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000

d1 mm	inch	l1 mm	l2 mm
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
9,000		125,000	81,000
9,200		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,800		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
11,000		142,000	94,000
11,500		142,000	94,000
11,800		142,000	94,000
12,000		151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000

Punte cilindriche

Punte elicoidali, corte

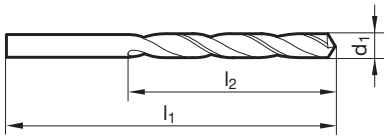
Catalogo n° 71128

V72 | ~5xD | DIN 338 | HSS | lucido | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		○	●		

Parametri di lav. ind. a pag. 180

- spoglia sul cono tagliente
- ideali per torni



d1 mm	inch	l1 mm	l2 mm
0,550		24,000	7,000
0,600		24,000	7,000
0,650		26,000	8,000
0,750		28,000	9,000
0,800		30,000	10,000
0,850		30,000	10,000
0,900		32,000	11,000
0,950		32,000	11,000
1,000		34,000	12,000
1,050		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,250		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,450		40,000	18,000
1,500		40,000	18,000
1,550		43,000	20,000
1,600		43,000	20,000
1,700		43,000	20,000
1,750		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,950		49,000	24,000
2,000		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,450		57,000	30,000
2,500		57,000	30,000
2,550		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,850		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,150		65,000	36,000
3,250		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000

d1 mm	inch	l1 mm	l2 mm
3,450		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,850		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,350		80,000	47,000
4,400		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,550		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,950		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000

d1 mm	inch	l1 mm	l2 mm
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
9,000		125,000	81,000
9,500		125,000	81,000

d1 mm	inch	l1 mm	l2 mm
9,800		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
11,000		142,000	94,000
11,500		142,000	94,000
12,000		151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000

Punte cilindriche

Punte elicoidali, corte

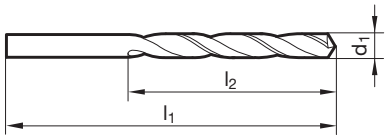
Catalogo n° 71129

V72 | ~5xD | DIN 338 | HSS | lucido | 118° | h8 | L | Cyl

P	M	K	N	S	H
●		○	●		

Parametri di lav. ind. a pag. 180

- spoglia sul cono tagliente
- ideali per torni



d1 mm	inch	l1 mm	l2 mm
0,500		22,000	6,000
0,550		24,000	7,000
0,600		24,000	7,000
0,650		26,000	8,000
0,700		28,000	9,000
0,750		28,000	9,000
0,900		32,000	11,000
1,000		34,000	12,000
1,250		38,000	16,000
1,550		43,000	20,000
1,650		43,000	20,000
2,150		53,000	27,000
2,200		53,000	27,000
2,300		53,000	27,000
2,500		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,850		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,300		65,000	36,000
3,550		70,000	39,000
3,600		70,000	39,000
3,950		75,000	43,000
4,000		75,000	43,000
4,250		75,000	43,000
4,500		80,000	47,000
4,550		80,000	47,000
4,600		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
5,000		86,000	52,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000

d1 mm	inch	l1 mm	l2 mm
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,600		133,000	87,000
10,700		142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,200		142,000	94,000
11,500		142,000	94,000
11,700		142,000	94,000
11,800		142,000	94,000
12,000		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,300	31/64	151,000	101,000
12,400		151,000	101,000
12,500		151,000	101,000
12,600		151,000	101,000
12,700	1/2	151,000	101,000
12,800		151,000	101,000

Punte cilindriche

Punte elicoidali, corte

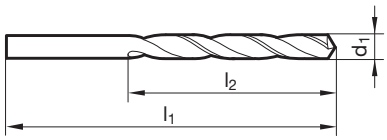
Catalogo n° 51158

V97 | ~5xD | DIN 338 | HSS-Co | TiAlN nano | 130° | h8 | R | Cyl

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 184

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- scanalature larghe
- massima resistenza all'usura
- specifiche per prof. di foro oltre 3xD



d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000

d1 mm	inch	l1 mm	l2 mm
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000
10,700		142,000	94,000
10,800		142,000	94,000
11,000		142,000	94,000

d1 mm	inch	l1 mm	l2 mm
11,200		142,000	94,000
11,500		142,000	94,000
11,700		142,000	94,000
11,800		142,000	94,000
12,000		151,000	101,000
12,500		151,000	101,000

d1 mm	inch	l1 mm	l2 mm
13,000		151,000	101,000

Punte cilindriche

Punte elicoidali, corte

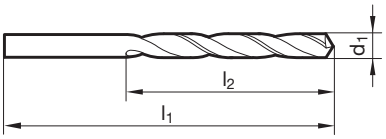
Catalogo n° 61232

V-PM | ~5xD | DIN 338 | HSS-E-PM | TiN | 130° | h8 | R | Cyl

P	M	K	N	S	H
○	○	●	○		

Parametri di lav. ind. a pag. 184

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- scanalature larghe
- stabilità elevata
- specialmente per resistenza all'usura



d1 mm	inch	l1 mm	l2 mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000

d1 mm	inch	l1 mm	l2 mm
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,800		125,000	81,000
9,000		125,000	81,000
9,300		125,000	81,000
9,500		125,000	81,000
9,800		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
11,000		142,000	94,000
11,500		142,000	94,000
12,000		151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000
13,500		160,000	108,000
14,000		160,000	108,000

Punte cilindriche

Serie di punte

NX | ~5xD | DIN 338 | HSS-Co | lucido | 118° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	●		

- in scatole di plastica
- costituito da catalogo-Nr. 71221
- affilatura su piani

Catalogo n° 79012

Codice	d1 mm	in progr. mm	Pezzi per set
7,014	1,0-13,0	0,5	25
7,018	1,0-10,5	0,5	24

Punte cilindriche

Serie di punte

N | ~5xD | DIN 338 | HSS | trattati a vapore | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

- in scatole di plastica
- costituito da catalogo-Nr. 71115
- spoglia sul cono tagliente
- lucida < 2,36 mm

Catalogo n° 78879

Codice	d1 mm	in progr. mm	Pezzi per set
0,011	1,0-5,0	0,1	41
0,012	5,1-10,0	0,1	50
0,013	1,0-10,0	0,5	19
0,014	1,0-13,0	0,5	25
0,015	1,0-5,9	0,1	50
0,016	6,0-10,0	0,1	41
0,018	1,0-10,5	0,5	24

Punte cilindriche

Serie di punte

N | ~5xD | DIN 338 | HSS | TiN - testa | 118° | h8 | R | Cyl

P	M	K	N	S	H
○		●	○		

- in scatole di plastica
- costituito da catalogo-Nr. 61115
- spoglia sul cono tagliente

Catalogo n° 78880

Codice	d1 mm	in progr. mm	Pezzi per set
6,013	1,0-10,0	0,5	19
6,014	1,0-13,0	0,5	25

Punte cilindriche

Serie di punte

- livello di bachelite

Catalogo n° 78877

Codice	d1 mm
0,111	1,0-5,0
0,112	5,1-10,0
0,113	1,0-10,0
0,114	1,0-13,0

Punte cilindriche

Serie di punte

- cassetta di plastica

Catalogo n° 78878

Codice	d1 mm	in progr. mm	Pezzi per set
0,213	1,0-10,0	0,5	19
0,214	1,0-13,0	0,5	25
0,215	1,0-5,9	0,1	50
0,216	6,0-10,0	0,1	41

Punte cilindriche

Punte con codolo rinforzato

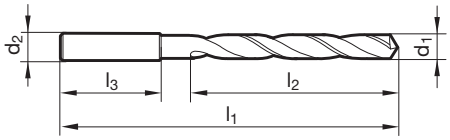
Catalogo n° 61120

NX | ~3xD | WN | HSS-Co | TiN | 118° | h8 | R | HA

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 178

- Assott. del nocc. ≥ Ø 2,000
- affilatura su piani
- è necess. una limitata forza di avanz.
- è necess. un limitato momento torcente
- massima resistenza all'usura
- uso universale
- Con codolo ridotto



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
2,000	3,000	44,000	12,000	28,000
2,100	3,000	44,000	12,000	28,000
2,200	3,000	45,000	13,000	28,000
2,300	3,000	45,000	13,000	28,000
2,400	3,000	46,000	14,000	28,000
2,500	3,000	46,000	14,000	28,000
2,600	3,000	46,000	14,000	28,000
2,700	3,000	48,000	16,000	28,000
2,800	3,000	48,000	16,000	28,000
2,900	3,000	48,000	16,000	28,000
3,000	3,000	48,000	16,000	28,000
3,100	4,000	50,000	18,000	28,000
3,200	4,000	50,000	18,000	28,000
3,300	4,000	50,000	18,000	28,000
3,400	4,000	52,000	20,000	28,000
3,500	4,000	52,000	20,000	28,000
3,600	4,000	52,000	20,000	28,000
3,700	4,000	52,000	20,000	28,000
3,800	4,000	54,000	22,000	28,000
3,900	4,000	54,000	22,000	28,000
4,000	4,000	54,000	22,000	28,000
4,100	6,000	66,000	22,000	36,000
4,200	6,000	66,000	22,000	36,000
4,300	6,000	68,000	24,000	36,000
4,400	6,000	68,000	24,000	36,000
4,500	6,000	68,000	24,000	36,000
4,600	6,000	68,000	24,000	36,000
4,700	6,000	68,000	24,000	36,000
4,800	6,000	70,000	26,000	36,000
4,900	6,000	70,000	26,000	36,000
5,000	6,000	70,000	26,000	36,000
5,100	6,000	70,000	26,000	36,000
5,200	6,000	70,000	26,000	36,000
5,300	6,000	70,000	26,000	36,000
5,400	6,000	72,000	28,000	36,000
5,500	6,000	72,000	28,000	36,000
5,600	6,000	72,000	28,000	36,000
5,700	6,000	72,000	28,000	36,000
5,800	6,000	72,000	28,000	36,000
5,900	6,000	72,000	28,000	36,000
6,000	6,000	72,000	28,000	36,000
6,100	8,000	75,000	31,000	36,000
6,200	8,000	75,000	31,000	36,000
6,300	8,000	75,000	31,000	36,000
6,400	8,000	75,000	31,000	36,000
6,500	8,000	75,000	31,000	36,000
6,600	8,000	75,000	31,000	36,000
6,700	8,000	75,000	31,000	36,000

d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
6,800	8,000	78,000	34,000	36,000
6,900	8,000	78,000	34,000	36,000
7,000	8,000	78,000	34,000	36,000
7,100	8,000	78,000	34,000	36,000
7,200	8,000	78,000	34,000	36,000
7,300	8,000	78,000	34,000	36,000
7,400	8,000	78,000	34,000	36,000
7,500	8,000	78,000	34,000	36,000
7,600	8,000	81,000	37,000	36,000
7,700	8,000	81,000	37,000	36,000
7,800	8,000	81,000	37,000	36,000
7,900	8,000	81,000	37,000	36,000
8,000	8,000	81,000	37,000	36,000
8,100	10,000	87,000	37,000	40,000
8,200	10,000	87,000	37,000	40,000
8,300	10,000	87,000	37,000	40,000
8,400	10,000	87,000	37,000	40,000
8,500	10,000	87,000	37,000	40,000
8,600	10,000	91,000	40,000	40,000
8,700	10,000	91,000	40,000	40,000
8,800	10,000	91,000	40,000	40,000
8,900	10,000	91,000	40,000	40,000
9,000	10,000	91,000	40,000	40,000
9,100	10,000	91,000	40,000	40,000
9,200	10,000	91,000	40,000	40,000
9,300	10,000	91,000	40,000	40,000
9,400	10,000	91,000	40,000	40,000
9,500	10,000	91,000	40,000	40,000
9,600	10,000	93,000	43,000	40,000
9,700	10,000	93,000	43,000	40,000
9,800	10,000	93,000	43,000	40,000
9,900	10,000	93,000	43,000	40,000
10,000	10,000	93,000	43,000	40,000
10,100	12,000	100,000	43,000	45,000
10,200	12,000	100,000	43,000	45,000
10,300	12,000	100,000	43,000	45,000
10,400	12,000	100,000	43,000	45,000
10,500	12,000	100,000	43,000	45,000
10,600	12,000	100,000	43,000	45,000
10,700	12,000	104,000	47,000	45,000
10,800	12,000	104,000	47,000	45,000
10,900	12,000	104,000	47,000	45,000
11,000	12,000	104,000	47,000	45,000
11,100	12,000	104,000	47,000	45,000
11,200	12,000	104,000	47,000	45,000
11,300	12,000	104,000	47,000	45,000
11,400	12,000	104,000	47,000	45,000
11,500	12,000	104,000	47,000	45,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
11,600	12,000	104,000	47,000	45,000
11,700	12,000	104,000	47,000	45,000
11,800	12,000	104,000	47,000	45,000
11,900	12,000	108,000	51,000	45,000
12,000	12,000	108,000	51,000	45,000
12,100	16,000	111,000	51,000	48,000
12,200	16,000	111,000	51,000	48,000
12,300	16,000	111,000	51,000	48,000
12,400	16,000	111,000	51,000	48,000
12,500	16,000	111,000	51,000	48,000
12,600	16,000	111,000	51,000	48,000
12,700	16,000	111,000	51,000	48,000
12,800	16,000	111,000	51,000	48,000
12,900	16,000	111,000	51,000	48,000
13,000	16,000	111,000	51,000	48,000
13,100	16,000	111,000	51,000	48,000
13,500	16,000	114,000	54,000	48,000
14,000	16,000	114,000	54,000	48,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
14,500	16,000	116,000	56,000	48,000
15,000	16,000	116,000	56,000	48,000
15,500	16,000	118,000	58,000	48,000
16,000	16,000	118,000	58,000	48,000
16,500	20,000	126,000	60,000	50,000
17,000	20,000	126,000	60,000	50,000
17,500	20,000	128,000	62,000	50,000
18,000	20,000	128,000	62,000	50,000
18,500	20,000	130,000	64,000	50,000
19,000	20,000	130,000	64,000	50,000
19,500	20,000	132,000	66,000	50,000
20,000	20,000	132,000	66,000	50,000

Punte cilindriche

Punte con codolo rinforzato

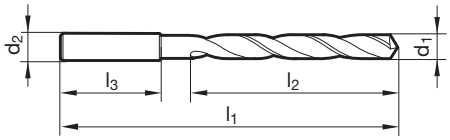
Catalogo n° 61121

NX | ~5xD | WN | HSS-Co | TiN | 118° | h8 | R | HA

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 184

- Assott. del nocc. ≥ Ø 2,000
- affilatura su piani
- è necess. una limitata forza di avanz.
- è necess. un limitato momento torcente
- massima resistenza all'usura
- uso universale
- Con codolo ridotto



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
2,000	3,000	56,000	24,000	28,000
2,100	3,000	56,000	24,000	28,000
2,200	3,000	59,000	27,000	28,000
2,300	3,000	59,000	27,000	28,000
2,400	3,000	62,000	30,000	28,000
2,500	3,000	62,000	30,000	28,000
2,600	3,000	62,000	30,000	28,000
2,700	3,000	65,000	33,000	28,000
2,800	3,000	65,000	33,000	28,000
2,900	3,000	65,000	33,000	28,000
3,000	3,000	65,000	33,000	28,000
3,100	4,000	68,000	36,000	28,000
3,200	4,000	68,000	36,000	28,000
3,300	4,000	68,000	36,000	28,000
3,400	4,000	71,000	39,000	28,000
3,500	4,000	71,000	39,000	28,000
3,600	4,000	71,000	39,000	28,000
3,700	4,000	71,000	39,000	28,000
3,800	4,000	75,000	43,000	28,000
3,900	4,000	75,000	43,000	28,000
4,000	4,000	75,000	43,000	28,000
4,100	6,000	87,000	43,000	36,000
4,200	6,000	87,000	43,000	36,000
4,300	6,000	91,000	47,000	36,000
4,400	6,000	91,000	47,000	36,000
4,500	6,000	91,000	47,000	36,000
4,600	6,000	91,000	47,000	36,000
4,700	6,000	91,000	47,000	36,000
4,800	6,000	96,000	52,000	36,000
4,900	6,000	96,000	52,000	36,000
5,000	6,000	96,000	52,000	36,000
5,100	6,000	96,000	52,000	36,000
5,200	6,000	96,000	52,000	36,000
5,300	6,000	96,000	52,000	36,000
5,400	6,000	101,000	57,000	36,000
5,500	6,000	101,000	57,000	36,000
5,600	6,000	101,000	57,000	36,000
5,700	6,000	101,000	57,000	36,000
5,800	6,000	101,000	57,000	36,000
5,900	6,000	101,000	57,000	36,000
6,000	6,000	101,000	57,000	36,000
6,100	8,000	107,000	63,000	36,000
6,200	8,000	107,000	63,000	36,000
6,300	8,000	107,000	63,000	36,000
6,400	8,000	107,000	63,000	36,000
6,500	8,000	107,000	63,000	36,000
6,600	8,000	107,000	63,000	36,000
6,700	8,000	107,000	63,000	36,000

d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
6,800	8,000	113,000	69,000	36,000
6,900	8,000	113,000	69,000	36,000
7,000	8,000	113,000	69,000	36,000
7,100	8,000	113,000	69,000	36,000
7,200	8,000	113,000	69,000	36,000
7,300	8,000	113,000	69,000	36,000
7,400	8,000	113,000	69,000	36,000
7,500	8,000	113,000	69,000	36,000
7,600	8,000	119,000	75,000	36,000
7,700	8,000	119,000	75,000	36,000
7,800	8,000	119,000	75,000	36,000
7,900	8,000	119,000	75,000	36,000
8,000	8,000	119,000	75,000	36,000
8,100	10,000	125,000	75,000	40,000
8,200	10,000	125,000	75,000	40,000
8,300	10,000	125,000	75,000	40,000
8,400	10,000	125,000	75,000	40,000
8,500	10,000	125,000	75,000	40,000
8,600	10,000	131,000	81,000	40,000
8,700	10,000	131,000	81,000	40,000
8,800	10,000	131,000	81,000	40,000
8,900	10,000	131,000	81,000	40,000
9,000	10,000	131,000	81,000	40,000
9,100	10,000	131,000	81,000	40,000
9,200	10,000	131,000	81,000	40,000
9,300	10,000	131,000	81,000	40,000
9,400	10,000	131,000	81,000	40,000
9,500	10,000	131,000	81,000	40,000
9,600	10,000	137,000	87,000	40,000
9,700	10,000	137,000	87,000	40,000
9,800	10,000	137,000	87,000	40,000
10,000	10,000	137,000	87,000	40,000
10,100	12,000	144,000	87,000	45,000
10,200	12,000	144,000	87,000	45,000
10,300	12,000	144,000	87,000	45,000
10,400	12,000	144,000	87,000	45,000
10,500	12,000	144,000	87,000	45,000
10,600	12,000	144,000	87,000	45,000
10,700	12,000	151,000	94,000	45,000
10,800	12,000	151,000	94,000	45,000
10,900	12,000	151,000	94,000	45,000
11,000	12,000	151,000	94,000	45,000
11,100	12,000	151,000	94,000	45,000
11,200	12,000	151,000	94,000	45,000
11,300	12,000	151,000	94,000	45,000
11,400	12,000	151,000	94,000	45,000
11,500	12,000	151,000	94,000	45,000
11,600	12,000	151,000	94,000	45,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
11,700	12,000	151,000	94,000	45,000
11,800	12,000	151,000	94,000	45,000
11,900	12,000	158,000	101,000	45,000
12,000	12,000	158,000	101,000	45,000
12,100	16,000	161,000	101,000	48,000
12,200	16,000	161,000	101,000	48,000
12,300	16,000	161,000	101,000	48,000
12,400	16,000	161,000	101,000	48,000
12,500	16,000	161,000	101,000	48,000
12,600	16,000	161,000	101,000	48,000
12,700	16,000	161,000	101,000	48,000
12,800	16,000	161,000	101,000	48,000
12,900	16,000	161,000	101,000	48,000
13,000	16,000	161,000	101,000	48,000
13,100	16,000	161,000	101,000	48,000
13,500	16,000	166,000	106,000	48,000
14,000	16,000	166,000	106,000	48,000
14,500	16,000	169,000	109,000	48,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
15,000	16,000	169,000	109,000	48,000
15,500	16,000	172,000	112,000	48,000
16,000	16,000	172,000	112,000	48,000
16,500	20,000	181,000	115,000	50,000
17,000	20,000	181,000	115,000	50,000
17,500	20,000	184,000	118,000	50,000
18,000	20,000	184,000	118,000	50,000
18,500	20,000	188,000	122,000	50,000
19,000	20,000	188,000	122,000	50,000
19,500	20,000	191,000	125,000	50,000
20,000	20,000	191,000	125,000	50,000

Punte cilindriche

Punte con codolo rinforzato

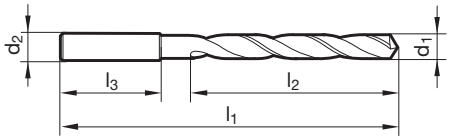
Catalogo n° 51132

V-PM | ~5xD | WN | HSS-E-PM | TiAlN-nano | 130° | h8 | R | HA

P	M	K	N	S	H
●		●		○	

Parametri di lav. ind. a pag. 184

- Assott. del nocc. ≥ Ø 2,000
- spoglia sul cono tagliente
- stabilità elevata
- specialmente per resistenza all'usura
- Con codolo ridotto



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
2,000	3,000	56,000	24,000	28,000
2,200	3,000	59,000	27,000	28,000
2,500	3,000	62,000	30,000	28,000
3,000	3,000	65,000	33,000	28,000
3,200	4,000	68,000	36,000	28,000
3,300	4,000	68,000	36,000	28,000
3,400	4,000	71,000	39,000	28,000
3,500	4,000	71,000	39,000	28,000
3,700	4,000	71,000	39,000	28,000
3,800	4,000	75,000	43,000	28,000
4,000	4,000	75,000	43,000	28,000
4,200	6,000	87,000	43,000	36,000
4,300	6,000	91,000	47,000	36,000
4,500	6,000	91,000	47,000	36,000
4,600	6,000	91,000	47,000	36,000
4,800	6,000	96,000	52,000	36,000
5,000	6,000	96,000	52,000	36,000
5,100	6,000	96,000	52,000	36,000
5,500	6,000	101,000	57,000	36,000
5,700	6,000	101,000	57,000	36,000
5,800	6,000	101,000	57,000	36,000
6,000	6,000	101,000	57,000	36,000
6,500	8,000	107,000	63,000	36,000
6,800	8,000	113,000	69,000	36,000

d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
6,900	8,000	113,000	69,000	36,000
7,000	8,000	113,000	69,000	36,000
7,400	8,000	113,000	69,000	36,000
7,500	8,000	113,000	69,000	36,000
7,800	8,000	119,000	75,000	36,000
8,000	8,000	119,000	75,000	36,000
8,500	10,000	125,000	75,000	40,000
8,600	10,000	131,000	81,000	40,000
8,800	10,000	131,000	81,000	40,000
9,000	10,000	131,000	81,000	40,000
9,300	10,000	131,000	81,000	40,000
9,500	10,000	131,000	81,000	40,000
10,000	10,000	137,000	87,000	40,000
10,200	12,000	144,000	87,000	45,000
10,300	12,000	144,000	87,000	45,000
10,500	12,000	144,000	87,000	45,000
11,000	12,000	151,000	94,000	45,000
11,200	12,000	151,000	94,000	45,000
11,500	12,000	151,000	94,000	45,000
12,000	12,000	158,000	101,000	45,000
12,100	14,000	161,000	101,000	45,000
12,500	14,000	161,000	101,000	45,000
13,000	14,000	161,000	101,000	45,000

Punte cilindriche

Punte corte, con codolo cil. Ø 16,0 mm

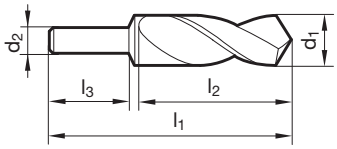
Catalogo n° 71168

V72 | WN | HSS-Co | lucido | 118° | h8 | R | Cyl

P	M	K	N	S	H

Parametri di lav. ind. a pag. 176

- per modifiche, come, p. es.: correzione del diametro, rettifica gradino, rettifica sagoma
- senza punto di divisione, senza tagli



d1 mm	l1 mm	l2 mm
16,000	130,000	88,000
16,500	130,000	88,000
17,000	130,000	88,000
17,500	130,000	88,000
18,000	130,000	88,000
19,000	130,000	88,000
20,000	130,000	88,000
20,500	130,000	88,000
21,000	130,000	88,000
21,500	130,000	88,000
22,000	130,000	88,000
23,000	130,000	88,000

d1 mm	l1 mm	l2 mm
24,000	130,000	88,000
24,500	130,000	88,000
25,000	130,000	88,000
25,500	140,000	98,000
26,000	140,000	98,000
27,000	140,000	98,000
28,000	140,000	98,000
30,000	140,000	98,000

Punte cilindriche

Punte corte, con codolo cil. Ø 25,4 mm

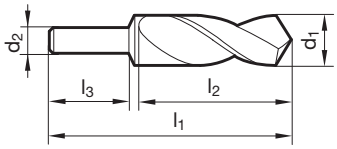
Catalogo n° 71169

V72 | WN | HSS-Co | lucido | 118° | h8 | R | Cyl

P	M	K	N	S	H

Parametri di lav. ind. a pag. 176

- con codolo unificato
- per modifiche, come, p. es.: correzione del diametro, rettifica gradino, rettifica sagoma
- senza punto di divisione, senza tagli



d1 **mm**	l1 mm	l2 mm	**d1** **mm**	l1 mm	l2 mm
28,000	140,000	93,000			
30,000	140,000	93,000			
32,000	140,000	93,000			
36,000	140,000	93,000			
40,000	140,000	93,000			

Punte cilindriche

Punte per foratura con bussola di guida

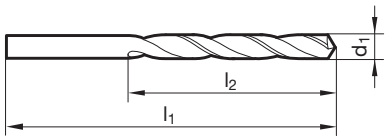
Catalogo n° 71130

N | ~10xD | DIN 339 | HSS | trattati a vapore | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 186

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- per forare con bussola di guida
- da Ø 3 mm con supporto secondo DIN 1809
- lucida < 2,36 mm



d1 mm	l1 mm	l2 mm
1,000	48,000	26,000
1,150	50,000	28,000
1,200	52,000	30,000
1,350	55,000	33,000
1,500	55,000	33,000
1,850	62,000	38,000
2,000	66,000	41,000
2,300	70,000	44,000
2,500	74,000	47,000
2,600	74,000	47,000
2,800	79,000	51,000
2,850	79,000	51,000
2,900	79,000	51,000
3,100	84,000	55,000
3,200	84,000	55,000
3,400	91,000	60,000
3,800	96,000	64,000
3,900	96,000	64,000
4,000	96,000	64,000
4,100	96,000	64,000
4,300	102,000	69,000
4,400	102,000	69,000
4,500	102,000	69,000
4,600	102,000	69,000
4,700	102,000	69,000
4,800	108,000	74,000
4,900	108,000	74,000
5,000	108,000	74,000
5,100	108,000	74,000
5,400	116,000	80,000
5,600	116,000	80,000
5,700	116,000	80,000
5,800	116,000	80,000
5,900	116,000	80,000
6,000	116,000	80,000
6,100	124,000	86,000
6,200	124,000	86,000
6,400	124,000	86,000
6,500	124,000	86,000
6,600	124,000	86,000
6,800	133,000	93,000
7,000	133,000	93,000
7,100	133,000	93,000
7,200	133,000	93,000
7,300	133,000	93,000
7,400	133,000	93,000
7,500	133,000	93,000
7,600	142,000	100,000

d1 mm	l1 mm	l2 mm
7,700	142,000	100,000
7,800	142,000	100,000
7,900	142,000	100,000
8,000	142,000	100,000
8,100	142,000	100,000
8,200	142,000	100,000
8,300	142,000	100,000
8,500	142,000	100,000
8,700	151,000	107,000
8,800	151,000	107,000
9,000	151,000	107,000
9,100	151,000	107,000
9,200	151,000	107,000
9,300	151,000	107,000
9,400	151,000	107,000
9,500	151,000	107,000
9,600	162,000	116,000
9,900	162,000	116,000
10,000	162,000	116,000
10,200	162,000	116,000
10,500	162,000	116,000
11,000	173,000	125,000
11,200	173,000	125,000
11,800	173,000	125,000
12,000	184,000	134,000
12,200	184,000	134,000
12,500	184,000	134,000
13,000	184,000	134,000
13,500	194,000	142,000
14,000	194,000	142,000
14,500	202,000	147,000
15,000	202,000	147,000
16,000	211,000	153,000
17,000	218,000	159,000
17,500	226,000	165,000
18,000	226,000	165,000
18,500	234,000	171,000
19,000	234,000	171,000
19,200	242,000	177,000
19,500	242,000	177,000

Punte cilindriche

Punte elicoidali, lunghe

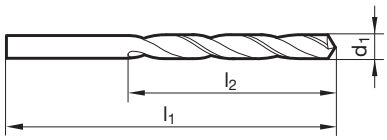
Catalogo n° 71136

N | ~10xD | DIN 340 | HSS | lucido | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 186

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- per fori profondi
- per forare con bussola di guida



d1 mm	inch	l1 mm	l2 mm
0,500		32,000	12,000
0,600		35,000	15,000
0,700		42,000	21,000
0,800		46,000	25,000
0,900		51,000	29,000
1,000		56,000	33,000
1,050		56,000	33,000
1,100		60,000	37,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,500		70,000	45,000
1,550		76,000	50,000
1,600		76,000	50,000
1,650		76,000	50,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,950		85,000	56,000
2,000		85,000	56,000
2,400		95,000	62,000
2,500		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,800		132,000	87,000
4,900		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000

d1 mm	inch	l1 mm	l2 mm
5,400		139,000	91,000
5,500		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,200		148,000	97,000
6,300		148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,500		165,000	109,000
8,700		175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,500		175,000	115,000
9,600		184,000	121,000
9,700		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,500		184,000	121,000
11,000		195,000	128,000
11,500		195,000	128,000
12,000		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000
13,500		214,000	140,000
14,500		220,000	144,000
15,000		220,000	144,000
15,500		227,000	149,000
16,000		227,000	149,000
16,500		235,000	154,000

Punte cilindriche

Punte elicoidali, lunghe

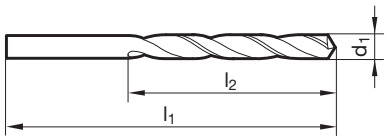
Catalogo n° 71135

N | ~10xD | DIN 340 | HSS | trattati a vapore | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 186

- Assott. del nocc. ≥ Ø 1,800
- spoglia sul cono tagliente
- per fori profondi
- per forare con bussola di guida
- lucida < 2,36 mm



d1 mm	inch	l1 mm	l2 mm
1,800		80,000	53,000
2,000		85,000	56,000
2,050		85,000	56,000
2,100		85,000	56,000
2,300		90,000	59,000
2,400		95,000	62,000
2,500		95,000	62,000
2,600		95,000	62,000
2,800		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,850		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,650		126,000	82,000
4,750		126,000	82,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000

d1 mm	inch	l1 mm	l2 mm
6,250		148,000	97,000
6,300		148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,200		156,000	102,000
7,250		156,000	102,000
7,300		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,700		175,000	115,000
8,750		175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,600		184,000	121,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000
10,250		184,000	121,000
10,300		184,000	121,000
10,400		184,000	121,000
10,500		184,000	121,000
10,600		184,000	121,000

d1		l1	l2
mm	inch	mm	mm
10,700		195,000	128,000
10,800		195,000	128,000
10,900		195,000	128,000
11,000		195,000	128,000
11,500		195,000	128,000
11,750		195,000	128,000
12,000		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000
13,500		214,000	140,000
14,000		214,000	140,000
14,500		220,000	144,000

d1		l1	l2
mm	inch	mm	mm
15,000		220,000	144,000
15,500		227,000	149,000
16,000		227,000	149,000
17,000		235,000	154,000
18,000		241,000	158,000
20,000		254,000	166,000

Punte cilindriche

Punte elicoidali, lunghe

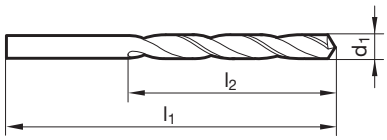
Catalogo n° 61136

N | ~10xD | DIN 340 | HSS | TiN | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 186

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- per fori profondi
- per forare con bussola di guida
- massima resistenza all'usura



d1 mm	inch	l1 mm	l2 mm
1,000		56,000	33,000
1,100		60,000	37,000
1,200		65,000	41,000
1,300		65,000	41,000
1,400		70,000	45,000
1,500		70,000	45,000
1,600		76,000	50,000
1,700		76,000	50,000
1,800		80,000	53,000
1,900		80,000	53,000
2,000		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,400		95,000	62,000
2,500		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,800		132,000	87,000
4,900		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000

d1 mm	inch	l1 mm	l2 mm
5,800		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,700		175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,600		184,000	121,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,500		184,000	121,000
10,800		195,000	128,000
11,000		195,000	128,000
11,500		195,000	128,000

d1		l1	l2
mm	inch	mm	mm
12,000		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000
13,500		214,000	140,000
14,000		214,000	140,000
14,500		220,000	144,000

d1		l1	l2
mm	inch	mm	mm
15,000		220,000	144,000
15,500		227,000	149,000
16,000		227,000	149,000

Punte cilindriche

Punte elicoidali, lunghe

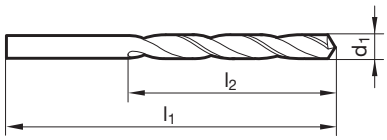
Catalogo n° 71222

NX | ~10xD | DIN 340 | HSS-Co | lucido | 118° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 184

- Assott. del nocc. ≥ Ø 1,000
- affilatura su piani
- è necess. una limitata forza di avanz.
- è necess. un limitato momento torcente
- uso universale



d1 mm	inch	l1 mm	l2 mm
1,000		56,000	33,000
1,100		60,000	37,000
1,200		65,000	41,000
1,300		65,000	41,000
1,400		70,000	45,000
1,500		70,000	45,000
1,600		76,000	50,000
1,700		76,000	50,000
1,800		80,000	53,000
1,900		80,000	53,000
2,000		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,400		95,000	62,000
2,500		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,800		132,000	87,000
4,900		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000

d1 mm	inch	l1 mm	l2 mm
5,800		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,700		175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,600		184,000	121,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000
10,300		184,000	121,000
10,400		184,000	121,000
10,500		184,000	121,000

d1 mm	inch	l1 mm	l2 mm
11,000		195,000	128,000
11,500		195,000	128,000
12,000		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000
13,500		214,000	140,000

d1 mm	inch	l1 mm	l2 mm
14,000		214,000	140,000

Punte cilindriche

Punte elicoidali, lunghe

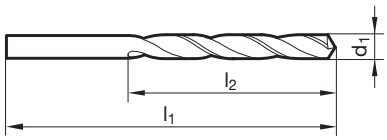
Catalogo n° 61222

NX | ~10xD | DIN 340 | HSS-Co | TiN | 118° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 184

- Assott. del nocc. ≥ Ø 1,000
- affilatura su piani
- è necess. un limitato momento torcente
- è necess. una limitata forza di avanz.
- massima resistenza all'usura
- uso universale



d1 mm	inch	l1 mm	l2 mm
1,000		56,000	33,000
1,100		60,000	37,000
1,200		65,000	41,000
1,300		65,000	41,000
1,400		70,000	45,000
1,500		70,000	45,000
1,600		76,000	50,000
1,700		76,000	50,000
1,800		80,000	53,000
1,900		80,000	53,000
2,000		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,400		95,000	62,000
2,500		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,800		132,000	87,000
4,900		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000

d1 mm	inch	l1 mm	l2 mm
5,800		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,700		175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,600		184,000	121,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000
10,300		184,000	121,000
10,400		184,000	121,000
10,500		184,000	121,000

d1 mm	inch	l1 mm	l2 mm
11,000		195,000	128,000
11,500		195,000	128,000
12,000		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000
13,500		214,000	140,000

d1 mm	inch	l1 mm	l2 mm
14,000		214,000	140,000

Punte cilindriche

Punte elicoidali, lunghe

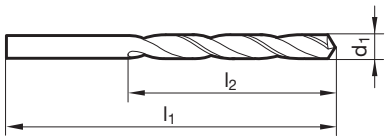
Catalogo n° 71225

V66 | ~10xD | DIN 340 | HSS-Co | lucido | 130° | h8 | R | Cyl

P	M	K	N	S	H
●	●		●	●	

Parametri di lav. ind. a pag. 186

- Assott. del nocc. ≥ Ø 1,000
- spoglia sul cono tagliente
- massima resistenza all'usura
- preferibile per Titanio e leghe di Titanio
- con riserva per Hastelloy, Inconel, Nimonic



d1 mm	inch	l1 mm	l2 mm
1,000		56,000	33,000
1,100		60,000	37,000
1,200		65,000	41,000
1,300		65,000	41,000
1,400		70,000	45,000
1,500		70,000	45,000
1,600		76,000	50,000
1,700		76,000	50,000
1,800		80,000	53,000
2,000		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,500		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,800		132,000	87,000
5,000		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000

d1 mm	inch	l1 mm	l2 mm
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,500		165,000	109,000
9,000		175,000	115,000
9,500		175,000	115,000
10,000		184,000	121,000
10,200		184,000	121,000
10,500		184,000	121,000
11,000		195,000	128,000
12,000		205,000	134,000
13,000		205,000	134,000

Punte cilindriche

Punte elicoidali, lunghe

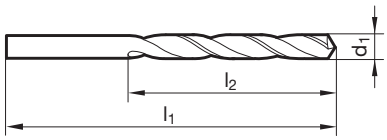
Catalogo n° 71150

V70 | ~10xD | DIN 340 | HSS | lucido | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 186

- Assott. del nocc. ≥ Ø 1,500
- spoglia sul cono tagliente
- scanalature larghe



d1 mm	inch	l1 mm	l2 mm
1,500		70,000	45,000
1,600		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,800		80,000	53,000
1,900		80,000	53,000
2,000		85,000	56,000
2,050		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,400		95,000	62,000
2,500		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,800		132,000	87,000
4,900		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000

d1 mm	inch	l1 mm	l2 mm
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,700		175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,600		184,000	121,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,500		184,000	121,000
11,000		195,000	128,000
11,500		195,000	128,000
12,000		205,000	134,000

Punte cilindriche

Punte elicoidali, lunghe

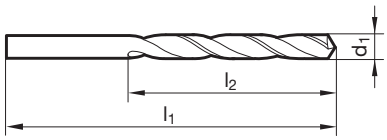
Catalogo n° 71152

V70 | ~10xD | DIN 340 | HSS | lucido | 130° | h8 | L | Cyl

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 186

- Assott. del nocc. ≥ Ø 1,500
- spoglia sul cono tagliente
- scanalature larghe



d1 mm	inch	l1 mm	l2 mm
1,500		70,000	45,000
1,600		76,000	50,000
1,900		80,000	53,000
2,400		95,000	62,000
2,500		95,000	62,000
2,700		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
4,000		119,000	78,000
4,200		119,000	78,000
4,500		126,000	82,000
5,000		132,000	87,000
6,000		139,000	91,000
6,600		148,000	97,000
6,800		156,000	102,000

d1 mm	inch	l1 mm	l2 mm
7,000		156,000	102,000
8,000		165,000	109,000
9,000		175,000	115,000
10,000		184,000	121,000
10,200		184,000	121,000
11,000		195,000	128,000
12,000		205,000	134,000
13,000		205,000	134,000

Punte cilindriche

Punte elicoidali, lunghe

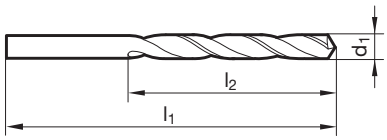
Catalogo n° 61150

V70 | ~10xD | DIN 340 | HSS | TiN | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 186

- Assott. del nocc. ≥ Ø 2,000
- spoglia sul cono tagliente
- scanalature larghe
- maggiore protezione contro l'usura



d1 mm	inch	l1 mm	l2 mm
2,000		85,000	56,000
2,500		95,000	62,000
3,000		100,000	66,000
3,300		106,000	69,000
3,500		112,000	73,000
4,000		119,000	78,000
4,200		119,000	78,000
4,500		126,000	82,000
5,000		132,000	87,000
5,500		139,000	91,000
6,000		139,000	91,000
8,000		165,000	109,000

d1 mm	inch	l1 mm	l2 mm
8,500		165,000	109,000
10,000		184,000	121,000
10,200		184,000	121,000
12,000		205,000	134,000

Punte cilindriche

Punte elicoidali, lunghe

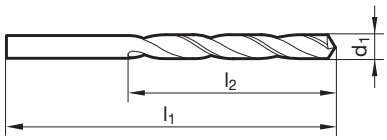
Catalogo n° 71154

V73 | ~10xD | DIN 340 | HSS | fasi nitrurate | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 186

- Assott. del nocc. ≥ Ø 1,500
- spoglia sul cono tagliente
- scanalature larghe
- stabilità elevata



d1 mm	inch	l1 mm	l2 mm
1,500		70,000	45,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,980	5/64	85,000	56,000
1,990		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,060		85,000	56,000
2,080		85,000	56,000
2,100		85,000	56,000
2,180		90,000	59,000
2,200		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,370		95,000	62,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,440		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,580		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,780	7/64	100,000	66,000
2,800		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,180		106,000	69,000
3,200		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000

d1 mm	inch	l1 mm	l2 mm
3,600		112,000	73,000
3,660		112,000	73,000
3,700		112,000	73,000
3,730		112,000	73,000
3,800		119,000	78,000
3,860		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,970	5/32	119,000	78,000
3,990		119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,310		126,000	82,000
4,370	11/64	126,000	82,000
4,390		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
4,920		132,000	87,000
4,980		132,000	87,000
5,000		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,110		132,000	87,000
5,180		132,000	87,000
5,200		132,000	87,000
5,220		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,610		139,000	91,000
5,700		139,000	91,000
5,790		139,000	91,000
5,800		139,000	91,000

d1 mm	inch	l1 mm	l2 mm
5,900		139,000	91,000
5,940		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,040		148,000	97,000
6,100		148,000	97,000
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,760		156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
6,910		156,000	102,000
7,000		156,000	102,000
7,040		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,400		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,600		165,000	109,000
7,670		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,030		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,330	21/64	165,000	109,000
8,400		165,000	109,000
8,430		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,840		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,090		175,000	115,000
9,100		175,000	115,000
9,130	23/64	175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,530		184,000	121,000
9,580		184,000	121,000
9,600		184,000	121,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,080		184,000	121,000
10,200		184,000	121,000
10,260		184,000	121,000
10,320	13/32	184,000	121,000
10,490		184,000	121,000
10,500		184,000	121,000
10,720	27/64	195,000	128,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,500		195,000	128,000
11,510	29/64	195,000	128,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,300	31/64	205,000	134,000
12,700	1/2	205,000	134,000

Punte cilindriche

Punte elicoidali, lunghe

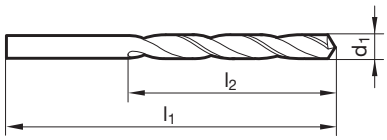
Catalogo n° 71156

V73 | ~10xD | DIN 340 | HSS-Co | fasi nitrurate | 130° | h8 | R | Cyl

P	M	K	N	S	H
●	○	●	○		

Parametri di lav. ind. a pag. 186

- Assott. del nocc. ≥ Ø 1,500
- spoglia sul cono tagliente
- scanalature larghe
- stabilità elevata
- massima resistenza all'usura



d1 mm	inch	l1 mm	l2 mm
1,500		70,000	45,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,700		76,000	50,000
1,800		80,000	53,000
1,900		80,000	53,000
2,000		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,380	3/32	95,000	62,000
2,500		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,180		106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
3,970	5/32	119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,900		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000

d1 mm	inch	l1 mm	l2 mm
5,800		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,530		184,000	121,000
9,600		184,000	121,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000

d1 mm	inch	l1 mm	l2 mm
10,000		184,000	121,000
10,200		184,000	121,000
10,320	13/32	184,000	121,000
10,500		184,000	121,000
10,800		195,000	128,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,500		195,000	128,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,500		205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000

Punte cilindriche

Punte elicoidali in lunghezze speciali, grandezza 1

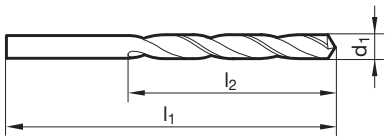
Catalogo n° 71145

V63 | ~15xD | DIN 1869 | HSS | fasi nitrurate | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 188

- Assott. del nocc. ≥ Ø 2,000
- spoglia sul cono tagliente
- scanalature larghe
- per fori estremamente profondi
- per una migliore evacuazione del truciolo
- lucida < 2,36 mm



d1 mm	inch	l1 mm	l2 mm
2,000		125,000	85,000
2,100		125,000	85,000
2,200		135,000	90,000
2,300		135,000	90,000
2,400		140,000	95,000
2,500		140,000	95,000
2,600		140,000	95,000
2,700		150,000	100,000
2,800		150,000	100,000
2,900		150,000	100,000
3,000		150,000	100,000
3,100		155,000	105,000
3,200		155,000	105,000
3,300		155,000	105,000
3,400		165,000	115,000
3,500		165,000	115,000
3,600		165,000	115,000
3,700		165,000	115,000
3,800		175,000	120,000
3,900		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,100		175,000	120,000
4,200		175,000	120,000
4,300		185,000	125,000
4,400		185,000	125,000
4,500		185,000	125,000
4,600		185,000	125,000
4,700		185,000	125,000
4,760	3/16	195,000	135,000
4,800		195,000	135,000
4,900		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,200		195,000	135,000
5,300		195,000	135,000
5,400		205,000	140,000
5,500		205,000	140,000
5,600		205,000	140,000
5,700		205,000	140,000
5,800		205,000	140,000
5,900		205,000	140,000
5,950	15/64	205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,200		215,000	150,000
6,300		215,000	150,000
6,350	1/4	215,000	150,000

d1 mm	inch	l1 mm	l2 mm
6,400		215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,700		215,000	150,000
6,750	17/64	225,000	155,000
6,800		225,000	155,000
6,900		225,000	155,000
7,000		225,000	155,000
7,100		225,000	155,000
7,200		225,000	155,000
7,300		225,000	155,000
7,400		225,000	155,000
7,500		225,000	155,000
7,540	19/64	240,000	165,000
7,600		240,000	165,000
7,700		240,000	165,000
7,800		240,000	165,000
7,900		240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,100		240,000	165,000
8,200		240,000	165,000
8,300		240,000	165,000
8,400		240,000	165,000
8,500		240,000	165,000
8,600		250,000	175,000
8,700		250,000	175,000
8,800		250,000	175,000
8,900		250,000	175,000
9,000		250,000	175,000
9,100		250,000	175,000
9,300		250,000	175,000
9,400		250,000	175,000
9,500		250,000	175,000
9,520	3/8	265,000	185,000
9,600		265,000	185,000
9,700		265,000	185,000
9,800		265,000	185,000
9,900		265,000	185,000
10,000		265,000	185,000
10,100		265,000	185,000
10,200		265,000	185,000
10,500		265,000	185,000
10,720	27/64	280,000	195,000
10,800		280,000	195,000
11,000		280,000	195,000
11,110	7/16	280,000	195,000
11,200		280,000	195,000

d1 mm	inch	l1 mm	l2 mm
11,500		280,000	195,000
11,510	29/64	280,000	195,000
11,800		280,000	195,000
11,910	15/32	295,000	205,000
12,000		295,000	205,000
12,300	31/64	295,000	205,000

d1 mm	inch	l1 mm	l2 mm
12,700	1/2	295,000	205,000
13,000		295,000	205,000

Punte cilindriche

Punte elicoidali in lunghezze speciali, grandezza 1

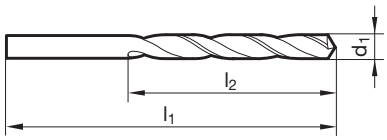
Catalogo n° 71192

V63 | ~15xD | DIN 1869 | HSS-Co | fasi ni-trurate | 130° | h8 | R | Cyl

P	M	K	N	S	H
●	○	●	●		

Parametri di lav. ind. a pag. 188

- Assott. del nocc. ≥ Ø 3,000
- spoglia sul cono tagliente
- scanalature larghe
- massima resistenza all'usura
- per fori estremamente profondi
- per una migliore evacuazione del truciolo



d1 mm	inch	l1 mm	l2 mm
3,000		150,000	100,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,300		155,000	105,000
3,400		165,000	115,000
3,500		165,000	115,000
3,600		165,000	115,000
3,700		165,000	115,000
3,800		175,000	120,000
3,900		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,100		175,000	120,000
4,200		175,000	120,000
4,300		185,000	125,000
4,400		185,000	125,000
4,500		185,000	125,000
4,600		185,000	125,000
4,700		185,000	125,000
4,760	3/16	195,000	135,000
4,800		195,000	135,000
4,900		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,200		195,000	135,000
5,300		195,000	135,000
5,400		205,000	140,000
5,500		205,000	140,000
5,560	7/32	205,000	140,000
5,600		205,000	140,000
5,700		205,000	140,000
5,800		205,000	140,000
5,900		205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,200		215,000	150,000
6,300		215,000	150,000
6,350	1/4	215,000	150,000
6,400		215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,700		215,000	150,000
6,800		225,000	155,000
6,900		225,000	155,000
7,000		225,000	155,000
7,100		225,000	155,000
7,200		225,000	155,000

d1 mm	inch	l1 mm	l2 mm
7,300		225,000	155,000
7,400		225,000	155,000
7,500		225,000	155,000
7,600		240,000	165,000
7,700		240,000	165,000
7,800		240,000	165,000
7,900		240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,100		240,000	165,000
8,200		240,000	165,000
8,300		240,000	165,000
8,400		240,000	165,000
8,500		240,000	165,000
8,600		250,000	175,000
8,700		250,000	175,000
8,730	11/32	250,000	175,000
8,800		250,000	175,000
8,900		250,000	175,000
9,000		250,000	175,000
9,100		250,000	175,000
9,200		250,000	175,000
9,300		250,000	175,000
9,400		250,000	175,000
9,500		250,000	175,000
9,530		265,000	185,000
9,600		265,000	185,000
9,700		265,000	185,000
9,900		265,000	185,000
10,000		265,000	185,000
10,100		265,000	185,000
10,200		265,000	185,000
10,320	13/32	265,000	185,000
10,500		265,000	185,000
10,800		280,000	195,000
11,000		280,000	195,000
11,200		280,000	195,000
11,500		280,000	195,000
11,800		280,000	195,000
11,910	15/32	295,000	205,000
12,700	1/2	295,000	205,000

Punte cilindriche

Punte elicoidali in lunghezze speciali, grandezza 2

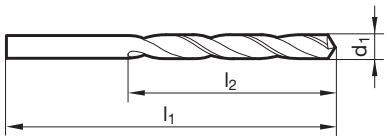
Catalogo n° 71146

V63 | ~20xD | DIN 1869 | HSS | fasi ni-trurate | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 188

- Assott. del nocc. ≥ Ø 13,000
- spoglia sul cono tagliente
- scanalature larghe
- per fori estremamente profondi
- per una migliore evacuazione del truciolo



d1 mm	inch	l1 mm	l2 mm
3,000		190,000	130,000
3,170	1/8	200,000	135,000
3,500		210,000	145,000
3,570	9/64	210,000	145,000
3,970	5/32	220,000	150,000
4,000		220,000	150,000
4,500		235,000	160,000
4,760	3/16	245,000	170,000
5,000		245,000	170,000
5,500		260,000	180,000
5,950	15/64	260,000	180,000
6,000		260,000	180,000
6,500		275,000	190,000
6,750	17/64	290,000	200,000
6,800		290,000	200,000
7,000		290,000	200,000
7,500		290,000	200,000
7,940	5/16	305,000	210,000

d1 mm	inch	l1 mm	l2 mm
8,000		305,000	210,000
8,500		305,000	210,000
9,000		320,000	220,000
9,500		320,000	220,000
9,520	3/8	340,000	235,000
9,920	25/64	340,000	235,000
10,000		340,000	235,000
10,720	27/64	365,000	250,000
11,000		365,000	250,000
11,910	15/32	375,000	260,000
12,000		375,000	260,000
12,700	1/2	375,000	260,000
13,000		375,000	260,000

Punte cilindriche

Punte elicoidali in lunghezze speciali, grandezza 2

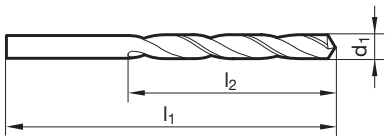
Catalogo n° 71193

V63 | ~20xD | DIN 1869 | HSS-Co | fasi ni-trurate | 130° | h8 | R | Cyl

P	M	K	N	S	H
●	○	●	●		

Parametri di lav. ind. a pag. 188

- Assott. del nocc. ≥ Ø 3,000
- spoglia sul cono tagliente
- scanalature larghe
- massima resistenza all'usura
- per fori estremamente profondi
- per una migliore evacuazione del truciolo



d1 mm	inch	l1 mm	l2 mm
3,000		190,000	130,000
3,500		210,000	145,000
4,000		220,000	150,000
4,500		235,000	160,000
5,000		245,000	170,000
5,500		260,000	180,000
6,000		260,000	180,000
6,500		275,000	190,000
7,000		290,000	200,000
7,500		290,000	200,000
8,000		305,000	210,000
8,500		305,000	210,000

d1 mm	inch	l1 mm	l2 mm
9,000		320,000	220,000
9,500		320,000	220,000
10,000		340,000	235,000
12,000		375,000	260,000

Punte cilindriche

Punte elicoidali in lunghezze speciali, grandezza 3

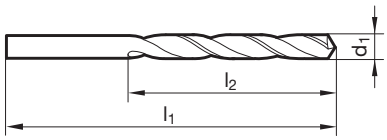
Catalogo n° 71147

V63 | ~25xD | DIN 1869 | HSS | fasi ni-trurate | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 188

- Assott. del nocc. ≥ Ø 3,500
- spoglia sul cono tagliente
- scanalature larghe
- per fori estremamente profondi
- per una migliore evacuazione del truciolo



d1 mm	inch	l1 mm	l2 mm
3,500		265,000	180,000
4,000		280,000	190,000
4,500		295,000	200,000
5,000		315,000	210,000
5,500		330,000	225,000
6,000		330,000	225,000
6,350	1/4	350,000	235,000
6,500		350,000	235,000
7,000		370,000	250,000
7,500		370,000	250,000
7,940	5/16	390,000	265,000
8,000		390,000	265,000
8,500		390,000	265,000
9,000		410,000	280,000
9,130	23/64	410,000	280,000
9,500		410,000	280,000
9,530		430,000	295,000
9,920	25/64	430,000	295,000
10,000		430,000	295,000
10,720	27/64	455,000	310,000
11,000		455,000	310,000
11,910	15/32	480,000	330,000
12,000		480,000	330,000
12,300	31/64	480,000	330,000
13,000		480,000	330,000

Punte cilindriche

Punte elicoidali, extra lunghe

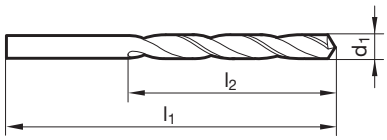
Catalogo n° 71195

V63 | ~7xD | WN | HSS | fasi ni-trurate | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 188

- Assott. del nocc. ≥ Ø 6,000
- spoglia sul cono tagliente
- scanalature larghe
- per fori estremamente profondi
- per una migliore evacuazione del truciolo



d1 **mm**	l1 mm	l2 mm
6,000	500,000	400,000
8,000	500,000	400,000
10,000	600,000	500,000
12,000	600,000	500,000

d1 **mm**	l1 mm	l2 mm

Punte cilindriche

Punte elicoidali, extra lunghe

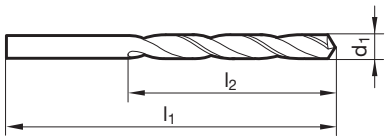
Catalogo n° 71196

V63 | ~7xD | WN | HSS | luci-do | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 188

- Assott. del nocc. ≥ Ø 8,000
- spoglia sul cono tagliente
- scanalature larghe
- per fori estremamente profondi
- per una migliore evacuazione del truciolo



d1 **mm**	l1 mm	l2 mm
8,000	750,000	650,000
10,000	750,000	650,000
12,000	750,000	650,000

d1 **mm**	l1 mm	l2 mm

Punte cilindriche

Punte con fori di refrigerazione

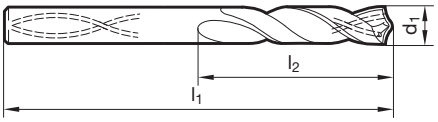
Catalogo n° 71584

V73-IK | ~10xD | WN | HSS | luci-do | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 186

- Assott. del nocc. ≥ Ø 3,000
- spoglia sul cono tagliente
- scanalature larghe



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
3,000	3,000	100,000	66,000	34,000
3,300	3,300	106,000	69,000	37,000
3,500	3,500	112,000	73,000	39,000
4,000	4,000	119,000	78,000	41,000
4,200	4,200	119,000	78,000	41,000
4,500	4,500	126,000	82,000	44,000
5,000	5,000	132,000	87,000	45,000
5,500	5,500	139,000	91,000	48,000
6,000	6,000	139,000	91,000	48,000
6,500	6,500	148,000	97,000	51,000
6,800	6,800	156,000	102,000	54,000
7,000	7,000	156,000	102,000	54,000

d1 mm	d2 mm	l1 mm	l2 mm	l3 mm
7,500	7,500	156,000	102,000	54,000
8,000	8,000	165,000	109,000	56,000
8,500	8,500	165,000	109,000	56,000
9,000	9,000	175,000	115,000	60,000
9,500	9,500	175,000	115,000	60,000
10,000	10,000	184,000	121,000	63,000
10,200	10,200	184,000	121,000	63,000
10,500	10,500	184,000	121,000	63,000
11,000	11,000	195,000	128,000	67,000
12,000	12,000	205,000	134,000	71,000
13,000	13,000	205,000	134,000	71,000

Punte cilindriche

Micropunte

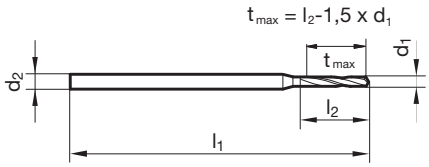
Catalogo n° 71187

N | ~5xD | DIN 1899 | HSS-E-PM | lucido | 118° | -0,004 | R | Cyl

P	M	K	N	S	H
•	•	•	•		

Parametri di lav. ind. a pag. 178

- affilatura su piani
- con codolo rinforzato



d1 mm	d2 mm	l1 mm	l2 mm
0,050	1,000	25,000	0,400
0,060	1,000	25,000	0,400
0,070	1,000	25,000	0,500
0,080	1,000	25,000	0,500
0,090	1,000	25,000	0,500
0,100	1,000	25,000	0,500
0,110	1,000	25,000	0,500
0,120	1,000	25,000	0,500
0,130	1,000	25,000	0,800
0,140	1,000	25,000	0,800
0,150	1,000	25,000	0,800
0,160	1,000	25,000	1,100
0,170	1,000	25,000	1,100
0,180	1,000	25,000	1,100
0,190	1,000	25,000	1,100
0,200	1,000	25,000	1,500
0,210	1,000	25,000	1,500
0,220	1,000	25,000	1,500
0,230	1,000	25,000	1,500
0,240	1,000	25,000	1,500
0,250	1,000	25,000	1,900
0,260	1,000	25,000	1,900
0,270	1,000	25,000	1,900
0,280	1,000	25,000	1,900
0,290	1,000	25,000	1,900
0,300	1,000	25,000	1,900
0,310	1,000	25,000	2,400
0,320	1,000	25,000	2,400
0,330	1,000	25,000	2,400
0,340	1,000	25,000	2,400
0,350	1,000	25,000	2,400
0,360	1,000	25,000	2,400
0,370	1,000	25,000	2,400
0,380	1,000	25,000	2,400
0,390	1,000	25,000	3,000
0,400	1,000	25,000	3,000
0,410	1,000	25,000	3,000
0,420	1,000	25,000	3,000
0,430	1,000	25,000	3,000
0,440	1,000	25,000	3,000
0,450	1,000	25,000	3,000
0,460	1,000	25,000	3,000
0,470	1,000	25,000	3,000
0,480	1,000	25,000	3,000
0,490	1,000	25,000	3,400
0,500	1,000	25,000	3,400
0,510	1,000	25,000	3,400
0,520	1,000	25,000	3,400

d1 mm	d2 mm	l1 mm	l2 mm
0,530	1,000	25,000	3,400
0,540	1,000	25,000	3,900
0,550	1,000	25,000	3,900
0,560	1,000	25,000	3,900
0,570	1,000	25,000	3,900
0,580	1,000	25,000	3,900
0,590	1,000	25,000	3,900
0,600	1,000	25,000	3,900
0,610	1,000	25,000	4,200
0,620	1,000	25,000	4,200
0,630	1,000	25,000	4,200
0,640	1,000	25,000	4,200
0,650	1,000	25,000	4,200
0,660	1,000	25,000	4,200
0,670	1,000	25,000	4,200
0,680	1,000	25,000	4,800
0,690	1,000	25,000	4,800
0,700	1,000	25,000	4,800
0,710	1,000	25,000	4,800
0,720	1,000	25,000	4,800
0,730	1,000	25,000	4,800
0,740	1,000	25,000	4,800
0,750	1,000	25,000	4,800
0,760	1,000	25,000	5,300
0,770	1,000	25,000	5,300
0,780	1,000	25,000	5,300
0,790	1,000	25,000	5,300
0,800	1,500	25,000	5,300
0,810	1,500	25,000	5,300
0,820	1,500	25,000	5,300
0,830	1,500	25,000	5,300
0,840	1,500	25,000	5,300
0,850	1,500	25,000	5,300
0,860	1,500	25,000	6,000
0,870	1,500	25,000	6,000
0,880	1,500	25,000	6,000
0,890	1,500	25,000	6,000
0,900	1,500	25,000	6,000
0,910	1,500	25,000	6,000
0,920	1,500	25,000	6,000
0,930	1,500	25,000	6,000
0,940	1,500	25,000	6,000
0,950	1,500	25,000	6,000
0,960	1,500	25,000	6,800
0,970	1,500	25,000	6,800
0,980	1,500	25,000	6,800
0,990	1,500	25,000	6,800
1,000	1,500	25,000	6,800

d1 mm	d2 mm	l1 mm	l2 mm
1,010	1,500	25,000	6,800
1,020	1,500	25,000	6,800
1,030	1,500	25,000	6,800
1,040	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,060	1,500	25,000	6,800
1,070	1,500	25,000	7,600
1,080	1,500	25,000	7,600
1,090	1,500	25,000	7,600
1,100	1,500	25,000	7,600
1,110	1,500	25,000	7,600
1,120	1,500	25,000	7,600
1,130	1,500	25,000	7,600
1,140	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,160	1,500	25,000	7,600
1,170	1,500	25,000	7,600
1,180	1,500	25,000	7,600
1,190	1,500	25,000	8,500
1,200	1,500	25,000	8,500
1,210	1,500	25,000	8,500
1,220	1,500	25,000	8,500
1,230	1,500	25,000	8,500
1,240	1,500	25,000	8,500

d1 mm	d2 mm	l1 mm	l2 mm
1,250	1,500	25,000	8,500
1,260	1,500	25,000	8,500
1,270	1,500	25,000	8,500
1,280	1,500	25,000	8,500
1,290	1,500	25,000	8,500
1,300	1,500	25,000	8,500
1,310	1,500	25,000	8,500
1,320	1,500	25,000	8,500
1,330	1,500	25,000	9,500
1,340	1,500	25,000	9,500
1,350	1,500	25,000	9,500
1,360	1,500	25,000	9,500
1,370	1,500	25,000	9,500
1,380	1,500	25,000	9,500
1,390	1,500	25,000	9,500
1,400	1,500	25,000	9,500
1,410	1,500	25,000	9,500
1,420	1,500	25,000	9,500
1,430	1,500	25,000	9,500
1,440	1,500	25,000	9,500
1,450	1,500	25,000	9,500

Punte cilindriche

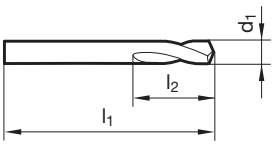
Punte cilindriche per centri CN

Catalogo n° 71175

N	WN	HSS	luci-do	90°	h6	R	Cyl

P	M	K	N	S	H
●	●	●	●	●	

- spoglia sul cono tagliente
- adatte solo per centrare



d1 mm	l1 mm	l2 mm
3,000	46,000	12,000
4,000	55,000	12,000
5,000	62,000	14,000
6,000	66,000	16,000
8,000	79,000	21,000
10,000	89,000	25,000

d1 mm	l1 mm	l2 mm
12,000	102,000	30,000
16,000	115,000	37,500
20,000	131,000	45,000
25,000	151,000	53,000
25,400	156,000	53,000

Punte cilindriche

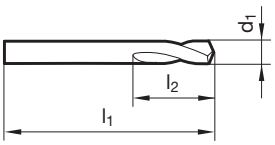
Punte cilindriche per centri CN

Catalogo n° 61175

N	WN	HSS	TiN	90°	h6	R	Cyl

P	M	K	N	S	H
●	●	●	●	●	

- spoglia sul cono tagliente
- adatte solo per centrare
- maggiore protezione contro l'usura



d1 **mm**	l1 mm	l2 mm
3,000	46,000	12,000
4,000	55,000	12,000
6,000	66,000	16,000
8,000	79,000	21,000
10,000	89,000	25,000
12,000	102,000	30,000

d1 **mm**	l1 mm	l2 mm
16,000	115,000	37,500
20,000	131,000	45,000
25,000	151,000	53,000

Punte cilindriche

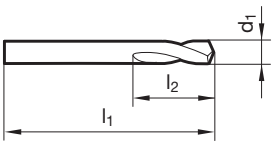
Punte cilindriche per centri CN

Catalogo n° 71176

N	WN	HSS	luci-do	120°	h6	R	Cyl

P	M	K	N	S	H
●	●	●	●	●	

- spoglia sul cono tagliente
- adatte solo per centrare



d1 mm	l1 mm	l2 mm
3,000	46,000	12,000
4,000	55,000	12,000
5,000	62,000	14,000
6,000	66,000	16,000
8,000	79,000	21,000
10,000	89,000	25,000

d1 mm	l1 mm	l2 mm
12,000	102,000	30,000
16,000	115,000	37,500
20,000	131,000	45,000
25,400	156,000	53,000

Punte con codolo conico Morse

Punte elicoidali, corte

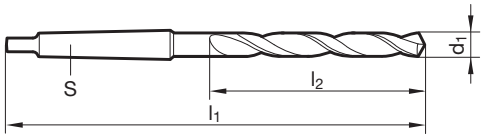
Catalogo n° 71303

N	WN	HSS-Co8	lucido	130°	h8	R	MK

P	M	K	N	S	H
●	●	○		○	○

Parametri di lav. ind. a pag. 176

- Assott. del nocc. ≥ Ø 10,000
- spoglia sul cono tagliente
- particolarmente stabile e resistente



d1 mm	S	l1 mm	l2 mm
10,000	MK-1	138,000	57,000
10,200	MK-1	138,000	57,000
10,500	MK-1	138,000	57,000
10,800	MK-1	142,000	61,000
11,000	MK-1	142,000	61,000
11,500	MK-1	142,000	61,000
12,000	MK-1	147,000	66,000
12,500	MK-1	147,000	66,000
13,000	MK-1	147,000	66,000
14,500	MK-2	172,000	74,000
15,000	MK-2	172,000	74,000
16,000	MK-2	176,000	78,000

d1 mm	S	l1 mm	l2 mm
16,500	MK-2	179,000	81,000
17,000	MK-2	179,000	81,000
17,500	MK-2	183,000	85,000
18,000	MK-2	183,000	85,000
18,500	MK-2	186,000	88,000
23,500	MK-3	222,000	101,000
24,000	MK-3	225,000	104,000
24,500	MK-3	225,000	104,000
25,000	MK-3	225,000	104,000
25,500	MK-4	256,000	107,000

Punte con codolo conico Morse

Punte elicoidali, corte

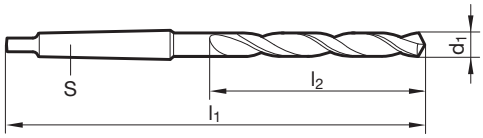
Catalogo n° 71304

N	WN	HSS-Co8	lucido	130°	h8	R	MK

P	M	K	N	S	H
●	●	○		○	○

Parametri di lav. ind. a pag. 176

- Assott. del nocc. ≥ Ø 12,000
- spoglia sul cono tagliente
- particolarmente stabile e resistente
- con cono Morse sovradimensionato



d1 mm	S	l1 mm	l2 mm
12,000	MK-2	164,000	66,000
12,500	MK-2	164,000	66,000
12,800	MK-2	164,000	66,000
13,000	MK-2	164,000	66,000
13,500	MK-2	169,000	70,000
14,000	MK-2	169,000	70,000
19,000	MK-3	211,000	88,000
19,500	MK-3	214,000	91,000
20,000	MK-3	214,000	91,000
20,500	MK-3	217,000	95,000
21,000	MK-3	217,000	95,000
21,500	MK-3	221,000	98,000

d1 mm	S	l1 mm	l2 mm
22,000	MK-3	221,000	98,000
22,500	MK-3	224,000	101,000
23,000	MK-3	224,000	101,000
26,000	MK-4	256,000	107,000
26,500	MK-4	261,000	107,000
27,000	MK-4	261,000	110,000
27,500	MK-4	261,000	110,000
28,000	MK-4	261,000	110,000
28,500	MK-4	265,000	114,000
29,000	MK-4	265,000	114,000
29,500	MK-4	265,000	114,000
30,000	MK-4	265,000	114,000

Punte con codolo conico Morse

Punte elicoidali

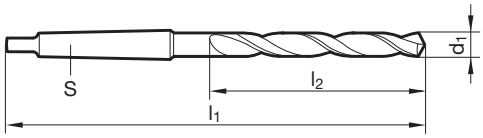
Catalogo n° 71300

N | ~5xD | DIN 345 | HSS | trattati a vapore | 118° | h8 | R | MK

P	M	K	N	S	H
•		•	•		

Parametri di lav. ind. a pag. 180

- Assott. del nocc. ≥ Ø 14,100
- spoglia sul cono tagliente



d1 mm	S	l1 mm	l2 mm
3,750	MK-1	120,000	39,000
4,000	MK-1	124,000	43,000
4,100	MK-1	124,000	43,000
4,200	MK-1	124,000	43,000
4,250	MK-1	124,000	43,000
4,500	MK-1	128,000	47,000
4,600	MK-1	128,000	47,000
4,900	MK-1	133,000	52,000
5,000	MK-1	133,000	52,000
5,100	MK-1	133,000	52,000
5,500	MK-1	138,000	57,000
5,750	MK-1	138,000	57,000
5,800	MK-1	138,000	57,000
6,000	MK-1	138,000	57,000
6,500	MK-1	144,000	63,000
6,750	MK-1	150,000	69,000
6,800	MK-1	150,000	69,000
7,000	MK-1	150,000	69,000
7,200	MK-1	150,000	69,000
7,250	MK-1	150,000	69,000
7,400	MK-1	150,000	69,000
7,500	MK-1	150,000	69,000
7,800	MK-1	156,000	75,000
7,900	MK-1	156,000	75,000
8,000	MK-1	156,000	75,000
8,100	MK-1	156,000	75,000
8,200	MK-1	156,000	75,000
8,250	MK-1	156,000	75,000
8,300	MK-1	156,000	75,000
8,500	MK-1	156,000	75,000
8,600	MK-1	162,000	81,000
8,700	MK-1	162,000	81,000
8,750	MK-1	162,000	81,000
8,900	MK-1	162,000	81,000
9,000	MK-1	162,000	81,000
9,200	MK-1	162,000	81,000
9,300	MK-1	162,000	81,000
9,400	MK-1	162,000	81,000
9,500	MK-1	162,000	81,000
9,750	MK-1	168,000	87,000
9,800	MK-1	168,000	87,000
9,900	MK-1	168,000	87,000
10,000	MK-1	168,000	87,000
10,100	MK-1	168,000	87,000
10,200	MK-1	168,000	87,000
10,250	MK-1	168,000	87,000
10,300	MK-1	168,000	87,000
10,400	MK-1	168,000	87,000

d1 mm	S	l1 mm	l2 mm
10,500	MK-1	168,000	87,000
10,600	MK-1	168,000	87,000
10,700	MK-1	175,000	94,000
10,750	MK-1	175,000	94,000
10,800	MK-1	175,000	94,000
10,900	MK-1	175,000	94,000
11,000	MK-1	175,000	94,000
11,100	MK-1	175,000	94,000
11,200	MK-1	175,000	94,000
11,300	MK-1	175,000	94,000
11,400	MK-1	175,000	94,000
11,500	MK-1	175,000	94,000
11,600	MK-1	175,000	94,000
11,700	MK-1	175,000	94,000
11,750	MK-1	175,000	94,000
11,800	MK-1	175,000	94,000
11,900	MK-1	182,000	101,000
12,000	MK-1	182,000	101,000
12,100	MK-1	182,000	101,000
12,200	MK-1	182,000	101,000
12,250	MK-1	182,000	101,000
12,300	MK-1	182,000	101,000
12,400	MK-1	182,000	101,000
12,500	MK-1	182,000	101,000
12,600	MK-1	182,000	101,000
12,700	MK-1	182,000	101,000
12,800	MK-1	182,000	101,000
12,900	MK-1	182,000	101,000
13,000	MK-1	182,000	101,000
13,100	MK-1	182,000	101,000
13,200	MK-1	182,000	101,000
13,300	MK-1	189,000	108,000
13,400	MK-1	189,000	108,000
13,500	MK-1	189,000	108,000
13,600	MK-1	189,000	108,000
13,700	MK-1	189,000	108,000
13,750	MK-1	189,000	108,000
13,800	MK-1	189,000	108,000
13,900	MK-1	189,000	108,000
14,000	MK-1	189,000	108,000
14,100	MK-2	212,000	114,000
14,200	MK-2	212,000	114,000
14,250	MK-2	212,000	114,000
14,300	MK-2	212,000	114,000
14,400	MK-2	212,000	114,000
14,500	MK-2	212,000	114,000
14,600	MK-2	212,000	114,000
14,700	MK-2	212,000	114,000

d1 mm	S	l1 mm	l2 mm
14,750	MK-2	212,000	114,000
14,800	MK-2	212,000	114,000
14,900	MK-2	212,000	114,000
15,000	MK-2	212,000	114,000
15,100	MK-2	218,000	120,000
15,200	MK-2	218,000	120,000
15,250	MK-2	218,000	120,000
15,300	MK-2	218,000	120,000
15,400	MK-2	218,000	120,000
15,500	MK-2	218,000	120,000
15,600	MK-2	218,000	120,000
15,700	MK-2	218,000	120,000
15,750	MK-2	218,000	120,000
15,800	MK-2	218,000	120,000
15,900	MK-2	218,000	120,000
16,000	MK-2	218,000	120,000
16,100	MK-2	223,000	125,000
16,200	MK-2	223,000	125,000
16,250	MK-2	223,000	125,000
16,300	MK-2	223,000	125,000
16,400	MK-2	223,000	125,000
16,500	MK-2	223,000	125,000
16,600	MK-2	223,000	125,000
16,700	MK-2	223,000	125,000
16,750	MK-2	223,000	125,000
16,800	MK-2	223,000	125,000
16,900	MK-2	223,000	125,000
17,000	MK-2	223,000	125,000
17,100	MK-2	228,000	130,000
17,200	MK-2	228,000	130,000
17,300	MK-2	228,000	130,000
17,400	MK-2	228,000	130,000
17,500	MK-2	228,000	130,000
17,600	MK-2	228,000	130,000
17,700	MK-2	228,000	130,000
17,750	MK-2	228,000	130,000
17,800	MK-2	228,000	130,000
17,900	MK-2	228,000	130,000
18,000	MK-2	228,000	130,000
18,100	MK-2	233,000	135,000
18,200	MK-2	233,000	135,000
18,250	MK-2	233,000	135,000
18,300	MK-2	233,000	135,000
18,500	MK-2	233,000	135,000
18,600	MK-2	233,000	135,000
18,750	MK-2	233,000	135,000
19,000	MK-2	233,000	135,000
19,250	MK-2	238,000	140,000
19,500	MK-2	238,000	140,000
19,750	MK-2	238,000	140,000
20,000	MK-2	238,000	140,000
20,100	MK-2	243,000	145,000
20,250	MK-2	243,000	145,000
20,300	MK-2	243,000	145,000
20,400	MK-2	243,000	145,000
20,500	MK-2	243,000	145,000
20,640	MK-2	243,000	145,000
20,750	MK-2	243,000	145,000
21,000	MK-2	243,000	145,000
21,250	MK-2	248,000	150,000
21,430	MK-2	248,000	150,000
21,500	MK-2	248,000	150,000
22,000	MK-2	248,000	150,000
22,250	MK-2	248,000	150,000
22,500	MK-2	253,000	155,000
22,900	MK-2	253,000	155,000
23,000	MK-2	253,000	155,000
23,500	MK-3	276,000	155,000
23,750	MK-3	281,000	160,000
24,000	MK-3	281,000	160,000
24,250	MK-3	281,000	160,000
24,500	MK-3	281,000	160,000

d1 mm	S	l1 mm	l2 mm
24,750	MK-3	281,000	160,000
25,000	MK-3	281,000	160,000
25,250	MK-3	286,000	165,000
25,500	MK-3	286,000	165,000
25,750	MK-3	286,000	165,000
26,000	MK-3	286,000	165,000
26,500	MK-3	286,000	165,000
27,000	MK-3	291,000	170,000
27,250	MK-3	291,000	170,000
27,500	MK-3	291,000	170,000
27,750	MK-3	291,000	170,000
28,000	MK-3	291,000	170,000
28,500	MK-3	296,000	175,000
28,570	MK-3	296,000	175,000
29,000	MK-3	296,000	175,000
29,250	MK-3	296,000	175,000
29,500	MK-3	296,000	175,000
29,750	MK-3	296,000	175,000
30,000	MK-3	296,000	175,000
30,250	MK-3	301,000	180,000
30,500	MK-3	301,000	180,000
30,750	MK-3	301,000	180,000
31,000	MK-3	301,000	180,000
31,500	MK-3	301,000	180,000
32,000	MK-4	334,000	185,000
32,500	MK-4	334,000	185,000
33,000	MK-4	334,000	185,000
33,340	MK-4	334,000	185,000
33,500	MK-4	334,000	185,000
34,000	MK-4	339,000	190,000
34,500	MK-4	339,000	190,000
35,000	MK-4	339,000	190,000
35,500	MK-4	339,000	190,000
36,000	MK-4	344,000	195,000
36,500	MK-4	344,000	195,000
37,000	MK-4	344,000	195,000
37,500	MK-4	344,000	195,000
38,000	MK-4	349,000	200,000
38,500	MK-4	349,000	200,000
39,000	MK-4	349,000	200,000
39,500	MK-4	349,000	200,000
39,690	MK-4	349,000	200,000
40,000	MK-4	349,000	200,000
40,500	MK-4	354,000	205,000
41,000	MK-4	354,000	205,000
41,500	MK-4	354,000	205,000
42,000	MK-4	354,000	205,000
42,500	MK-4	354,000	205,000
43,000	MK-4	359,000	210,000
43,500	MK-4	359,000	210,000
44,000	MK-4	359,000	210,000
44,500	MK-4	359,000	210,000
45,000	MK-4	359,000	210,000
45,500	MK-4	364,000	215,000
46,000	MK-4	364,000	215,000
46,500	MK-4	364,000	215,000
47,000	MK-4	364,000	215,000
48,000	MK-4	369,000	220,000
48,500	MK-4	369,000	220,000
49,000	MK-4	369,000	220,000
49,500	MK-4	369,000	220,000
50,000	MK-4	369,000	220,000
50,500	MK-4	374,000	225,000
50,800	MK-4	374,000	225,000
51,000	MK-5	412,000	225,000
52,000	MK-5	412,000	225,000
53,500	MK-5	417,000	230,000
54,000	MK-5	417,000	230,000
55,000	MK-5	417,000	230,000
57,000	MK-5	422,000	235,000
58,000	MK-5	422,000	235,000
59,000	MK-5	422,000	235,000

d1 mm	S	l1 mm	l2 mm
60,000	MK-5	422,000	235,000
61,000	MK-5	427,000	240,000
68,000	MK-5	437,000	250,000

d1 mm	S	l1 mm	l2 mm

Punte con codolo conico Morse

Punte elicoidali

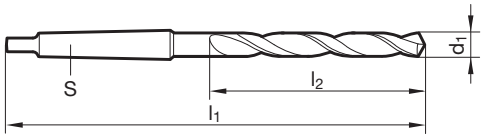
Catalogo n° 71416

N	~5xD	DIN 345	HSS-Co	trattati a vapore	118°	h8	R	MK

P	M	K	N	S	H
●	○	●			

Parametri di lav. ind. a pag. 182

- Assott. del nocc. ≥ Ø 5,000
- spoglia sul cono tagliente
- massima resistenza all'usura



d1 mm	S	l1 mm	l2 mm
5,000	MK-1	133,000	52,000
8,000	MK-1	156,000	75,000
8,500	MK-1	156,000	75,000
9,000	MK-1	162,000	81,000
9,500	MK-1	162,000	81,000
10,200	MK-1	168,000	87,000
10,500	MK-1	168,000	87,000
10,600	MK-1	168,000	87,000
11,000	MK-1	175,000	94,000
11,500	MK-1	175,000	94,000
12,000	MK-1	182,000	101,000
12,500	MK-1	182,000	101,000
14,000	MK-1	189,000	108,000
14,500	MK-2	212,000	114,000
14,750	MK-2	212,000	114,000
15,000	MK-2	212,000	114,000
15,500	MK-2	218,000	120,000
16,000	MK-2	218,000	120,000

d1 mm	S	l1 mm	l2 mm
17,000	MK-2	223,000	125,000
17,500	MK-2	228,000	130,000
18,000	MK-2	228,000	130,000
18,500	MK-2	233,000	135,000
19,000	MK-2	233,000	135,000
20,000	MK-2	238,000	140,000
20,500	MK-2	243,000	145,000
21,000	MK-2	243,000	145,000
21,500	MK-2	248,000	150,000
22,000	MK-2	248,000	150,000
23,000	MK-2	253,000	155,000
23,500	MK-3	276,000	155,000
24,000	MK-3	281,000	160,000
25,000	MK-3	281,000	160,000
26,000	MK-3	286,000	165,000
26,500	MK-3	286,000	165,000
30,500	MK-3	301,000	180,000
33,000	MK-4	334,000	185,000

Punte con codolo conico Morse

Punte elicoidali

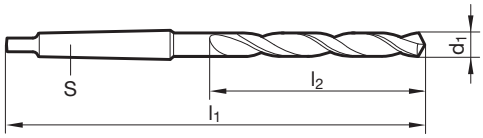
Catalogo n° 71305

V70 | ~5xD | DIN 345 | HSS | lucido | 130° | h8 | R | MK

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 180

- Assott. del nocc. ≥ Ø 7,940
- spoglia sul cono tagliente
- scanalature larghe



d1 mm	S	l1 mm	l2 mm
7,940	MK-1	156,000	75,000
8,000	MK-1	156,000	75,000
8,250	MK-1	156,000	75,000
8,500	MK-1	156,000	75,000
8,750	MK-1	162,000	81,000
9,000	MK-1	162,000	81,000
9,250	MK-1	162,000	81,000
9,500	MK-1	162,000	81,000
10,000	MK-1	168,000	87,000
10,200	MK-1	168,000	87,000
10,250	MK-1	168,000	87,000
10,500	MK-1	168,000	87,000
10,750	MK-1	175,000	94,000
11,000	MK-1	175,000	94,000
11,500	MK-1	175,000	94,000
11,750	MK-1	175,000	94,000
12,000	MK-1	182,000	101,000
12,250	MK-1	182,000	101,000
12,700	MK-1	182,000	101,000
13,000	MK-1	182,000	101,000
13,500	MK-1	189,000	108,000
14,000	MK-1	189,000	108,000
14,500	MK-2	212,000	114,000
15,000	MK-2	212,000	114,000
15,500	MK-2	218,000	120,000
16,000	MK-2	218,000	120,000
16,500	MK-2	223,000	125,000
17,000	MK-2	223,000	125,000
17,500	MK-2	228,000	130,000
18,000	MK-2	228,000	130,000

d1 mm	S	l1 mm	l2 mm
18,500	MK-2	233,000	135,000
19,000	MK-2	233,000	135,000
20,000	MK-2	238,000	140,000
20,500	MK-2	243,000	145,000
21,000	MK-2	243,000	145,000
22,000	MK-2	248,000	150,000
23,000	MK-2	253,000	155,000
24,000	MK-3	281,000	160,000
25,000	MK-3	281,000	160,000
25,500	MK-3	286,000	165,000
26,000	MK-3	286,000	165,000
26,500	MK-3	286,000	165,000
26,990	MK-3	291,000	170,000
27,000	MK-3	291,000	170,000
27,500	MK-3	291,000	170,000
28,000	MK-3	291,000	170,000
28,570	MK-3	296,000	175,000
29,000	MK-3	296,000	175,000
29,500	MK-3	296,000	175,000
31,000	MK-3	301,000	180,000
31,500	MK-3	301,000	180,000
32,000	MK-4	334,000	185,000

Punte con codolo conico Morse

Punte elicoidali

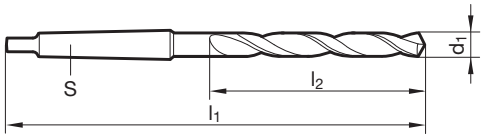
Catalogo n° 71312

V66 Ti | ~5xD | DIN 345 | HSS-Co | lucido | 130° | h8 | R | MK

P	M	K	N	S	H
●	●	●		●	

Parametri di lav. ind. a pag. 182

- Assott. del nocc. ≥ Ø 8,500
- spoglia sul cono tagliente
- alta rigidità



d1 mm	S	l1 mm	l2 mm
8,500	MK-1	156,000	75,000
9,000	MK-1	162,000	81,000
9,500	MK-1	162,000	81,000
10,000	MK-1	168,000	87,000
10,200	MK-1	168,000	87,000
10,500	MK-1	168,000	87,000
11,000	MK-1	175,000	94,000
11,250	MK-1	175,000	94,000
11,500	MK-1	175,000	94,000
12,000	MK-1	182,000	101,000
12,500	MK-1	182,000	101,000
13,000	MK-1	182,000	101,000
13,500	MK-1	189,000	108,000
14,000	MK-1	189,000	108,000
14,500	MK-2	212,000	114,000
15,000	MK-2	212,000	114,000
15,500	MK-2	218,000	120,000
16,000	MK-2	218,000	120,000
16,250	MK-2	223,000	125,000
16,500	MK-2	223,000	125,000
17,000	MK-2	223,000	125,000
17,500	MK-2	228,000	130,000
18,000	MK-2	228,000	130,000
18,500	MK-2	233,000	135,000

d1 mm	S	l1 mm	l2 mm
19,000	MK-2	233,000	135,000
19,500	MK-2	238,000	140,000
20,000	MK-2	238,000	140,000
20,250	MK-2	243,000	145,000
21,000	MK-2	243,000	145,000
22,000	MK-2	248,000	150,000
23,000	MK-2	253,000	155,000
24,000	MK-3	281,000	160,000
25,000	MK-3	281,000	160,000
26,000	MK-3	286,000	165,000
27,000	MK-3	291,000	170,000
27,500	MK-3	291,000	170,000
28,000	MK-3	291,000	170,000
30,000	MK-3	296,000	175,000
32,000	MK-4	334,000	185,000

Punte con codolo conico Morse

Punte elicoidali

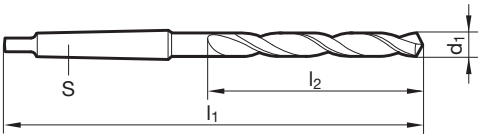
Catalogo n° 71313

V66 Ti | ~5xD | DIN 346 | HSS-Co | luci-do | 130° | h8 | R | MK

P	M	K	N	S	H
●	●	●		●	

Parametri di lav. ind. a pag. 182

- Assott. del nocc. ≥ Ø 11,000
- spoglia sul cono tagliente
- alta rigidità
- con cono Morse rinforzato



d1 mm	S	l1 mm	l2 mm
11,000	MK-2	192,000	94,000
12,000	MK-2	199,000	101,000
12,500	MK-2	199,000	101,000
12,800	MK-2	199,000	101,000
13,000	MK-2	199,000	101,000
13,500	MK-2	206,000	108,000
14,000	MK-2	206,000	108,000
20,000	MK-3	261,000	140,000
20,500	MK-3	266,000	145,000
21,500	MK-3	271,000	150,000
23,000	MK-3	276,000	155,000
26,000	MK-4	314,000	165,000
27,000	MK-4	319,000	170,000
29,000	MK-4	324,000	175,000

Punte con codolo conico Morse

Punte per foratura con bussola di guida

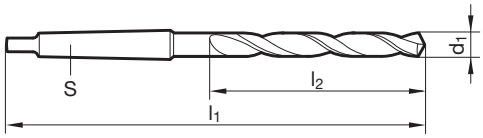
Catalogo n° 71320

N	~10xD	DIN 341	HSS	trattati a vapore	118°	h8	R	MK

P	M	K	N	S	H
●		●			

Parametri di lav. ind. a pag. 186

- Assott. del nocc. ≥ Ø 14,500
- spoglia sul cono tagliente
- per forare con bussola di guida



d1 mm	S	l1 mm	l2 mm
6,000	MK-1	161,000	80,000
6,500	MK-1	167,000	86,000
6,800	MK-1	174,000	93,000
7,000	MK-1	174,000	93,000
8,000	MK-1	181,000	100,000
8,200	MK-1	181,000	100,000
8,500	MK-1	181,000	100,000
8,750	MK-1	188,000	107,000
8,800	MK-1	188,000	107,000
9,000	MK-1	188,000	107,000
9,500	MK-1	188,000	107,000
10,000	MK-1	197,000	116,000
10,100	MK-1	197,000	116,000
10,200	MK-1	197,000	116,000
11,000	MK-1	206,000	125,000
11,500	MK-1	206,000	125,000
12,000	MK-1	215,000	134,000
12,500	MK-1	215,000	134,000
12,750	MK-1	215,000	134,000
13,000	MK-1	215,000	134,000
13,500	MK-1	223,000	142,000
13,750	MK-1	223,000	142,000
13,800	MK-1	223,000	142,000
13,900	MK-1	223,000	142,000
14,000	MK-1	223,000	142,000
14,500	MK-2	245,000	147,000
15,000	MK-2	245,000	147,000
16,000	MK-2	251,000	153,000
16,250	MK-2	257,000	159,000
16,500	MK-2	257,000	159,000
16,750	MK-2	257,000	159,000
17,000	MK-2	257,000	159,000
17,500	MK-2	263,000	165,000
18,000	MK-2	263,000	165,000
18,500	MK-2	269,000	171,000
18,750	MK-2	269,000	171,000

d1 mm	S	l1 mm	l2 mm
19,000	MK-2	269,000	171,000
19,250	MK-2	275,000	177,000
19,500	MK-2	275,000	177,000
20,000	MK-2	275,000	177,000
21,000	MK-2	282,000	184,000
22,000	MK-2	289,000	191,000
22,500	MK-2	296,000	198,000
23,000	MK-2	296,000	198,000
24,000	MK-3	327,000	206,000
25,000	MK-3	327,000	206,000
26,000	MK-3	335,000	214,000
26,500	MK-3	335,000	214,000
27,000	MK-3	343,000	222,000
28,000	MK-3	343,000	222,000
29,500	MK-3	351,000	230,000
30,000	MK-3	351,000	230,000
31,000	MK-3	360,000	239,000
32,000	MK-4	397,000	248,000
33,000	MK-4	397,000	248,000
34,000	MK-4	406,000	257,000
35,000	MK-4	406,000	257,000
36,000	MK-4	416,000	267,000
38,000	MK-4	426,000	277,000
40,000	MK-4	426,000	277,000
45,000	MK-4	447,000	298,000

Punte con codolo conico Morse

Punte per foratura con bussola di guida

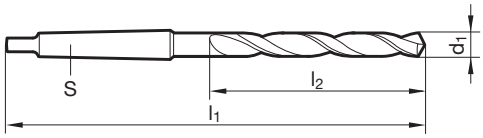
Catalogo n° 71322

V70 | ~10xD | DIN 341 | HSS | luci-do | 130° | h8 | R | MK

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 186

- Assott. del nocc. ≥ Ø 8,000
- spoglia sul cono tagliente
- scanalature larghe



d1 mm	S	l1 mm	l2 mm
8,000	MK-1	181,000	100,000
8,500	MK-1	181,000	100,000
8,730	MK-1	188,000	107,000
8,750	MK-1	188,000	107,000
9,000	MK-1	188,000	107,000
9,500	MK-1	188,000	107,000
9,920	MK-1	197,000	116,000
10,000	MK-1	197,000	116,000
10,250	MK-1	197,000	116,000
10,320	MK-1	197,000	116,000
10,500	MK-1	197,000	116,000
10,720	MK-1	206,000	125,000
10,750	MK-1	206,000	125,000
11,000	MK-1	206,000	125,000
11,750	MK-1	206,000	125,000
12,500	MK-1	215,000	134,000
12,700	MK-1	215,000	134,000
12,750	MK-1	215,000	134,000
13,000	MK-1	215,000	134,000
13,750	MK-1	223,000	142,000
14,000	MK-1	223,000	142,000
14,500	MK-2	245,000	147,000
15,000	MK-2	245,000	147,000
16,000	MK-2	251,000	153,000
16,500	MK-2	257,000	159,000
17,500	MK-2	263,000	165,000
17,750	MK-2	263,000	165,000
18,000	MK-2	263,000	165,000
18,260	MK-2	269,000	171,000
18,650	MK-2	269,000	171,000

d1 mm	S	l1 mm	l2 mm
19,000	MK-2	269,000	171,000
19,250	MK-2	275,000	177,000
20,000	MK-2	275,000	177,000
21,750	MK-2	289,000	191,000
22,000	MK-2	289,000	191,000
22,250	MK-2	289,000	191,000
23,020	MK-2	296,000	198,000
23,420	MK-3	319,000	198,000
23,500	MK-3	319,000	198,000
24,000	MK-3	327,000	206,000
25,000	MK-3	327,000	206,000
26,000	MK-3	335,000	214,000
28,000	MK-3	343,000	222,000
28,500	MK-3	351,000	230,000
29,500	MK-3	351,000	230,000
30,000	MK-3	351,000	230,000
31,500	MK-3	360,000	239,000
31,750	MK-3	369,000	248,000
32,000	MK-4	397,000	248,000
37,000	MK-4	416,000	267,000
37,500	MK-4	416,000	267,000
39,000	MK-4	426,000	277,000
40,000	MK-4	426,000	277,000
44,000	MK-4	447,000	298,000

Punte con codolo conico Morse

Punte elicoidali in lunghezze speciali, grandezza 1

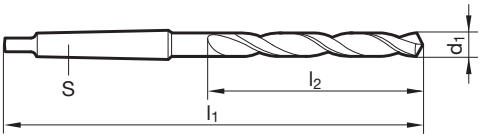
Catalogo n° 71325

V63 | ~15xD | DIN 1870 | HSS | fasi ni-trurate | 130° | h8 | R | MK

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 188

- Assott. del nocc. ≥ Ø 8,000
- spoglia sul cono tagliente
- scanalature larghe
- per fori estremamente profondi
- per una migliore evacuazione del truciolo
- vaporizzato ≤ Ø 16 mm



d1 mm	S	l1 mm	l2 mm
8,000	MK-1	265,000	165,000
8,330	MK-1	265,000	165,000
8,500	MK-1	265,000	165,000
9,000	MK-1	275,000	175,000
10,000	MK-1	285,000	185,000
10,500	MK-1	285,000	185,000
11,000	MK-1	300,000	195,000
11,500	MK-1	300,000	195,000
12,000	MK-1	310,000	205,000
12,300	MK-1	310,000	205,000
12,500	MK-1	310,000	205,000
13,000	MK-1	310,000	205,000
13,500	MK-1	325,000	220,000
14,000	MK-1	325,000	220,000
14,500	MK-2	340,000	220,000
15,000	MK-2	340,000	220,000
15,500	MK-2	355,000	230,000
16,000	MK-2	355,000	230,000

d1 mm	S	l1 mm	l2 mm
17,000	MK-2	355,000	230,000
17,500	MK-2	370,000	245,000
18,000	MK-2	370,000	245,000
18,500	MK-2	370,000	245,000
19,000	MK-2	370,000	245,000
19,500	MK-2	385,000	260,000
20,000	MK-2	385,000	260,000
21,000	MK-2	385,000	260,000
21,500	MK-2	405,000	270,000
22,000	MK-2	405,000	270,000
23,000	MK-2	405,000	270,000
24,000	MK-3	440,000	290,000
25,000	MK-3	440,000	290,000
26,000	MK-3	440,000	290,000
26,990	MK-3	460,000	305,000
28,000	MK-3	460,000	305,000
30,000	MK-3	460,000	305,000

Punte con codolo conico Morse

Punte elicoidali in lunghezze speciali, grandezza 2

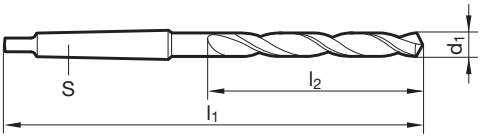
Catalogo n° 71326

V63 | ~20xD | DIN 1870 | HSS | fasi ni-trurate | 130° | h8 | R | MK

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 188

- Assott. del nocc. ≥ Ø 8,000
- spoglia sul cono tagliente
- scanalature larghe
- per fori estremamente profondi
- per una migliore evacuazione del truciolo
- vaporizzato ≤ Ø 16 mm



d1 mm	S	l1 mm	l2 mm
8,000	MK-1	330,000	210,000
8,730	MK-1	345,000	220,000
9,000	MK-1	345,000	220,000
10,000	MK-1	360,000	235,000
11,000	MK-1	375,000	250,000
11,500	MK-1	375,000	250,000
12,000	MK-1	395,000	260,000
12,700	MK-1	395,000	260,000
13,000	MK-1	395,000	260,000
13,500	MK-1	410,000	275,000
14,000	MK-1	410,000	275,000
14,500	MK-2	425,000	275,000
15,000	MK-2	425,000	275,000
15,500	MK-2	445,000	295,000
16,000	MK-2	445,000	295,000
16,500	MK-2	445,000	295,000
17,000	MK-2	445,000	295,000
17,500	MK-2	465,000	310,000

d1 mm	S	l1 mm	l2 mm
17,860	MK-2	465,000	310,000
18,000	MK-2	465,000	310,000
19,000	MK-2	465,000	310,000
20,000	MK-2	490,000	325,000
20,500	MK-2	490,000	325,000
21,000	MK-2	490,000	325,000
22,000	MK-2	515,000	345,000
23,000	MK-2	515,000	345,000
24,000	MK-3	555,000	365,000
25,000	MK-3	555,000	365,000
26,000	MK-3	555,000	365,000
26,500	MK-3	555,000	365,000
30,000	MK-3	580,000	385,000
31,750	MK-3	610,000	410,000
43,000	MK-4	735,000	490,000

Punte con codolo conico Morse

Punte con fori di refrigerazione

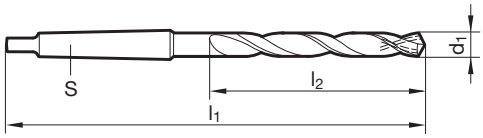
Catalogo n° 71554

N-IK | ~10xD | WN | HSS | trattati a vapore | 118° | h8 | R | MK

P	M	K	N	S	H
●	○	●	○		

Parametri di lav. ind. a pag. 188

- Assott. del nocc. ≥ Ø 10,000
- spoglia sul cono tagliente
- per forare con bussola di guida



d1 mm	S	l1 mm	l2 mm
10,000	MK-2	233,000	116,000
11,000	MK-2	242,000	125,000
12,000	MK-2	251,000	134,000
13,000	MK-2	251,000	134,000
14,000	MK-2	259,000	142,000
15,000	MK-2	264,000	147,000
16,000	MK-2	270,000	153,000
17,000	MK-2	276,000	159,000
18,000	MK-2	282,000	165,000
19,000	MK-3	307,000	171,000
20,000	MK-3	313,000	177,000
21,000	MK-3	320,000	184,000
22,000	MK-3	327,000	191,000
23,000	MK-3	334,000	198,000
24,000	MK-3	342,000	206,000
25,000	MK-3	342,000	206,000
26,000	MK-3	350,000	214,000
27,000	MK-4	385,000	222,000

d1 mm	S	l1 mm	l2 mm
28,000	MK-4	385,000	222,000
29,000	MK-4	393,000	230,000
30,000	MK-4	393,000	230,000
32,000	MK-4	421,000	248,000
33,000	MK-4	421,000	248,000
34,000	MK-4	430,000	257,000
35,000	MK-4	430,000	257,000
40,000	MK-4	450,000	277,000

Punte con codolo conico Morse

Punte elicoidali lunghe con refrigerazione interna

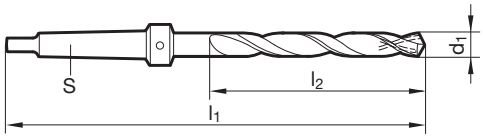
Catalogo n° 71550

V70-IK | WN | HSS-Co | trattati a vapore | 130° | h8 | R | MK

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 186

- Assott. del nocc. ≥ Ø 14,500
- spoglia sul cono tagliente
- raffreddamento mediante anello di adduzione, catalogo-Nr. 71560 (disponibile separatamente)



d1 mm	S	l1 mm	l2 mm
14,500	MK-2	297,000	147,000
15,000	MK-2	297,000	147,000
15,500	MK-2	303,000	153,000
16,000	MK-2	303,000	153,000
17,000	MK-2	309,000	159,000
18,000	MK-2	315,000	165,000

d1 mm	S	l1 mm	l2 mm
24,000	MK-3	374,000	206,000
24,500	MK-3	374,000	206,000
25,000	MK-3	374,000	206,000
26,000	MK-3	382,000	214,000
32,000	MK-4	461,000	248,000

Punte con codolo conico Morse

Punte elicoidali lunghe con refrigerazione interna

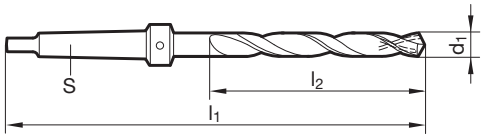
Catalogo n° 71553

V70-IK | WN | HSS-Co | trattati a vapore | 130° | h8 | R | MK

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 186

- Assott. del nocc. ≥ Ø 8,000
- spoglia sul cono tagliente
- raffreddamento mediante anello di adduzione, catalogo-Nr. 71560 (disponibile separatamente)



d1 mm	S	l1 mm	l2 mm
8,000	MK-2	250,000	100,000
8,500	MK-2	250,000	100,000
9,000	MK-2	257,000	107,000
9,500	MK-2	257,000	107,000
10,000	MK-2	266,000	116,000
10,500	MK-2	266,000	116,000
11,500	MK-2	275,000	125,000
12,000	MK-2	284,000	134,000
12,500	MK-2	284,000	134,000
13,000	MK-2	284,000	134,000
14,000	MK-2	292,000	142,000
19,500	MK-3	345,000	177,000

d1 mm	S	l1 mm	l2 mm
20,000	MK-3	345,000	177,000
20,500	MK-3	352,000	184,000
21,000	MK-3	352,000	184,000
21,500	MK-3	359,000	191,000
22,000	MK-3	359,000	191,000
23,000	MK-3	366,000	198,000
27,000	MK-4	435,000	222,000
27,500	MK-4	435,000	222,000
28,500	MK-4	443,000	230,000
29,000	MK-4	443,000	230,000
29,500	MK-4	443,000	230,000
31,500	MK-4	452,000	239,000

Punte con codolo conico Morse

Punta per fori prof. con tagl. a spirale extra lungo con raffr. int.

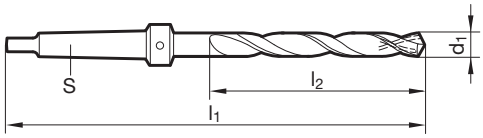
Catalogo n° 71565

V63-IK | WN | HSS-Co | trattati a vapore | 130° | h8 | R | MK

P	M	K	N	S	H
●	○	●	○	○	

Parametri di lav. ind. a pag. 188

- Assott. del nocc. ≥ Ø 14,500
- spoglia sul cono tagliente
- raffreddamento mediante anello di adduzione, catalogo-Nr. 71560 (disponibile separatamente)



d1 mm	S	l1 mm	l2 mm
14,500	MK-2	370,000	220,000
15,000	MK-2	370,000	220,000
15,480	MK-2	380,000	230,000
15,500	MK-2	380,000	230,000
16,000	MK-2	380,000	230,000
17,860	MK-2	395,000	245,000
18,000	MK-2	395,000	245,000
19,000	MK-2	395,000	245,000
19,840	MK-2	410,000	260,000
20,000	MK-2	410,000	260,000
21,430	MK-2	420,000	270,000
21,500	MK-2	420,000	270,000
22,000	MK-2	420,000	270,000
22,220	MK-2	420,000	270,000
22,500	MK-2	420,000	270,000
23,500	MK-3	438,000	270,000
23,810	MK-3	458,000	290,000
25,000	MK-3	458,000	290,000

d1 mm	S	l1 mm	l2 mm
25,500	MK-3	458,000	290,000
26,000	MK-3	458,000	290,000
27,780	MK-3	473,000	305,000
28,500	MK-3	473,000	305,000
28,570	MK-3	473,000	305,000
29,000	MK-3	473,000	305,000
29,370	MK-3	473,000	305,000
29,500	MK-3	473,000	305,000
30,000	MK-3	473,000	305,000
31,000	MK-3	488,000	320,000
31,500	MK-3	488,000	320,000

Punte con codolo conico Morse

Punta per fori prof. con tagl. a spirale extra lungo con raffr. int.

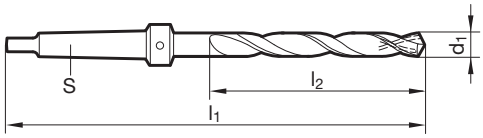
Catalogo n° 71567

V63-IK | WN | HSS-Co | trattati a vapore | 130° | h8 | R | MK

P	M	K	N	S	H
●	○	●	○	○	

Parametri di lav. ind. a pag. 188

- Assott. del nocc. ≥ Ø 8,000
- spoglia sul cono tagliente
- raffreddamento mediante anello di adduzione, catalogo-Nr. 71560 (disponibile separatamente)



d1 mm	S	l1 mm	l2 mm
8,000	MK-2	315,000	165,000
9,000	MK-2	325,000	175,000
9,500	MK-2	325,000	175,000
10,000	MK-2	335,000	185,000
10,320	MK-2	335,000	185,000
10,500	MK-2	335,000	185,000
10,720	MK-2	345,000	195,000
11,000	MK-2	345,000	195,000
11,110	MK-2	345,000	195,000
11,500	MK-2	345,000	195,000
11,510	MK-2	345,000	195,000
12,000	MK-2	355,000	205,000

d1 mm	S	l1 mm	l2 mm
12,500	MK-2	355,000	205,000
13,000	MK-2	355,000	205,000
13,100	MK-2	355,000	205,000
13,490	MK-2	370,000	220,000
14,000	MK-2	370,000	220,000

Punte con codolo conico Morse

Punta per fori prof. con tagl. a spirale extra lungo con raffr. int.

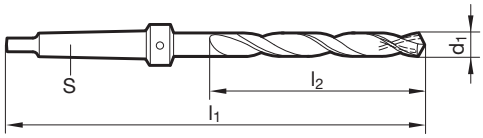
Catalogo n° 71566

V63-IK | WN | HSS-Co | trattati a vapore | 130° | h8 | R | MK

P	M	K	N	S	H
●	○	●	○	○	

Parametri di lav. ind. a pag. 188

- Assott. del nocc. ≥ Ø 14,500
- spoglia sul cono tagliente
- raffreddamento mediante anello di adduzione, catalogo-Nr. 71560 (disponibile separatamente)



d1 mm	S	l1 mm	l2 mm
14,500	MK-2	425,000	275,000
15,000	MK-2	425,000	275,000
15,500	MK-2	445,000	295,000
16,000	MK-2	445,000	295,000
17,500	MK-2	460,000	310,000
18,000	MK-2	460,000	310,000

d1 mm	S	l1 mm	l2 mm
23,500	MK-3	513,000	345,000
24,000	MK-3	533,000	365,000
25,000	MK-3	533,000	365,000
25,500	MK-3	533,000	365,000
27,000	MK-4	598,000	385,000
32,000	MK-4	623,000	410,000

Punte con codolo conico Morse

Punta per fori prof. con tagl. a spirale extra lungo con raffr. int.

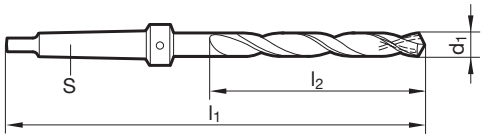
Catalogo n° 71568

V63-IK | WN | HSS-Co | trattati a vapore | 130° | h8 | R | MK

P	M	K	N	S	H
●	○	●	○	○	

Parametri di lav. ind. a pag. 188

- Assott. del nocc. ≥ Ø 8,000
- spoglia sul cono tagliente
- raffreddamento mediante anello di adduzione, catalogo-Nr. 71560 (disponibile separatamente)



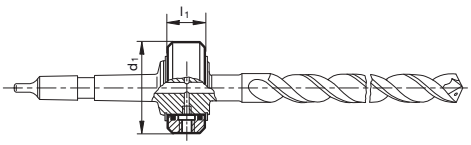
d1 mm	S	l1 mm	l2 mm
8,000	MK-2	360,000	210,000
8,500	MK-2	360,000	210,000
9,000	MK-2	370,000	220,000
10,000	MK-2	385,000	235,000
10,500	MK-2	385,000	235,000
11,000	MK-2	400,000	250,000
11,500	MK-2	400,000	250,000
13,000	MK-2	410,000	260,000
14,000	MK-2	425,000	275,000
19,000	MK-3	478,000	310,000
19,500	MK-3	493,000	325,000
21,000	MK-3	493,000	325,000

d1 mm	S	l1 mm	l2 mm
21,500	MK-3	513,000	345,000
28,000	MK-4	598,000	385,000
29,000	MK-4	598,000	385,000
29,500	MK-4	598,000	385,000
30,000	MK-4	598,000	385,000
31,000	MK-4	623,000	410,000
31,500	MK-4	623,000	410,000

Alimentatori per punte con fori di refrigerazione

WN

Catalogo n° 71560

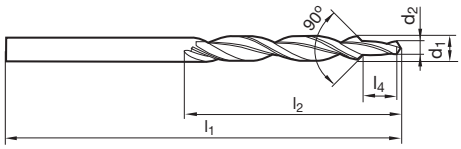


Grandezza	Codice	d1 mm	l1 mm
MK-2	**1,000**	58,000	24,000
MK-3	**2,000**	58,000	24,000
MK-4	**3,000**	80,000	28,000

Punte a gradino

Punte a gradino ad eliche indipendenti, cil.

Catalogo n° 71501



N	DIN 8374	HSS	trattati a vapore	118°	h8	R	Cyl

P	M	K	N	S	H
●		●			

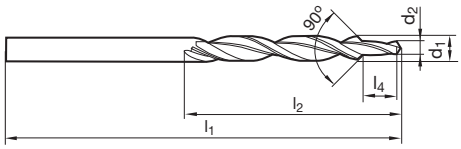
- Assott. del nocc. ≥ Ø 6,000
- spoglia sul cono tagliente
- per fori passanti a DIN EN 20273, serie fine
- per svasature per teste di viti 90°
- l'avanz. si basa sul diametro inferiore
- Vc si basa sul diametro maggiore

d1 mm	d2 mm	l1 mm	l2 mm	l4 mm	**Grandezza**
6,000	3,200	93,000	57,000	9,000	**M 3**
8,000	4,300	117,000	75,000	11,000	**M 4**
10,000	5,300	133,000	87,000	13,000	**M 5**
11,500	6,400	142,000	94,000	15,000	**M 6**
15,000	8,400	169,000	114,000	19,000	**M 8**
19,000	10,500	198,000	135,000	23,000	**M 10**

Punte a gradino

Punte a gradino ad eliche indipendenti, cil.

Catalogo n° 71503



N | DIN 8378 | HSS | trattati a vapore | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●			

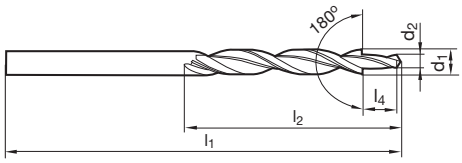
- Assott. del nocc. ≥ Ø 3,400
- spoglia sul cono tagliente
- per fori filettati secondo DIN 336
- per svasature a 90° corrispondenti a fori passanti secondo DIN EN 20273, serie media
- l'avanz. si basa sul diametro inferiore
- Vc si basa sul diametro maggiore

d1 mm	d2 mm	l1 mm	l2 mm	l4 mm	**Grandezza**
3,400	2,500	70,000	39,000	8,800	**M 3**
4,500	3,300	80,000	47,000	11,400	**M 4**
5,500	4,200	93,000	57,000	13,600	**M 5**
6,600	5,000	101,000	63,000	16,500	**M 6**
9,000	6,800	125,000	81,000	21,000	**M 8**
11,000	8,500	142,000	94,000	25,500	**M 10**
13,500	10,200	160,000	108,000	30,000	**M 12**

Punte a gradino

Punte a gradino ad eliche indipendenti, cil.

Catalogo n° 71500



N | DIN 8376 | HSS | trattati a vapore | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●			

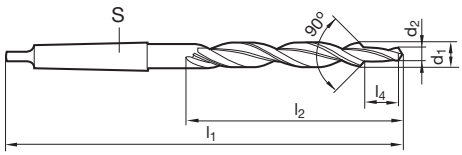
- Assott. del nocc. ≥ Ø 6,000
- spoglia sul cono tagliente
- per fori passanti a DIN EN 20273, serie media
- per svasature per teste di viti 180° secondo DIN 974-1, serie 1
- per viti secondo DIN 6912, 7984, 34821, DIN EN ISO 1207, 4762, 14579, 14580 e DIN 7513, 7516, 7500-1
- l'avanz. si basa sul diametro inferiore
- Vc si basa sul diametro maggiore

d1 mm	d2 mm	l1 mm	l2 mm	l4 mm	**Grandezza**
6,000	3,400	93,000	57,000	9,000	**M 3**
8,000	4,500	117,000	75,000	11,000	**M 4**
10,000	5,500	133,000	87,000	13,000	**M 5**
11,000	6,600	142,000	94,000	15,000	**M 6**
15,000	9,000	169,000	114,000	19,000	**M 8**
18,000	11,000	191,000	130,000	23,000	**M 10**

Punte a gradino

Punte a gradino ad eliche indipendenti, CM

Catalogo n° 71523



N | DIN 8379 | HSS | trattati a vapore | 118° | h8 | R | MK

P	M	K	N	S	H
●		●			

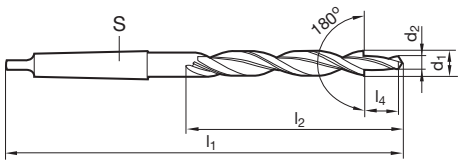
- Assott. del nocc. ≥ Ø 9,000
- spoglia sul cono tagliente
- per fori filettati secondo DIN 336
- per svasature a 90° corrispondenti a fori passanti secondo DIN EN 20273, serie media
- l'avanz. si basa sul diametro inferiore
- Vc si basa sul diametro maggiore

d1 **mm**	d2 mm	S	l1 mm	l2 mm	l4 mm	Grandezza
9,000	6,800	MK-1	162,000	81,000	21,000	M 8
11,000	8,500	MK-1	175,000	94,000	25,500	M 10
13,500	10,200	MK-1	189,000	108,000	30,000	M 12
15,500	12,000	MK-2	218,000	120,000	34,500	M 14
17,500	14,000	MK-2	228,000	130,000	38,500	M 16
20,000	15,500	MK-2	238,000	140,000	43,500	M 18
22,000	17,500	MK-2	248,000	150,000	47,500	M 20

Punte a gradino

Punte a gradino ad eliche indipendenti, CM

Catalogo n° 71520



N | DIN 8377 | HSS | trattati a vapore | 118° | h8 | R | MK

P	M	K	N	S	H
●		●			

- Assott. del nocc. ≥ Ø 11,000
- spoglia sul cono tagliente
- per fori passanti a DIN EN 20273, serie media
- per svasature per teste di viti 180° secondo DIN 974-1, serie 1
- per viti secondo DIN 6912, 7984, 34821, DIN EN ISO 1207, 4762, 14579, 14580 e DIN 7513, 7516, 7500-1
- l'avanz. si basa sul diametro inferiore
- Vc si basa sul diametro maggiore

d1 mm	d2 mm	S	l1 mm	l2 mm	l4 mm	Grandezza
11,000	6,600	MK-1	175,000	94,000	15,000	M 6
15,000	9,000	MK-2	212,000	114,000	19,000	M 8
18,000	11,000	MK-2	228,000	130,000	23,000	M 10
20,000	13,500	MK-2	238,000	140,000	27,000	M 12
24,000	15,500	MK-3	281,000	160,000	31,000	M 14
26,000	17,500	MK-3	286,000	165,000	35,000	M 16

Punte a centrare

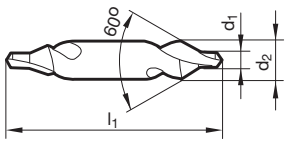
Punte a centrare senza piano

Catalogo n° 71600

N	DIN 333	HSS	lucido	118°	R	Cyl

P	M	K	N	S	H
●	●	●	●	○	

- Assott. del nocc. ≥ Ø 2,000
- spoglia sul cono tagliente
- per fori a centrare secondo DIN 332, foglio 1, forma A
- d1 ≤ 0,8 mm: 1 solo lato tagliente



d1 **mm**	d2 mm	l1 mm
0,500	3,150	25,000
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000
8,000	20,000	80,000
10,000	25,000	100,000
12,500	31,500	125,000

Punte a centrare

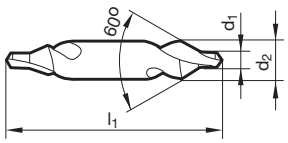
Punte a centrare senza piano

Catalogo n° 71601

N	DIN 333	HSS	lucido	118°	L	Cyl

P	M	K	N	S	H
●	●	●	●	○	

- Assott. del nocc. ≥ Ø 2,000
- spoglia sul cono tagliente
- per fori a centrare secondo DIN 332, foglio 1, forma A
- d1 ≤ 0,8 mm: 1 solo lato tagliente



d1 **mm**	d2 mm	l1 mm
0,500	3,150	25,000
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000

d1 **mm**	d2 mm	l1 mm
2,500	6,300	45,000
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000
8,000	20,000	80,000

Punte a centrare

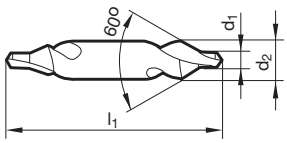
Punte a centrare senza piano

Catalogo n° 71602

N	DIN 333	HSS	luci-do	118°	R	Cyl

P	M	K	N	S	H
●	●	●	●	○	

- Assott. del nocc. ≥ Ø 2,000
- spoglia sul cono tagliente
- corretto posizionamento fra le contropunte
- per fori a centrare a DIN 332 parte 1, forma R
- d1 ≤ 0,8 mm: 1 solo lato tagliente



d1 **mm**	d2 mm	l1 mm
0,500	3,150	25,000
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000
8,000	20,000	80,000
10,000	25,000	100,000

Punte a centrare

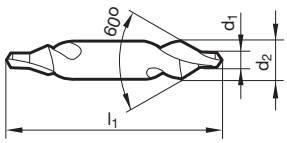
Punte a centrare senza piano

Catalogo n° 61602

N	DIN 333	HSS	TiN	118°	R	Cyl

P	M	K	N	S	H
●	●	●	●	●	

- Assott. del nocc. ≥ Ø 2,000
- spoglia sul cono tagliente
- corretto posizionamento fra le contropunte
- per fori a centrare a DIN 332 parte 1, forma R
- maggiore protezione contro l'usura
- d1 ≤ 0,8 mm: 1 solo lato tagliente



d1 **mm**	d2 mm	l1 mm
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000

d1 **mm**	d2 mm	l1 mm
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000

Punte a centrare

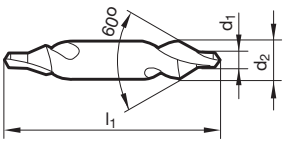
Punte a centrare senza piano

Catalogo n° 71605

N	DIN 333	HSS	lucido	118°	R

P	M	K	N	S	H
●	●	●	●	○	

- Assott. del nocc. ≥ Ø 2,000
- spoglia sul cono tagliente
- maggiore resistenza alla rottura grazie al rigonfiamento
- la cavità tra la svasatura e il foro serve da contenitore addizionale di lubrificante
- per fori a centrare secondo DIN 332, foglio 1, forma A



d1 **mm**	d2 mm	l1 mm
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000
3,150	8,000	50,000

d1 **mm**	d2 mm	l1 mm
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000

Punte a centrare

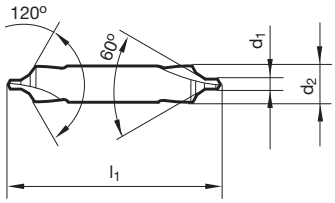
Punte a centrare senza piano

Catalogo n° 71604

N	DIN 333	HSS	luci-do	118°	R	Cyl

P	M	K	N	S	H
●	●	●	●	○	

- Assott. del nocc. ≥ Ø 2,000
- spoglia sul cono tagliente
- per fori a centrare secondo DIN 332, foglio 1, forma B
- con smusso di protezione 120°



d1 **mm**	d2 mm	l1 mm
1,000	4,000	35,500
1,250	5,000	40,000
1,600	6,300	45,000
2,000	8,000	50,000
2,500	10,000	56,000
3,150	11,200	60,000

d1 **mm**	d2 mm	l1 mm
4,000	14,000	67,000
5,000	18,000	75,000
6,300	20,000	80,000

Punte a centrare

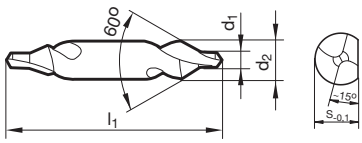
Punte a centrare con piano

Catalogo n° 71607

N	DIN 333	HSS	lucido	118°	R

P	M	K	N	S	H
●	●	●	●	○	

- Assott. del nocc. ≥ Ø 2,000
- spoglia sul cono tagliente
- per fori a centrare secondo DIN 332, foglio 1, forma A



d1 **mm**	d2 mm	l1 mm
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000

d1 **mm**	d2 mm	l1 mm
6,300	16,000	71,000

Punte a centrare

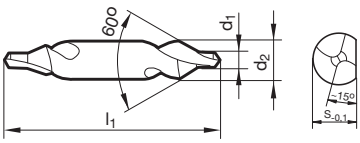
Punte a centrare con piano

Catalogo n° 71609

N	DIN 333	HSS	lucido	118°	R

P	M	K	N	S	H
●	●	●	●	○	

- Assott. del nocc. ≥ Ø 2,000
- spoglia sul cono tagliente
- corretto posizionamento fra le contropunte
- per fori a centrare a DIN 332 parte 1, forma R



d1 mm	d2 mm	l1 mm	**d1** mm	d2 mm	l1 mm
1,600	4,000	35,500	**6,300**	16,000	71,000
2,000	5,000	40,000	**8,000**	20,000	80,000
2,500	6,300	45,000			
3,150	8,000	50,000			
4,000	10,000	56,000			
5,000	12,500	63,000			

Allargatori

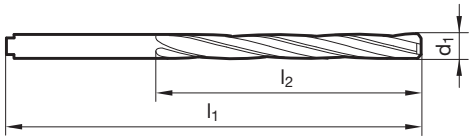
Allargatori cilindrici

Catalogo n° 72200

N | DIN 344 | HSS | trattati a vapore | 120° | h8 | R | Cyl

P	M	K	N	S	H
●		●			

- spoglia sul cono tagliente
- stabilità elevata
- con dente di trascinamento secondo DIN 1809
- per fori prefusi, precolati, preforati
- corregge la precisione di allineamento
- corregge la mancanza di rotondità
- finitura di superf. del foro migliorata
- ø imbocco < al foro da praticare
- considerare la quota “d0” come misura più piccola del foro pilota



d1 mm	d0 mm	l1 mm	l2 mm
4,800	3,5	108,000	74,000
5,000	3,5	108,000	74,000
5,800	4,2	116,000	80,000
6,000	4,2	116,000	80,000
6,800	4,9	133,000	93,000
7,000	4,9	133,000	93,000
7,800	5,6	142,000	100,000
8,000	5,6	142,000	100,000
8,800	6,3	151,000	107,000
9,000	6,3	151,000	107,000
9,800	7,0	162,000	116,000
10,000	7,0	162,000	116,000

d1 mm	d0 mm	l1 mm	l2 mm
10,750	7,7	173,000	125,000
11,000	7,7	173,000	125,000
11,750	8,4	184,000	134,000
12,000	8,4	184,000	134,000
12,750	9,1	184,000	134,000
13,000	9,1	184,000	134,000
13,750	9,8	194,000	142,000
14,750	10,5	202,000	147,000
16,000	11,2	211,000	153,000

Allargatori

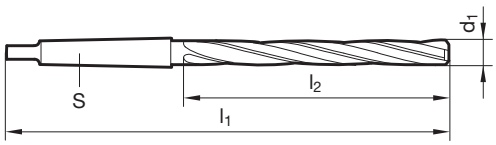
Allargatori con attacco cono morse

Catalogo n° 72210

N | DIN 343 | HSS | trattati a vapore | 120° | h8 | R | MK

P	M	K	N	S	H
●		●			

- spoglia sul cono tagliente
- stabilità elevata
- per fori prefusi, precolati, preforati
- corregge la precisione di allineamento
- corregge la mancanza di rotondità
- finitura di superf. del foro migliorata
- ø imbocco < al foro da praticare
- considerare la quota “d0” come misura più piccola del foro pilota



d1 mm	d0 mm	S	l1 mm	l2 mm
9,000	6,3	MK-1	162,000	81,000
9,800	7,0	MK-1	168,000	87,000
10,000	7,0	MK-1	168,000	87,000
11,750	8,4	MK-1	182,000	101,000
12,750	9,1	MK-1	182,000	101,000
13,750	9,8	MK-1	189,000	108,000
14,000	9,8	MK-1	189,000	108,000
14,750	10,5	MK-2	212,000	114,000
15,000	10,5	MK-2	212,000	114,000
15,750	11,2	MK-2	218,000	120,000
16,000	11,2	MK-2	218,000	120,000
16,750	11,9	MK-2	223,000	125,000
17,000	11,9	MK-2	223,000	125,000
17,750	12,6	MK-2	228,000	130,000
18,000	12,6	MK-2	228,000	130,000
18,700	13,3	MK-2	233,000	135,000
19,000	13,3	MK-2	233,000	135,000
19,700	14,0	MK-2	238,000	140,000
20,000	14,0	MK-2	238,000	140,000
21,000	14,6	MK-2	243,000	145,000
21,700	15,3	MK-2	248,000	150,000
22,000	15,3	MK-2	248,000	150,000
22,500	16,0	MK-2	253,000	155,000
22,700	16,0	MK-2	253,000	155,000

d1 mm	d0 mm	S	l1 mm	l2 mm
23,000	16,0	MK-2	253,000	155,000
23,700	16,6	MK-3	281,000	160,000
24,000	16,6	MK-3	281,000	160,000
24,700	17,3	MK-3	281,000	160,000
25,700	18,0	MK-3	286,000	165,000
26,000	18,0	MK-3	286,000	165,000
26,700	18,6	MK-3	291,000	170,000
27,700	19,3	MK-3	291,000	170,000
29,700	20,5	MK-3	296,000	175,000
31,600	22,0	MK-4	334,000	185,000
34,600	25,0	MK-4	339,000	190,000
38,000	26,5	MK-4	349,000	200,000
48,600	34,0	MK-4	369,000	220,000

UTENSILI PER FILETTARE

CODICI ISO

P	acciaio, acciaio legato in alta percentuale
M	acciaio inossidabile
K	ghisa grigia, ghisa sferoidale e ghisa malleabile
N	alluminio ed altri metalli non ferrosi
S	leghe speciali, superleghe e leghe di titanio
H	acciaio temprato e ghisa temprata

Nelle pagine successive, contenenti programma, trovate per ciascun utensile consigli sull'idoneità in base ai seguenti gruppi di impiego:
● Idoneità ottima
○ Idoneità limitata

LEGENDA DEI PITTOGRAMMI

MATERIALE TAGLIENTE: VHM (Int. in metallo duro), HSS, HSS-E, HSS-E-PM

TRATT. DI SUPERFICIE: lucido, nitrurado, tratt. a vapore, TiCN, Al-TiZrN, TiAlN, TiN, Al-TiN, Al-CrN

CLASSE DI TOLLERANZA: ISO2/6H, 6HX, ISO3/6G, 2B, 6GX, 6g

FORMA: B, C, D, E

DIREZIONE DI TAGLIO: R (a destra), L (a sinistra)

FORMA DEL CODOLO: HA

PROFONDITÀ: 1xD, 2xD

NORMA: DIN 371, DIN 376, DIN 374, DIN 371/376, ~DIN 371, ~DIN 376, ~DIN 371/376, ~DIN 374, DIN 5156, DIN 40432, DIN 2180, DIN 352, ~DIN 352, DIN 357, DIN 5157, DIN EN 22568, WN (Norma di fabricca)

TIPO: Produktiv Synchro, Produktiv N-X, Produktiv N, Intensiv Synchro, Intensiv N-X, Intensiv N, Produktiv HX, Produktiv HDX, N, Massiv N, Intensiv HX, Intensiv HDX, HCX, H, Produktiv H, H R15, Produktiv HD, Intensiv HD, GG, Produktiv W, Intensiv W, Durativ, VA, TMC SP, TM SP

La gamma dei nostri utensili per filettare

Gli utensili per filettare sono,insieme a punte,alesatori e frese, gli utensili di precisione più importanti della gamma STOCK. La varietà di design, insieme alle diverse tipologie di di filettatura, alle tolleranze ed agli standard DIN od in caso, utensili speciali, offrono una vasta scelta per risolvere i problemi di filettatura. La qualità del foro, la dimensione del pre foro, la rotondità, la lineareità e la rugosità della superficie hanno una rilevante influenza sui filetti prodotti.

Per andare sul sicuro e ottenere risultati migliori si consiglia di utilizzare le punte STOCK. Richiedi il nostro catalogo oppure contattaci per la scelta dell' utensile più adatto.

STOCK-
Utensili per filettare
maschi
maschi a rullare
maschi a mano
filiere
frese a filettare

STOCK-
Frese
HSS
HSS-E
HSS-E-PM
Metallo Duro

STOCK-
Filettature standard
Metrico,
Metrico fine,
UNC, UNF, BSW
G, PG, NPT

STOCK-
Tipi Standard
PRODUKTIV 
N, W, H, HD, HDX, HX, N-X e maschi Synchro con taglienti dritti con angolo d'elica per fori passanti.

INTENSIV 
Tipo N, W, H, HD, HDX, HX e Synchro Maschi a macchina Synchro con taglienti elicoidali da 10°, 15°, 25°, 40°, 45° e 50° per fori ciechi.

MASSIV 
Tipo N
Maschi per fori passanti per la applicazioni di foratura o punzonatura di lamiere.

DURATIV 
Tipo N
Maschi a rullare con o senza canali di lubrificazione.

STOCK-
Soluzioni
Produciamo utensili speciali per filettare come maschi, maschi a rullare, frese a filettare con o senza lubrificazione, per lavorazioni a secco o con lubrificazione minimale e per la lavorazione di materiali temprati. Per un migliore risultato gli utensili possono essere lucidi, vaporizzati, nitrurati o rivestiti con TiN, TiCN, TiAlN o MoS2 per una migliore lubrificazione.

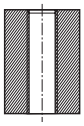
STOCK-
Codici Colore

- Acciai in genere fino a 800 N/mm²
- Materiali con resistenza alla trazione da 800 a 1200 N/mm²
- Acciai inossidabili e resistenti agli acidi
- Applicazioni universali > 1100 N/mm²
- Alluminio e sue leghe
- Ghisa

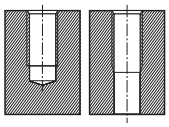
Spiegazione dei Simboli per la tipologia dei fori

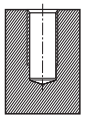
 = foro passante, corto

 = foro passante 1 x D

 = foro passante 2 x D

 = foro cieco 1 x D

 = foro cieco 2 x D

 = foro cieco

Maschi a macchina per filettatura metrica ISO

P	M	K	N	S	H	Tipo	Forma	classe di tolleranza	Materiale tagliente	Superficie	Norma	d1	Catalogo n°	Pagina
														
●	●	●	●	○		Produktiv Synchro	B	ISO2/6H	**HSS-E-PM**	TiCN	DIN 371	M 2 - M10	**53053**	362
														
●	●	●	●	○		Produktiv Synchro	B	ISO2/6H	**HSS-E-PM**	TiCN	DIN 376	M12 - M20	**53054**	363
														
●	●	●	○	●		Produktiv N-X	B	6HX	**HSS-E**	AlTiZrN	~DIN 371/~DIN 376	M 2 - M30	**53733**	364
														
●	○	○	○			Produktiv N	B	ISO2/6H	**HSS-E**	TiN	DIN 371	M 3 - M10	**63033**	365
														
●	○	○	○			Produktiv N	B	ISO2/6H	**HSS-E**	trattati a vapore	DIN 371	M 3 - M10	**73033**	366
														
●	○	○	○			Produktiv N	B	ISO2/6H	**HSS-E**	trattati a vapore	DIN 376	M12 - M24	**73038**	367
														
●	●	●	●	○		Intensiv Synchro	C	6HX	**HSS-E-PM**	TiCN	DIN 371	M 5 - M10	**53050**	368
														
●	●	●	●	○		Intensiv Synchro	C	6HX	**HSS-E-PM**	TiCN	DIN 376	M12 - M20	**53051**	369
														
●	●	●	○	○		Intensiv N-X	C	6HX	**HSS-E**	TiAlN	~DIN 371/~DIN 376	M 2 - M30	**53746**	370
														
●	○	○	○			Intensiv N	C	ISO2/6H	**HSS-E**	TiN	DIN 371	M 3 - M10	**63046**	371
														
●	○	○	○			Intensiv N	C	ISO2/6H	**HSS-E**	trattati a vapore	DIN 371	M 3 - M10	**73046**	372
														
●	○	○	○			Intensiv N	C	6HX	**HSS-E**	TiN	DIN 376	M12 - M20	**63048**	373
														
●	○	○	○			Intensiv N	C	ISO2/6H	**HSS-E**	trattati a vapore	DIN 376	M12 - M24	**73048**	374
														
●	○	○	○			Intensiv N	E	ISO2/6H	**HSS-E**	lucido	DIN 371	M 4 - M10	**73047**	375
														
		○		●	●	Produktiv HX	B	6HX	**HSS-E-PM**	AlTiN	DIN 371/ DIN 376	M 3 - M16	**53669**	376
														
	●			●		Intensiv HDX	B	6HX	**HSS-E-PM**	TiCN	DIN 371/ DIN 376	M 3 - M16	**53667**	377

Maschi a macchina per filettatura metrica ISO

P	M	K	N	S	H	Tipo	Forma	classe di tolleranza	Materiale tagliente	Superficie	Norma	d1	Catalogo n°	Pagina
														
●			○			N	C	ISO2/6H	**HSS-E**	lucido	DIN 371	M 1 - M10	**73185**	378
														
●			○			N	C	ISO2/6H	**HSS-E**	lucido	DIN 376	M 6 - M22	**73191**	379
														
●			○			Massiv N	B	ISO2/6H	**HSS-E**	lucido	DIN 371	M 2,3 - M10	**73126**	380
														
		○		●	●	Intensiv HX	C	6HX	**HSS-E-PM**	AlTiN	DIN 371/ DIN 376	M 3 - M16	**53668**	381
														
	●			●		Intensiv HDX	C	6HX	**HSS-E-PM**	TiCN	DIN 371/ DIN 376	M 3 - M16	**53666**	382
														
●		●	○	●	○	HCX	C	6HX	**HSS-E-PM**	TiCN	DIN 371	M 5 - M10	**53670**	383
														
			●			H	C	6HX	**Metallo duro**	lucido	DIN 371	M 3 - M10	**73011**	384
														
●			○			Produktiv N	B	ISO2/6H	**HSS-E**	TiN	DIN 371	M 3 - M10	**63133**	385
														
●			○			Produktiv N	B	ISO3/6G	**HSS-E**	lucido	DIN 371	M 2,5 - M10	**73132**	386
														
●			○			Produktiv N	B	ISO2/6H	**HSS-E**	lucido	DIN 371	M 2 - M10	**73133**	387
														
●			○			Produktiv N	B	ISO2/6H	**HSS-E**	TiN	DIN 376	M12 - M20	**63138**	388
														
●			○			Produktiv N	B	ISO2/6H	**HSS-E**	lucido	DIN 376	M 2 - M24	**73138**	389
														
●			○			Intensiv N	C	ISO2/6H	**HSS-E**	TiN	DIN 371	M 3 - M10	**63146**	390
														
●			○			Intensiv N	C	ISO3/6G	**HSS-E**	lucido	DIN 371	M 3 - M10	**73145**	391
														
●			○			Intensiv N	C	ISO2/6H	**HSS-E**	lucido	DIN 371	M 2 - M10	**73146**	392
														
●			○			Intensiv N	C	ISO2/6H	**HSS-E**	lucido	DIN 371	M 2 - M10	**73221**	393

Maschi a macchina per filettatura metrica ISO

P	M	K	N	S	H	Tipo	Forma	classe di tolleranza	Materiale tagliente	Superficie	Norma	d1	Catalogo n°	Pagina
														
•			○			Intensiv N	C	ISO2/6H	**HSS-E**	TiN	DIN 376	M12 - M20	**63148**	394
														
•			○			Intensiv N	C	ISO2/6H	**HSS-E**	lucido	DIN 376	M 3 - M30	**73148**	395
														
•			○			Intensiv N	C	ISO2/6H	**HSS-E**	lucido	DIN 376	M 3 - M20	**73227**	396
														
•		○				Produktiv H	B	ISO2/6H	**HSS-E-PM**	TiCN	DIN 371/ DIN 376	M 3 - M10	**53640**	397
														
•		○				Produktiv H	B	ISO2/6H	**HSS-E**	TiCN	DIN 371	M 2 - M10	**53642**	398
														
•		○				Produktiv H	B	ISO2/6H	**HSS-E-PM**	TiN	DIN 371	M 3 - M10	**63641**	399
														
•		○				Produktiv H	B	ISO2/6H	**HSS-E-PM**	lucido	DIN 371	M 3 - M10	**73640**	400
														
•		○				Produktiv H	B	ISO2/6H	**HSS-E**	nitrurato	DIN 371	M 2 - M10	**73642**	401
														
•		○				Produktiv H	B	ISO2/6H	**HSS-E-PM**	TiN	DIN 376	M12 - M20	**63643**	402
														
•		○				Produktiv H	B	ISO2/6H	**HSS-E**	nitrurato	DIN 376	M12 - M20	**73645**	403
														
•		○				Intensiv H	C	ISO2/6H	**HSS-E**	TiCN	DIN 371/ DIN 376	M 2 - M10	**53661**	404
														
•		○				Intensiv H	C	ISO2/6H	**HSS-E**	TiN	DIN 371	M 3 - M10	**63674**	405
														
•		○				H R15	C	ISO2/6H	**HSS-E-PM**	lucido	DIN 371	M 3 - M10	**73619**	406
														
•		○				Intensiv H	C	ISO2/6H	**HSS-E**	lucido	DIN 371	M 3 - M10	**73661**	407
														
•		○				Intensiv H	C	ISO2/6H	**HSS-E**	TiN	DIN 376	M12 - M20	**63675**	408
														
•		○				Intensiv H	C	ISO2/6H	**HSS-E**	lucido	DIN 376	M12 - M20	**73664**	409

Maschi a macchina per filettatura metrica ISO

P	M	K	N	S	H	Tipo	Forma	classe di tolleranza	Materiale tagliente	Superficie	Norma	d1	Catalogo n°	Pagina
														
•		○				H R15	C	ISO2/6H	**HSS-E-PM**	lucido	DIN 376	M12 - M20	**73666**	410
														
•					•	H	D	ISO2/6H	**Metallo duro**	TiCN	~DIN 371	M 3 - M12	**63010**	411
														
	•			○		Produktiv HD	B	ISO2/6H	**HSS-E-PM**	TiCN	DIN 371	M 3 - M10	**53641**	412
														
	•			○		Produktiv HD	B	ISO2/6H	**HSS-E**	TiN	DIN 371	M 3 - M10	**63176**	413
														
	•			○		Produktiv HD	B	ISO2/6H	**HSS-E**	trattati a vapore	DIN 371	M 3 - M10	**73176**	414
														
	•			○		Produktiv HD	B	ISO2/6H	**HSS-E-PM**	lucido	DIN 371	M 3 - M10	**73641**	415
														
	•			○		Produktiv HD	B	ISO2/6H	**HSS-E-PM**	TiCN	DIN 376	M12 - M16	**53643**	416
														
	•		○	○		Produktiv HD	B	6HX	**HSS-E**	TiN	DIN 376	M12 - M16	**63177**	417
														
	•			○		Produktiv HD	B	ISO2/6H	**HSS-E**	trattati a vapore	DIN 376	M12 - M20	**73177**	418
														
	•		○	○		Produktiv HD	B	ISO2/6H	**HSS-E-PM**	lucido	DIN 376	M12 - M22	**73643**	419
														
	•		○	○		Intensiv HD	C	ISO2/6H	**HSS-E-PM**	TiCN	DIN 371	M 3 - M10	**53662**	420
														
	•		○	○		Intensiv HD	C	ISO2/6H	**HSS-E-PM**	TiN	DIN 371	M 3 - M10	**63662**	421
														
	•			○		Intensiv HD	C	ISO2/6H	**HSS-E**	trattati a vapore	DIN 371	M 3 - M10	**73660**	422
														
	•		○	○		Intensiv HD	C	ISO2/6H	**HSS-E-PM**	lucido	DIN 371	M 3 - M10	**73662**	423
														
	•			○		Intensiv HD	C	ISO2/6H	**HSS-E-PM**	TiCN	DIN 376	M12 - M16	**53665**	424
														
	•				•	Intensiv HD	C	ISO2/6H	**HSS-E-PM**	TiN	DIN 376	M12 - M16	**63665**	425

Maschi a macchina per filettatura metrica ISO

P	M	K	N	S	H	Tipo	Forma	classe di tolleranza	Materiale tagliente	Superficie	Norma	d1	Catalogo n°	Pagina
														
	•			○		Intensiv HD	C	ISO2/6H	HSS-E	trattati a vapore	DIN 376	M12 - M20	**73659**	426
														
	•			○	○	Intensiv HD	C	ISO2/6H	HSS-E-PM	lucido	DIN 376	M12 - M24	**73665**	427
														
		•	○			GG	C	6HX	HSS-E	AlTiN	DIN 371	M 3 - M10	**63201**	428
														
		•				GG	C	6HX	HSS-E	nitrurato	DIN 371	M 3 - M10	**73201**	429
														
		•				GG	C	6HX	HSS-E	nitrurato	DIN 376	M12 - M20	**73211**	430
														
			•			Produktiv W	B	ISO2/6H	HSS-E	lucido	DIN 371	M 2 - M10	**73131**	431
														
			•			Produktiv W	B	ISO2/6H	HSS-E	lucido	DIN 376	M12 - M20	**73189**	432
														
			•			Intensiv W	C	ISO2/6H	HSS-E	lucido	DIN 371	M 2 - M10	**73156**	433
														
			•			Intensiv W	C	ISO2/6H	HSS-E	lucido	DIN 376	M12 - M20	**73136**	434

Maschi a macchina per fil. metr. ISO passo fine

P	M	K	N	S	H	Tipo	Forma	classe di tolleranza	Materiale tagliente	Superficie	Norma	d1	Catalogo n°	Pagina
														
•	•	•	○	○		Intensiv N-X	C	6HX	HSS-E	TiAlN	DIN 374	M 6 X0,75 - M24 X1,5	**53780**	435
														
•	•	•	○	○		Produktiv N-X	B	6HX	HSS-E	AlTiZrN	DIN 374	M 6 X0,75 - M24 X1,5	**53778**	436
														
•	•	•	•	○		Produktiv Synchro	B	ISO2/6H	HSS-E-PM	TiCN	DIN 374	M 8 X1 - M16 X1,5	**53055**	437
														
•	•	•	•	○		Intensiv Synchro	C	6HX	HSS-E-PM	TiCN	DIN 374	M 8 X1 - M20 X1,5	**53052**	438
														
•	○	○	○			Produktiv N	B	ISO2/6H	HSS-E	trattati a vapore	DIN 374	M 6 X0,75 - M20 X1,5	**73183**	439
														
•	○	○	○			Intensiv N	C	ISO2/6H	HSS-E	trattati a vapore	DIN 374	M 6 X0,75 - M20 X1,5	**73187**	440

Maschi a macchina per fil. metr. ISO passo fine

P	M	K	N	S	H	Tipo	Forma	classe di tolleranza	Materiale tagliente	Superficie	Norma	d1	Catalogo n°	Pagina
														
●			○			N	C	ISO2/6H	**HSS-E**	lucido	DIN 374	M 8 X0,75 - M24 X1,5	**73237**	441
														
●			○			Produktiv N	B	ISO2/6H	**HSS-E**	lucido	DIN 374	M 4 X0,5 - M36 X1,5	**73250**	442
														
●			○			Intensiv N	C	ISO2/6H	**HSS-E**	lucido	DIN 374	M 3 X0,35 - M30 X2	**73173**	443
														
●			○			Intensiv N	C	ISO2/6H	**HSS-E**	TiN	DIN 374	M 8 X1 - M20 X1,5	**63173**	444
														
●		○				Produktiv H	B	ISO2/6H	**HSS-E**	nitrurato	DIN 374	M 3 X0,35 - M22 X1,5	**73646**	445
														
	●			○		Produktiv HD	B	ISO2/6H	**HSS-E**	trattati a vapore	DIN 374	M 5 X0,5 - M20 X1,5	**73178**	446
														
	●			○		Intensiv HD	C	ISO2/6H	**HSS-E**	trattati a vapore	DIN 374	M 8 X1 - M20 X1,5	**73180**	447
														
		●				GG	C	6HX	**HSS-E**	nitrurato	DIN 374	M 8 X1 - M20 X1,5	**73194**	448

Maschi a macchina per filettatura UNC

P	M	K	N	S	H	Tipo	Forma	classe di tolleranza	Materiale tagliente	Superficie	Norma	d1	Catalogo n°	Pagina
														
●	○	○	○			Produktiv N	B	2B	**HSS-E**	trattati a vapore	~DIN 371	4 -40 - 3/8 -16	**73308**	449
														
●	○	○	○			Produktiv N	B	2B	**HSS-E**	trattati a vapore	~DIN 376	1/2 -13 - 3/4 -10	**73309**	450
														
●	○	○	○			Intensiv N	C	2B	**HSS-E**	trattati a vapore	~DIN 371	4 -40 - 3/8 -16	**73322**	451
														
●	○	○	○			Intensiv N	C	2B	**HSS-E**	trattati a vapore	~DIN 376	1/2 -13 - 3/4 -10	**73323**	452
														
	●			○		Produktiv HD	B	2B	**HSS-E**	trattati a vapore	~DIN 371	4 -40 - 3/8 -16	**73297**	453
														
	●			○		Produktiv HD	B	2B	**HSS-E**	trattati a vapore	~DIN 376	1/2 -13 - 1 - 8	**73298**	454
														
	●			○		Intensiv HD	C	2B	**HSS-E**	trattati a vapore	~DIN 371	4 -40 - 3/8 -16	**73304**	455

P	M	K	N	S	H	Tipo	Forma	classe di tolleranza	Materiale tagliente	Superficie	Norma	d1	Catalogo n°	Pagina

Maschi a macchina per filettatura UNC

	●			○		Intensiv HD	C	2B	HSS-E	trattati a vapore	~DIN 376	1/2 -13 - 3/4 -10	**73305**	456

		●				GG	C	2B	HSS-E	nitrurato	~DIN 371	8 -32 - 3/8 -16	**73326**	457

		●				GG	C	2B	HSS-E	nitrurato	~DIN 376	1/2 -13 - 1 - 8	**73327**	458

Maschi a macchina per filettatura UNF

●	○	○	○			Produktiv N	B	2B	HSS-E	trattati a vapore	~DIN 374	10 -32 - 5/8 -18	**73310**	459

●	○	○	○			Intensiv N	C	2B	HSS-E	trattati a vapore	~DIN 374	10 -32 - 5/8 -18	**73324**	460

	●			○		Produktiv HD	B	2B	HSS-E	trattati a vapore	~DIN 374	10 -32 - 5/8 -18	**73299**	461

	●			○		Intensiv HD	C	2B	HSS-E	trattati a vapore	~DIN 374	10 -32 - 3/4 -16	**73306**	462

Maschi a macchina per filettatura NPT

○	●	○		○		VA	C		HSS-E	trattati a vapore	Norma di fab.	1/8 - 3/4	**73293**	463

Maschi a macchina per filettatura Whitworth BSP

●	○	○	○			Produktiv N	B		HSS-E	trattati a vapore	DIN 5156	G 1/8 - G1	**73321**	464

●	○	○	○			Intensiv N	C		HSS-E	trattati a vapore	DIN 5156	G 1/8 - G1	**73325**	465

●	●	●	○	○		Intensiv N-X	C	X	HSS-E	TiAlN	DIN 5156	G 1/16 - G1	**53788**	466

●			○			Intensiv N	C		HSS-E	lucido	DIN 5156	G 1/8 - G1 1/2	**73286**	467

	●			○		Produktiv HD	B		HSS-E	trattati a vapore	DIN 5156	G 1/8 - G1	**73300**	468

P	M	K	N	S	H	Tipo	Forma	classe di tolleranza	Materiale tagliente	Superficie	Norma	d1	Catalogo n°	Pagina
Maschi a macchina per filettatura Whitworth BSP														
														
	●			○		Intensiv HD	C		HSS-E	trattati a vapore	DIN 5156	G 1/8 - G1	**73288**	469
														
		●				GG	C		HSS-E	nitrurato	DIN 5156	G 1/8 - G1	**73345**	470
														
●	●	●	○	○		Produktiv N-X	B	X	HSS-E	AlTiZrN	DIN 5156	G 1/16 - G1	**53787**	471
Maschi a macchina per filettatura Pg														
														
●		○	○			N	B		HSS-E	lucido	DIN 40432	PG 7 - PG 16	**73296**	472
Maschi corti per filettatura NPT														
														
●		○	○			N	C		HSS-E	lucido	Norma di fab.	1/16 - 1	**73295**	473
Maschi a macchina a rullare con canalini di lubr. per fil. metrica ISO														
														
●	●		●			Durativ	C	6HX	HSS-E	lucido	~DIN 371	M 3 - M10	**73120**	474
														
●	●		●			Durativ	C	6HX	HSS-E	TiN	~DIN 371	M 3 - M10	**63120**	475
														
●	●		●			Durativ	C	6GX	HSS-E	TiN	~DIN 371	M 3 - M10	**63119**	476
														
●	●		●			Durativ	C	6HX	HSS-E	TiN	~DIN 376	M12 - M16	**63122**	477
														
●	●		●			Durativ	C	6HX	HSS-E-PM	AlCrN	~DIN 371	M 3 - M10	**53620**	478
														
●	●		●			Durativ	C	6GX	HSS-E-PM	AlCrN	~DIN 371	M 3 - M10	**53621**	479
														
●	●		●			Durativ	C	6HX	HSS-E-PM	AlCrN	~DIN 376	M12 - M20	**53622**	480

P	M	K	N	S	H	Tipo	Forma	classe di tolleranza	Materiale tagliente	Superficie	Norma	d1	Catalogo n°	Pagina

Maschi a rullare forati e c.canalini di lubr. per fil. metrica ISO

●	●		●			Durativ	C	6HX	**Metallo duro**	TiCN	~DIN 371	M 3 - M10	**63013**	481

Maschi a macchina a rullare senza canalini di lub. per fil. metrica ISO

●	●		●			Durativ	C	6HX	**HSS-E**	lucido	DIN 371	M 2 - M10	**73121**	482

●	●		●			Durativ	C	6HX	**HSS-E**	TiN	DIN 371	M 2 - M10	**63121**	483

●	●		●			Durativ	C	6HX	**HSS-E**	TiN	~DIN 376	M12 - M20	**63123**	484

Frese a filettare con fase di svasatura per filettatura metrica ISO

●	●	●	●	●		TMC SP			**Metallo duro**	lucido	Norma di fab.	M 3 - M20	**73810**	485

●	●	●	●	●	○	TMC SP			**Metallo duro**	TiCN	Norma di fab.	M 3 - M20	**53810**	486

Frese a filettare con fase di svasatura per fil. metr. ISO passo fine

●	●	●	●	●	○	TMC SP			**Metallo duro**	TiCN	Norma di fab.	M 4 X0,5 - M16 X1,5	**53820**	487

●	●	●	●	●		TMC SP			**Metallo duro**	lucido	Norma di fab.	M 4 X0,5 - M16 X1,5	**73820**	488

Frese a filettare senza fase di svasatura per filettatura metrica ISO

●	●	●	●	●		TM SP			**Metallo duro**	lucido	Norma di fab.	M 6 - M20 X1,5	**73830**	489

●	●	●	●	●	○	TM SP			**Metallo duro**	TiCN	Norma di fab.	M 6 - M20 X1,5	**53830**	490

P	M	K	N	S	H	Tipo	Forma	classe di tolleranza	Materiale tagliente	Superficie	Norma	d1	Catalogo n°	Pagina

Serie du maschi a mano per filettature metriche ISO destri

●	○	●	●			N	A/D/C	ISO2/6H	**HSS**	lucido	DIN 352	M 1 - M24	**73531**	491

Serie di maschi a mano per filettature metriche ISO sinistri

●	○	●	●			N	A/D/C	ISO2/6H	**HSS**	lucido	DIN 352	M 4 - M16	**73532**	492

Maschio a mano per filettatura metrica fine ISO, kit

●	○	●	●			N	D/C	ISO2/6H	**HSS**	lucido	DIN 2181	M 5 X0,5 - M18 X1,5	**73521**	493

Maschio a macchina per filettatura UNC, kit

●	○	●	●			N	A/D/C	2B	**HSS**	lucido	~DIN 352	4 -40 - 3/4 -10	**73535**	494

Maschio a macchina per filettatura BSW, kit

●	○	●	●			N	A/D/C		**HSS**	lucido	~DIN 352	W 1/8 - W 3/4	**73534**	495

P	M	K	N	S	H	Tipo	Forma	classe di tolleranza	Materiale tagliente	Superficie	Norma	d1	Catalogo n°	Pagina

Maschio a mano per filettatura gas, kit

●	○	●	●			N	D/C		HSS	lucido	DIN 5157	G 1/8 - G 1/2	**73522**	496

Utensili combinati per fil. metrica ISO

●	○	●	●			N	D	ISO2/6H	HSS-E	lucido	Norma di fab.	M 3 - M12	**73248**	497

Maschi a macchina per dadi per fil. metrica ISO

●	○	●	●			N		ISO2/6H	HSS-E	lucido	DIN 357	M 3 - M18	**73243**	498

Filiere per filettatura metrica ISO

●	○		●				B	6h	HSS	lucido	DIN EN 22568	M 1 - M30	**73400**	499

●		○	●				B	6g	HSS	lucido	DIN EN 22568	M 3 - M18	**73410**	500

●	●		●				B	6g	HSS-E	nitrurato	DIN EN 22568	M 2,5 - M20	**73413**	501

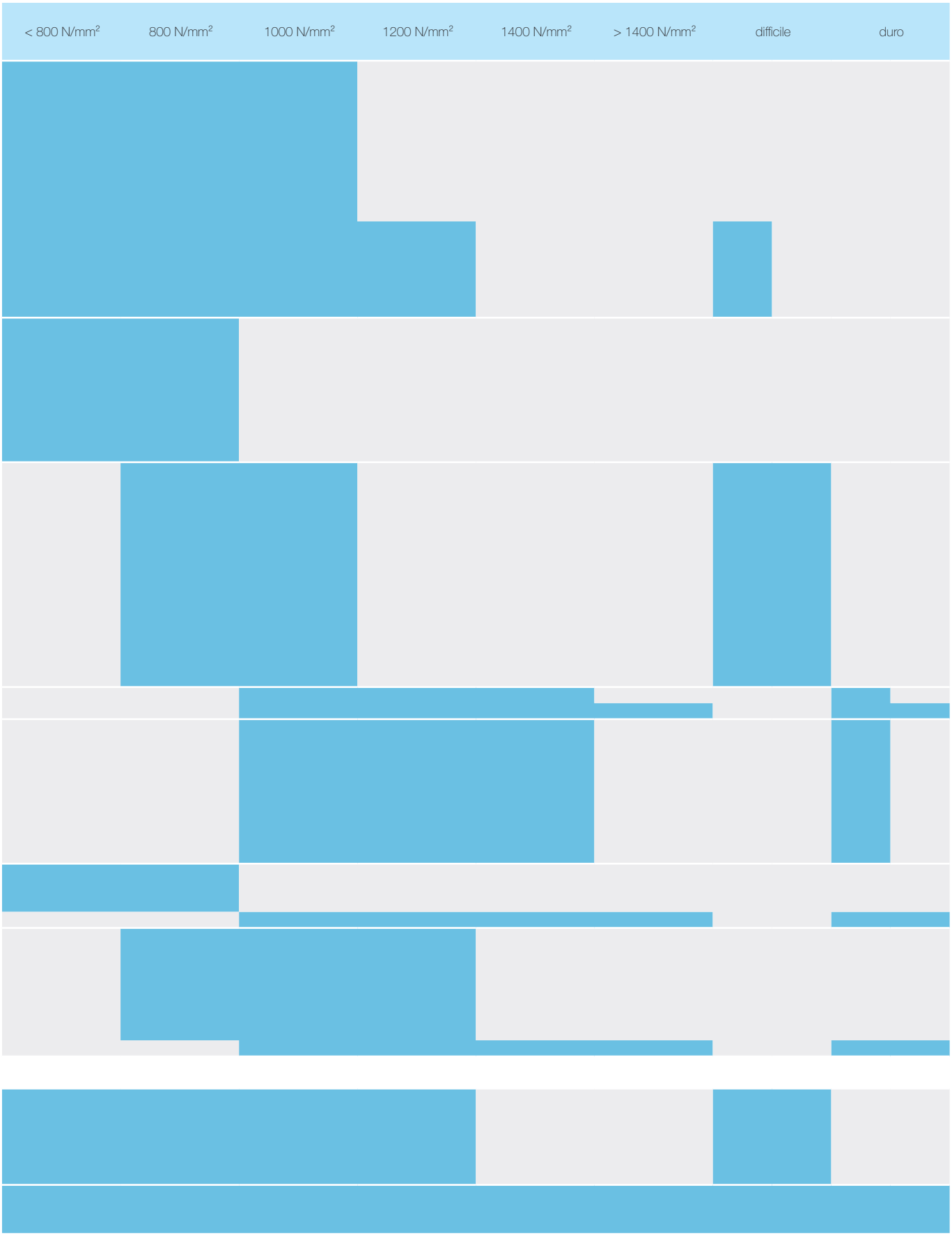
Applicazione

Per materiale

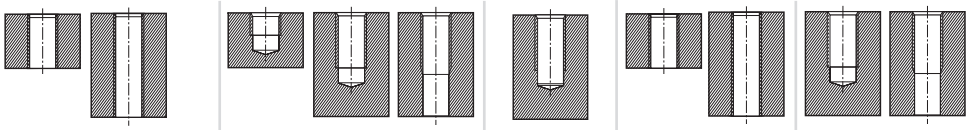
Colore anello	Catalogo n° Produktiv	Catalogo n° Intensiv	materiali non ferrosi, alluminio	acciai	ghise	acciai indossidabili e resistenti agli acidi	nichel e leghe di titanio	acciai temprati
verde	73033	73046	●	●	●	●	●	●
	73038	73048	●	●	●	●	●	●
	73183	73187	●	●	●	●	●	●
	73308	73322	●	●	●	●	●	●
	73309	73323	●	●	●	●	●	●
	73310	73324	●	●	●	●	●	●
	73321	73325	●	●	●	●	●	●
	63033	63046	●	●	●	●	●	●
		63048	●	●	●	●	●	●
		73047	●	●	●	●	●	●
verde Synchro	53733	53746	●	●	●	●	●	●
	53778	53780	●	●	●	●	●	●
	53787	53788	●	●	●	●	●	●
	53053	53050	●	●	●	●	●	●
	53054	53051	●	●	●	●	●	●
	53055	53052	●	●	●	●	●	●
giallo	73133	73146	○	●	○	○	○	○
	73132	73145	○	●	○	○	○	○
	73138	73148	○	●	○	○	○	○
	73250	73173	○	●	○	○	○	○
		73227	○	●	○	○	○	○
		73286	○	●	○	○	○	○
	63133	63146	○	●	○	○	○	○
	63138	63148	○	●	○	○	○	○
		63173	○	●	○	○	○	○
blu	73176	73660	○	○	○	●	○	○
	73177	73659	○	○	○	●	○	○
	73178	73180	○	○	○	●	○	○
	73297	73304	○	○	○	●	○	○
	73298	73305	○	○	○	●	○	○
	73299	73306	○	○	○	●	○	○
	73300	73288	○	○	○	●	○	○
	63176	73662	○	○	○	●	○	○
	63177	73665	○	○	○	●	○	○
	73641	63662	○	○	○	●	○	○
	73643	63665	○	○	○	●	○	○
		73293	○	○	○	●	○	○
	53641	53662	○	○	○	●	○	○
	53643	53665	○	○	○	●	○	○
ohne Ring	53667	53666	○	○	○	○	●	○
	53669	53668	○	○	○	○	●	○
rosso	73642	53661	○	●	○	○	○	○
	73645	73619	○	●	○	○	○	○
	73646	73661	○	●	○	○	○	○
	53642	73664	○	●	○	○	○	○
	73640	73666	○	●	○	○	○	○
	63641	63010	○	●	○	○	○	○
	63643	63674	○	●	○	○	○	○
	53640	63675	○	●	○	○	○	○
	53670	53670	○	●	○	○	○	○
nero	73131	73156	●	○	○	○	○	○
	73189	73136	●	○	○	○	○	○
	73011	73011	●	○	○	○	○	○
	53670	53670	●	○	○	○	○	○
blanco	73201	73201	○	○	●	○	○	○
	73211	73211	○	○	●	○	○	○
	73194	73194	○	○	●	○	○	○
	73326	73326	○	○	●	○	○	○
	73327	73327	○	○	●	○	○	○
	73345	73345	○	○	●	○	○	○
	63201	63201	○	○	●	○	○	○
	53670	53670	○	○	●	○	○	○
	per fori passanti e ciechi							
Filettature Rullate	73121	63122	●	●	○	●	○	○
	63121	53620	●	●	○	●	○	○
	63123	53621	●	●	○	●	○	○
	73120	53622	●	●	○	●	○	○
	63120	63013	●	●	○	●	○	○
	63119		●	●	○	●	○	○
Filettatura con frese a filettare	73810	53820	●	●	●	●	●	●
	73820	73830	●	●	●	●	●	●
	53810	53830	●	●	●	●	●	●

● ottimale ○ adatto bene

Per resistenza alla trazione



Campi d‘applicazione per maschi

Esempi di materiale	per l‘applicazione universale in materiale <1100 N/mm², p. e. : acciaio da costruzione, acciai automatici acciai temprati, acciai da bonifica acciai nitrurati ghisa sferoidale					per lavorazione Synchro per l‘applicazione universale in materiale fino a 1200 N/mm²	
Tipo di foro							
Mat. tagliente	HSS-E					HSS-E-PM	HSS-E-PM
Tipo	Produktiv N		Intensiv N		Intensiv N	Produktiv-Synchro	Intensiv-Synchro
Forma	B		C		E	B	C
Tratt. di superficie	vap.	TiN	vap.	TiN	lucido	TiCN	TiCN
v_c m/min	**≤ 15**	**≤ 20**	**≤ 15**	**≤ 20**	**≤ 15**	**≤ 20**	**≤ 20**

Tipo di filettatura	Dimensioni a DIN 2184-1	Tolleranza	Catalogo n°/Diametro/Pagina						
M	**DIN 371**	**ISO 2 6H**	73033 M3 - M10 366	63033 M3 - M10 365	73046 M3 - M10 372	63046 M3 - M10 371	73047 M4 - M10 375	53053 M2 - M10 362	
		6HX							53050 M5 - M10 368
	DIN 376	**ISO 2 6H**	73038 M12 - M24 367		73048 M12 - M24 374	63048 M12 - M20 373		53054 M12 - M20 363	
		6HX							53051 M12 - M20 369
MF	**DIN 374**	**ISO 2 6H**	73183 M6x0,75 - M20x1,5 439		73187 M6x0,75 - M20x1,5 440			53055 M8x1 - M16x1,5 437	
		6HX							53052 M8x1 - M20x1,5 438
UNC	**DIN ~ 371**	**2B**	73308 Nr.4-40 - 3/8-16 449		73322 Nr.4-40 - 3/8-16 451				
	DIN ~ 376	**2B**	73309 1/2-13 - 3/4-10 450		73323 1/2-13 - 3/4-10 452				
UNF	**DIN ~ 374**	**2B**	73310 Nr.10-32 - 5/8-18 459		73324 Nr.10-32 - 5/8-18 460				
G	**DIN 5156**	**–**	73321 G1/8 - G1 464		73325 G1/8 - G1 465				

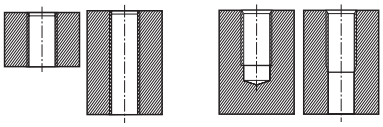
STOCK ProduktivN-X

Maschi per foro passante, imbocco B
HSS-E, TiAlN.

STOCK IntensivN-X

Maschi per foro cieco, imbocco C
elica a 45°, HSS-E, TiAlN.

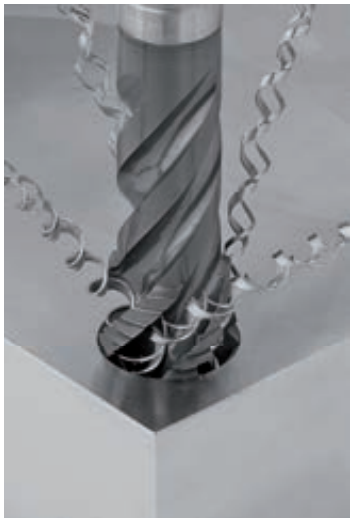
applicazioni universali
per acciai fino a 1300 N/mm²
incl. inossidabile e resistente agli acidi, ghisa, metalli non ferrosi

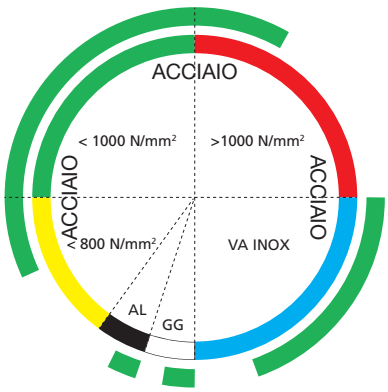


HSS-E	HSS-E
ProduktivN-X	IntensivN-X
B	C
AlTiZrN	TiAlN
≤ 20	**≤ 20**
Catalogo n°/Diametro/Pagina	
53733 M2 - M10 364	53746 M2 - M10 370
53733 M12 - M30 364	53746 M12 - M30 370
53778 MF 6x0,75 - MF 24x1,5 436	53780 MF 6x0,75 - MF 24x1,5 435
53787 G1/16 - G1 471	53788 G1/16 - G1 466

Un maschio universale per la produzine di filettature interne in quasi tutte le applicazioni. Per la lavorazione di acciaio al carbonio, temprato, bonificato, inos-sidabile e resistente agli acidi ma anche di ghisa e vari metalli non ferrosi in un range di resistenza alla trazione tra < 600 N/mm² e 1300 N/m². Efficiente evacuazione del truciolo, miglior vita utensile e preci-sione nelle filettature prodotte.

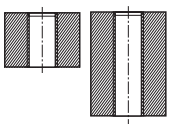
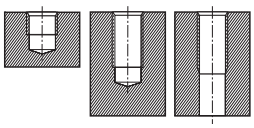
L' innovativa geometria del tagliente, il rivestimento TiAlN anti-usura e le corrette tolleranze producono filettature di alta qualità. La produzione di filettature con tolleranza 6HX, viene ottenuta in modo più economico ed efficiente grazie all' incremento delle performance, per una più vasta, affidabile ed universale applicazione.





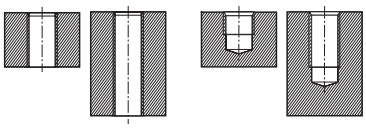
Campi d'applicazione

Campi d‘applicazione per maschi

Esempi di materiale	per acciaio inossidabile e resistente e acido p. e. : acciai solforati acciai austenitici acciai martensitici acciai ferritici				per acciaio inossidabile e resistente e acido p. e. : acciai solforati acciai austenitici acciai martensitici acciai ferritici			
Tipo di foro								
Mat. tagliente	HSS-E		HSS-E-PM		HSS-E	HSS-E-PM		
Tipo	Produktiv HD				Intensiv HD			
Forma	B				C			
Tratt. di superficie	vap.	TiN	lucido	TiCN	vap.	lucido	TiCN	TiN
v_c m/min	≤ 15	≤ 20	≤ 15	≤ 20	≤ 15	≤ 15	≤ 20	≤ 20

Tipo di filettatura	Dimensioni a DIN 2184-1	Tolleranza	Catalogo n°/Diametro/Pagina							
M	DIN 371	ISO 2 6H	73176 M3 - M10 414	63176 M3 - M10 413	73641 M3 - M10 415	53641 M3 - M10 412	73660 M3 - M10 422	73662 M3 - M10 423	53662 M3 - M10 420	63662 M3 - M10 421
		6HX								
	DIN 376	ISO 2 6H	73177 M12 - M20 418	63177 M12 - M16 417	73643 M12 - M22 419	53643 M12 - M16 416	73659 M12 - M20 426	73665 M12 - M24 427	53665 M12 - M16 424	63665 M12 - M16 425
		6HX								
MF	DIN 374	ISO 2 6H	73178 M5x0,5 - M20x1,5 446				73180 M8x1 - M20x1,5 447			
UNC	DIN ~ 371	2B	73297 Nr.4-40 - 3/8-16 453				73304 Nr.4-40 - 3/8-16 455			
	DIN ~ 376	2B	73298 1/2-13 - 1-8 454				73305 1/2-13 - 3/4-10 456			
UNF	DIN ~ 374	2B	73299 Nr.10-32- 5/8-18 461				73306 Nr.10-32- 3/4-16 462			
G	DIN 5156	–	73300 G1/8 - G1 468				73288 G1/8 - G1 469			
NPT	a norma	–	73293 1/8 - 3/4 463							

per titanio e leghe di titanio



HSS-E-PM	
Produktiv HDX	Intensiv HDX
B	C
TiCN	TiCN
≤ 20	**≤ 20**
Catalogo n°/Diametro/Pagina	
53667 M3 - M10 377	53666 M3 - M10 382
53667 M12 - M16 377	53666 M12 - M16 382

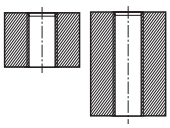
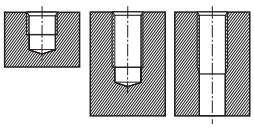
Stabili su materiali difficili da lavorare.

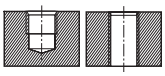
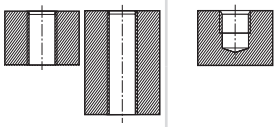
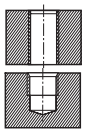
Specialmente affidabile per lavorazioni di titanio e leghe di titanio. I maschi HDX completano la nostra gamma di maschi HD.

Vantaggi:

- alta qualità di filetto
- ottimizzata evacuazione del truciolo
- non incolla
- bassa usura
- lunga vita dell'utensile
- massima affidabilità di processo

Campi d'applicazione per maschi

Esempi di materiale			per acciai ad alta resistenza ≥ 1100…1400 N/mm², p. e. : acciai da bonifica acciai per utensili legati a freddo acciaio rapido					per acciai ad alta resistenza ≥ 1100…1400 N/mm², p. e. : acciai da bonifica acciai per utensili legati a freddo acciaio rapido			
Tipo di foro											
Mat. tagliente			HSS-E		HSS-E-PM			HSS-E			HSS-E-PM
Tipo			Produktiv H					Intensiv H			HR 15
Forma			B					C			C
Tratt. di superficie			nitrurato	TiCN	lucido	TiN	TiCN	lucido	TiCN	TiN	lucido
v_c m/min			**≤ 15**	**≤ 20**	**≤ 15**	**≤ 20**	**≤ 20**	**≤ 15**	**≤ 20**	**≤ 20**	**≤ 15**
Tipo di filettatura	Dimensioni a DIN 2184-1	Tolleranza	**Catalogo n°/Diametro/Pagina**								
M	**DIN 371**	**ISO 2 6H**	73642 M2 - M10 401	53642 M2 - M10 398	73640 M3 - M10 400	63641 M3 - M10 399	53640 M3 - M10 397	73661 M3 - M10 407	53661 M2 - M10 404	63674 M3 - M10 405	73619 M3 - M10 406
		6HX									
	DIN 376	**ISO 2 6H**	73645 M12 - M20 403			63643 M12 - M20 402		73664 M12 - M20 409		63675 M12 - M20 408	73666 M12 - M20 410
		6HX					53640 M12 - M16 397		53661 M12 - M16 404		
	a norma	**ISO 2 6H**									
MF	**DIN 374**	**ISO 2 6H**	73646 M3x0,35 - M22x1,5 445								
UNC	**DIN ~ 371**	**2B**									
	DIN ~ 376	**2B**									
UNF	**DIN ~ 374**	**2B**									
G	**DIN 5156**	**–**									

per materiale ad alta resistenza ≥ 1400 N/mm²	per leghe speciale ad alta resistenza ≥ 1400 N/mm², p. e. : Inconel		per acciai ad alta resistenza 54-62HRC
			
HSS-E-PM	HSS-E-PM		M.D.I.
HCX	Produktiv HX	Intensiv HX	H
C	B	B	D
TiCN	AlTiN	AlTiN	TiCN
≤ 20	**≤ 20**	**≤ 20**	**≤ 2**
Catalogo n°/Diametro/Pagina			
53670 M5 - M10 383	53669 M3 - M10 376	53668 M3 - M10 381	
	53669 M12 - M16 376	53668 M12 - M16 381	
			63010 M3 - M12 411

In casi difficili.

Con i maschi di tipo HX e HCX STOCK vengono offerte soluzioni speciali per la lavorazione di materiali con alta resistenza alla trazione. Il rivestimento speciale permette una miglior resistenza all'usura nel caso di lavorazioni in condizioni difficili.

Applicazioni **HX**:

- Inconel
- Hastelloy
- Waspalloy
- Leghe di nickel

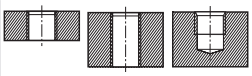
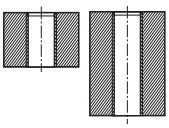
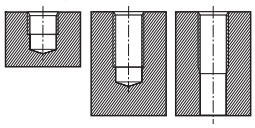
Applicazioni **HCX**:

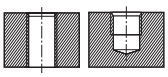
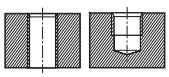
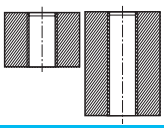
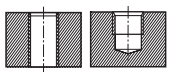
- acciai per utensili
- tutti gli acciai trattabili a caldo
- acciai ad alta velocità
- ghisa lamellare
- ghisa sferoidale
- bronzi duri
- materiali duri speciali
- Ampco >21

Vantaggi:

- maschiatura affidabile
- lunga vita dell'utensile
- elevata precisione

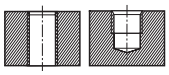
Campi d‘applicazione per maschi

Esempi di materiale		per acciai generici ≤ 800 N/mm², e metalli non ferrosi	per acciai generici ≤ 800 N/mm², p. e.: acciaio da costruzione acciai automatici acciai temprati acciai da bonifica		per acciai generici ≤ 800 N/mm², p. e.: acciaio da costruzione acciai automatici acciai temprati acciai da bonifica		per acciai generici ≤ 800 N/mm², e metalli non ferrosi	per acciai generici ≤ 800 N/mm², p. e.: acciaio da costruzione acciai automatici acciai temprati acciai da bonifica	
Tipo di foro									
Mat. tagliente		HSS-E							
Tipo		Massiv N	N		Produktiv N		Intensiv N		
Forma		B	C		B		C		
Tratt. di superficie		lucido	lucido		lucido	TiN	lucido	lucido	TiN
v_c m/min		**≤ 15**	**≤ 15**		**≤ 15**	**≤ 20**	**≤ 15**	**≤ 15**	**≤ 20**
Tipo di filettatura	Dimensioni a DIN 2184-1	Tolleranza	**Catalogo n°/Diametro/Pagina**						
M	**DIN 371**	**ISO 2 6H**	73126 M2,3 - M10 380	73185 M1 - M10 378		73133 M2 - M10 387	63133 M3 - M10 385	73221 M2 - M10 393	73146 M2 - M10 392	63146 M3 - M10 390
		ISO 3 6G				73132 M2,5 - M10 386			73145 M3 - M10 391	
	DIN 376	**ISO 2 6H**		73191 M6 - M22 379		73138 M2 - M24 389	63138 M12 - M20 388	73227 M3 - M20 396	73148 M3 - M30 395	63148 M12 - M20 394
MF	**DIN 374**	**ISO 2 6H**		73237 M8x0,75 - M24x1,5 441		73250 M4x0,50 - M36x1,5 442			73173 M3x0,35 - M30x2 443	63173 M8x1- M20x1,5 444
G	**DIN 5156**	**–**							73286 G1/8 - G1 1/2 467	

Esempi di materiale	per materiali non ferrosi a truciolo corto. es: Alsi > 10% Si	es: alluminio puro e leghe con Si < 10%		per Al e sue leghe a truciolo corto metalli non ferrosi plastica	per ghise, p. e.: ghisa grigia ghisa malleabile ghisa sferoidale ghisa			
Tipo di foro								
Mat. tagliente	HSS-E-PM	HSS-E		M.D.I.	HSS-E-PM	**HSS-E**		
Tipo	HCX	Produktiv W	Intensiv W	H	HCX	GG		
Forma	C	B	C		C	C		
Tratt. di superficie	TICN	lucido	lucido	lucido	TICN	nitrurato	AlTiN	
v_c m/min	**≤ 20**	**≤ 15**	**≤ 15**	**≤ 15**	**≤ 20**	**≤ 20**	**≤ 30**	

Tipo di filettatura	Dimensioni a DIN 2184-1	Tolleranza	**Catalogo n°/Diametro/Pagina**						
M	**DIN 371**	**ISO 2 6H**		73131 M2 - M10 431	73156 M2 - M10 433				
		6HX	53670 M5 - M10 383			73011 M3 - M10 384	53670 M5 - M10 383	73201 M3 - M10 429	63201 M3 - M10 428
	DIN 376	**ISO 2 6H**		73189 M12 - M20 432	73136 M12 - M20 434				
		6HX						73211 M12 - M20 430	
MF	**DIN 374**	**6HX**						73194 M8x1 - M20x1,5 448	
UNC	**DIN ~ 371**	**2B**						73326 Nr.8-32 - 3/8-16 457	
	DIN ~ 376	**2B**						73327 1/2-13 - 1-8 458	
G	**DIN 5156**	**–**						73345 G1/8 - G1 470	

Campi d‘applicazione per maschi a mano, maschi a macchina corto e maschi speciali

Esempi di materiale	per acciai generici ≤ 800 N/mm², p. e.: acciaio da costruzione, acciai automatici, acciai temprati, acciai da bonifica i maschi 73531 e 73532 sono utilizzabili anche per acciaio ad alta resistenza e resistente agli acidi	per acciai generici ≤ 800 N/mm², p. e.: acciaio da costruzione acciai automatici acciai temprati acciai da bonifica
Tipo di foro		

Mat. tagliente	HSS		HSS-E		
Tipo	N			N	
Forma	–		B	Kombi	-
Tratt. di superficie	lucido		lucido	lucido	lucido
v_c m/min	–		≤ 15	≤ 15	≤ 15

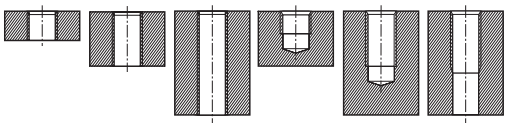
Tipo di filettatura	Dimensioni a DIN 2184-1	Tolleranza	Catalogo n°/Diametro/Pagina				
M	**DIN 352**	**ISO 2 6H**	73531 (set) RH: V 73101 M 73102 F 73103 M1 - M24 491	73532 (set) LH: V 73105 M 73106 F 73107 M4 - M16 492			73243 M3 - M18 498
	a norma	**ISO 2 6H**				73248 M3 - M12 497	
MF	**DIN 2181**	**ISO 2 6H**	73521 (set): V 73110 / F 73111 M5x0,5 - M18x1,5 493				
UNC	**~DIN 352**	**2B**	73535 (set): V 73301 / M 73302 / F 73303 Nr.4-40 - 3/4-10 494				
BSW	**~DIN 352**	**–**	73534 (set): V 73311 / M 73312 / F 73313 W1/8 - W3/4 495				
G	**DIN 5157**	**–**	73522 (set): V 73315 / F 73316 G1/8 - G1/2 496				
Pg	**DIN 40432**	**–**			73296 Pg7 - PG16 472		
NPT	**a norma**	**–**			73295 1 1/16 - 1 473		

Disponibili anche con:

MASCHIATORI STOCK

Campi d‘applicazione per maschi a rullare

Tipo di foro



Esempi di materiale

per acciai generici ≥ 800…1000 N/mm², acciaio inossidabile e resistente e acido, per l‘applicazione universale in materiale < 1000 N/mm² Al e leghe di Al

		Mat. tagliente	HSS-E				HSS-E-PM	M.D.I.
		Tipo	Durativ					
		Forma	C senza canalini di lub.		C con canalini di lub.			
		Tratt. di superficie	lucido	TiN	lucido	TiN	AlCrN	TiCN
		v_c m/min	**4-50**	**4-50**	**4-50**	**4-50**	**4-50**	**4-50**
Tipo di filettatura	Dimensioni a DIN 2174	Tolleranza	**Catalogo n°/Diametro/Pagina**					
M	~ **DIN 371**	**6HX**	73121 M2 - M10 482	63121 M2 - M10 483	73120 M3 - M10 474	63120 M3 - M10 475	53620 M3 - M10 478	63013 M3 - M10 481
		6GX				63119 M3 - M10 476	53621 M3 - M10 479	
	~ **DIN 376**	**6HX**		63123 M12 - M20 484		63122 M12 - M16 477	53622 M12 - M20 480	

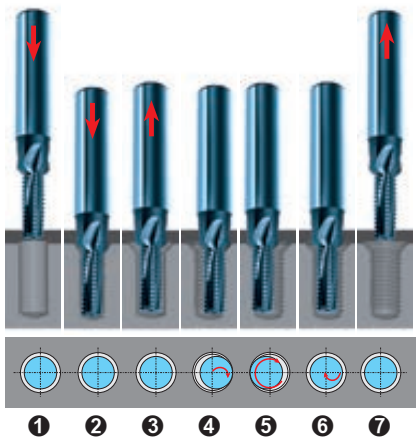
Campi d‘applicazione per frese a filettare

Tipo di foro

Esempi di materiale

per l‘applicazione universale:
acciaio da costruzione, acciai automatici, acciai temprati,
acciai da bonifica, acciai per utensili, acciaio rapido,
acciai austenitici e martensitici e solforati, leghe speciale,
Al e leghe di Al, ghise,
metalli non ferrosi, plastica, leghe di magnesio, Titanio

		Mat. tagliente	M.D.I.		M.D.I.	
		Tipo	TMC SP		TM SP	
		Forma	-	-	-	-
		Tratt. di superficie	lucido	TiCN	lucido	TiCN
		v_c m/min	**100 - 300 (Ti: 40-60)**	**50 - 200**	**100 - 300 (Ti: 40-60)**	**50 - 200**
Tipo di filettatura	Dimensioni a	Prof. di filettatura	**Catalogo n°/Diametro/Pagina**			
M	**a norma**	**2,0 x D**	73810 M3 - M20 485	53810 M3 - M20 486	73830 M6 - M20 489	53830 M6 - M20 490
MF	**a norma**	**2,0 x D**	73820 M4x0,5 - M16x1,5 488	53820 M4x0,5 - M16x1,5 487	73830 M8x1 - M20x1,5 489	53830 M8x1 - M20x1,5 490



Maschi a macchina

Maschi a macchina per filettatura metrica ISO

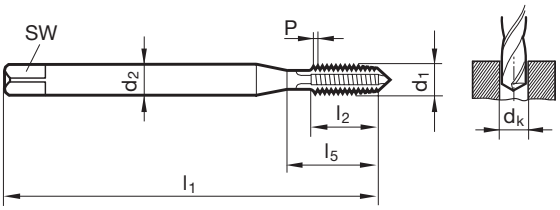
Catalogo n° 53053

Produktiv Synchro | DIN 371 | B | HSS-E-PM | TiCN | R | ISO2/6H

P	M	K	N	S	H
●	●	●	●	○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- uso universale
- materiali in acciaio fino a 1200 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 2	0,400	2,800	2,100	1,60	45,000	8,000	13,500
M 2,2	0,450	2,800	2,100	1,75	45,000	9,000	14,500
M 2,5	0,450	2,800	2,100	2,05	50,000	9,000	14,500
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

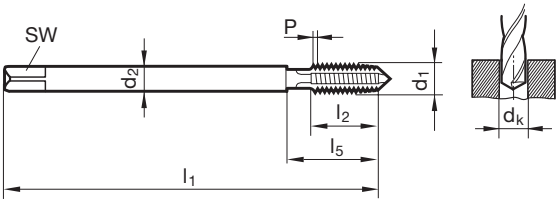
Catalogo n° 53054

Produktiv Synchro | DIN 376 | B | HSS-E-PM | TiCN | R | ISO2/6H

P	M	K	N	S	H
●	●	●	●	○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- uso universale
- materiali in acciaio fino a 1200 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M14	2,000	11,000	9,000	12,00	110,000	26,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000
M18	2,500	14,000	11,000	15,50	125,000	30,000	62,000
M20	2,500	16,000	12,000	17,50	140,000	32,000	62,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

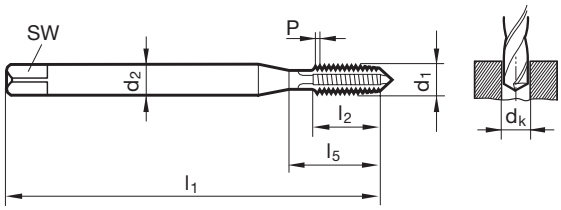
Catalogo n° 53733

Produktiv N-X | ~DIN 371/376 | B | HSS-E | Al-TiZrN | R | 6HX

P	M	K	N	S	H
●	●	●	○	●	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- uso universale
- acciaio 600-1300 N / mm²
- acciai inossidabili e resist. al calore
- metalli non ferrosi
- ghise



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 2	0,400	2,800	2,100	1,60	45,000	8,000	13,500
M 2,5	0,450	2,800	2,100	2,05	50,000	9,000	14,500
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M14	2,000	11,000	9,000	12,00	110,000	26,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000
M18	2,500	14,000	11,000	15,50	125,000	30,000	62,000
M20	2,500	16,000	12,000	17,50	140,000	32,000	62,000
M24	3,000	18,000	14,500	21,00	160,000	36,000	73,000
M30	3,500	22,000	18,000	26,50	180,000	40,000	85,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

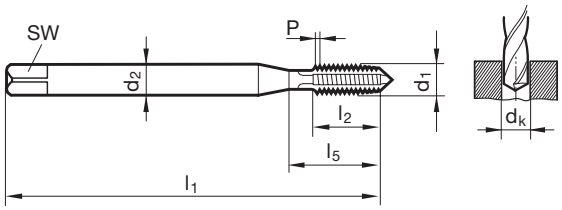
Catalogo n° 63033

Produktiv N | DIN 371 | B | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- uso universale
- acciai fino a 1100 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

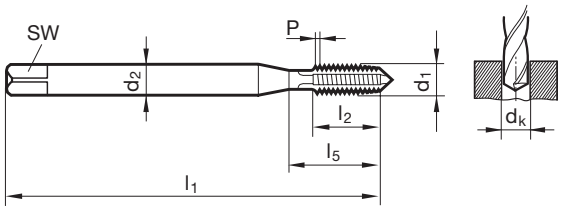
Catalogo n° 73033

Produktiv N | DIN 371 | B | HSS-E | trattati a vapore | R | ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- uso universale
- acciai fino a 1100 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

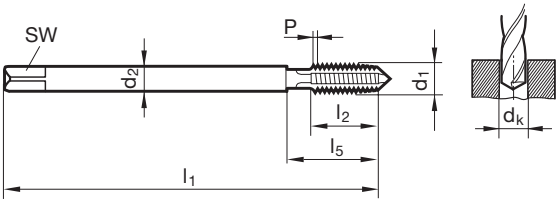
Catalogo n° 73038

Produktiv N | DIN 376 | B | HSS-E | trattati a vapore | R | ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- uso universale
- acciai fino a 1100 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M14	2,000	11,000	9,000	12,00	110,000	26,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000
M18	2,500	14,000	11,000	15,50	125,000	30,000	62,000
M20	2,500	16,000	12,000	17,50	140,000	32,000	62,000
M22	2,500	18,000	14,500	19,50	140,000	32,000	62,000
M24	3,000	18,000	14,500	21,00	160,000	36,000	73,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

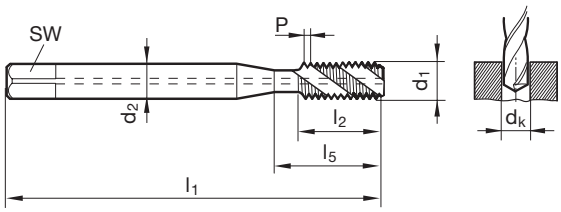
Catalogo n° 53050

Intensiv Synchro | DIN 371 | C | HSS-E-PM | TiCN | R | 6HX

P	M	K	N	S	H
●	●	●	●	○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- Scanalature con torsione destra 50°
- lunghezza del filetto più corto, adatto solo con mandrini a maschiatura sincro
- evacuazione truciolo nella direzione del codolo
- uso universale
- materiali in acciaio fino a 1200 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 5	0,800	6,000	4,900	4,20	70,000	4,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	5,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	6,300	35,000
M10	1,500	10,000	8,000	8,50	100,000	7,500	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

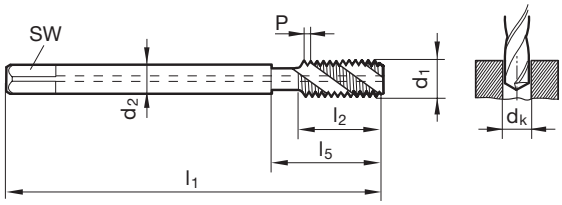
Catalogo n° 53051

Intensiv Synchro | DIN 376 | C | HSS-E-PM | TiCN | R | 6HX

P	M	K	N	S	H
●	●	●	●	○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- Scanalature con torsione destra 50°
- lunghezza del filetto più corto, adatto solo con mandrini a maschiatura sincro
- evacuazione truciolo nella direzione del codolo
- uso universale
- materiali in acciaio fino a 1200 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M12	1,750	9,000	7,000	10,20	110,000	8,800	63,000
M14	2,000	11,000	9,000	12,00	110,000	10,000	58,000
M16	2,000	12,000	9,000	14,00	110,000	10,000	58,000
M20	2,500	16,000	12,000	17,50	140,000	12,500	85,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

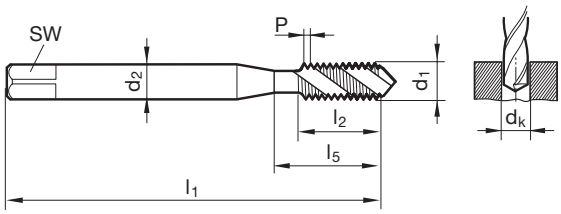
Catalogo n° 53746

Intensiv **N-X** | ~DIN **371/376** | **C** | **HSS-E** | **TiAlN** | **R** | **6HX**

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 45°
- evacuazione truciolo nella direzione del codolo
- uso universale
- acciaio 600-1300 N / mm²
- acciai inossidabili e resist. al calore
- metalli non ferrosi
- ghise



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 2	0,400	2,800	2,100	1,60	45,000	4,500	13,500
M 2,5	0,450	2,800	2,100	2,05	50,000	5,000	14,500
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000
M12	1,750	9,000	7,000	10,20	110,000	18,500	49,000
M14	2,000	11,000	9,000	12,00	110,000	20,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	20,000	54,000
M18	2,500	14,000	11,000	15,50	125,000	25,000	62,000
M20	2,500	16,000	12,000	17,50	140,000	25,000	62,000
M24	3,000	18,000	14,500	21,00	160,000	30,000	73,000
M30	3,500	22,000	18,000	26,50	180,000	35,000	85,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

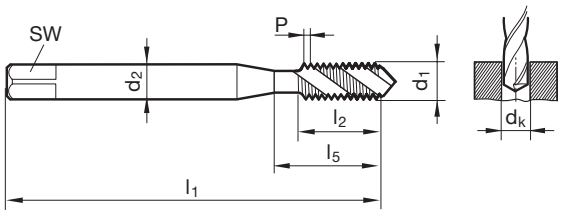
Catalogo n° 63046

Intensiv N	DIN 371	C	HSS-E	TiN	R	ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- uso universale
- acciai fino a 1100 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

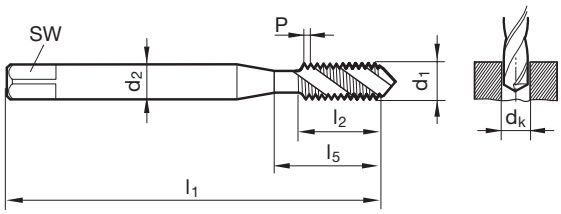
Catalogo n° 73046

Intensiv N	DIN 371	C	HSS-E	trattati a vapore	R	ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- uso universale
- acciai fino a 1100 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

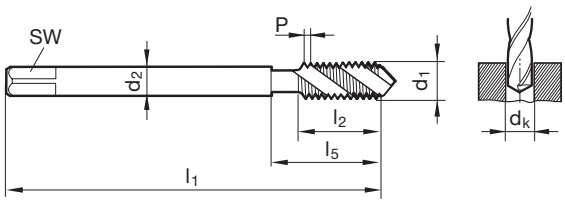
Catalogo n° 63048

Intensiv N	DIN 376	C	HSS-E	TiN	R	6HX

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- uso universale
- acciai fino a 1100 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	18,500	49,000
M16	2,000	12,000	9,000	14,00	110,000	20,000	54,000
M20	2,500	16,000	12,000	17,50	140,000	25,000	62,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

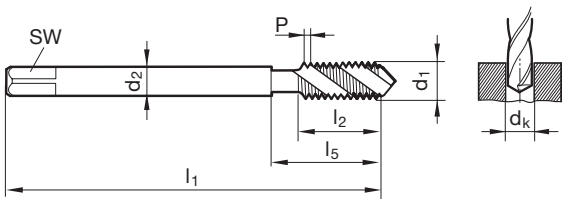
Catalogo n° 73048

Intensiv N	DIN 376	C	HSS-E	trattati a vapore	R	ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- uso universale
- acciai fino a 1100 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	18,500	49,000
M14	2,000	11,000	9,000	12,00	110,000	20,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	20,000	54,000
M18	2,500	14,000	11,000	15,50	125,000	25,000	62,000
M20	2,500	16,000	12,000	17,50	140,000	25,000	62,000
M22	2,500	18,000	14,500	19,50	140,000	27,000	62,000
M24	3,000	18,000	14,500	21,00	160,000	30,000	73,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

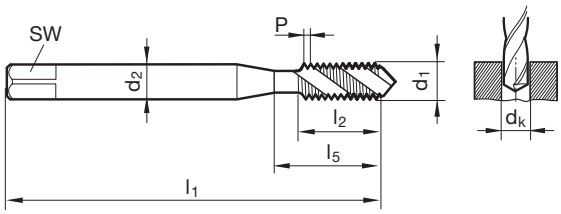
Catalogo n° 73047

Intensiv N | DIN 371 | E | HSS-E | luci-do | R | ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- uso universale
- imbocco corto per profondità di filetto vicine alla base del foro
- acciai fino a 1100 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

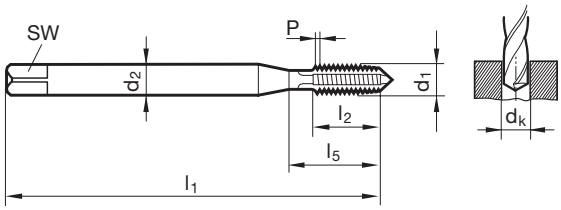
Catalogo n° 53669

Produktiv HX | DIN 371/376 | B | HSS-E-PM | Al-TiN | R | 6HX

P	M	K	N	S	H
		○		●	●

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- leghe speciali, acciai temprati
- nickel e leghe di nickel
- ampco > 21, ghisa refrigerate, Inconel



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

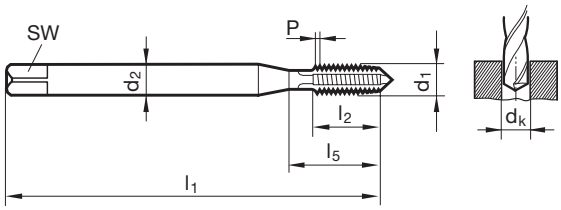
Catalogo n° 53667

Intensiv HDX | DIN 371/376 | B | HSS-E-PM | TiCN | R | 6HX

P	M	K	N	S	H
	•			•	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- leghe speciali
- titanio e leghe di titanio
- materiali duri fino a 1400 N / mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

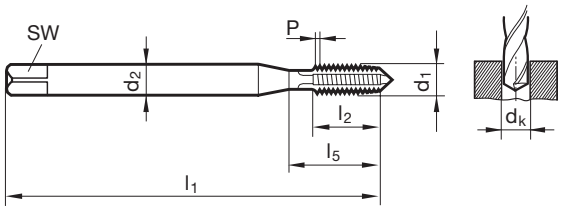
Catalogo n° 73185

N	1xD	DIN 371	C	HSS-E	lucido	R	ISO2/6H

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- per profondità di filetto fino a 1xD
- acciai fino a 800 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 1	0,250	2,500	2,100	0,75	40,000	5,500	
M 1,2	0,250	2,500	2,100	0,95	40,000	5,500	
M 1,4	0,300	2,500	2,100	1,10	40,000	7,000	
M 1,6	0,350	2,500	2,100	1,25	40,000	4,500	
M 2	0,400	2,800	2,100	1,60	45,000	4,500	13,500
M 2,3	0,400	2,800	2,100	1,90	45,000	4,500	14,500
M 2,5	0,450	2,800	2,100	2,05	50,000	5,000	14,500
M 2,6	0,450	2,800	2,100	2,15	50,000	5,000	14,500
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

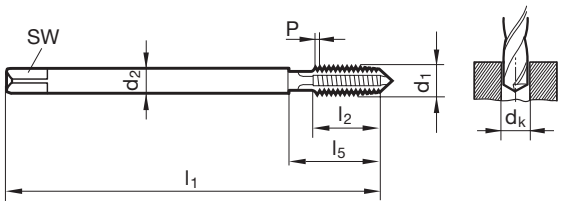
Catalogo n° 73191

N	1xD	DIN 376	C	HSS-E	lucido	R	ISO2/6H

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- per profondità di filetto fino a 1xD
- acciai fino a 800 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 6	1,000	4,500	3,400	5,00	80,000	11,000	30,000
M 8	1,250	6,000	4,900	6,80	90,000	14,000	35,000
M10	1,500	7,000	5,500	8,50	100,000	16,000	39,000
M12	1,750	9,000	7,000	10,20	110,000	18,500	49,000
M14	2,000	11,000	9,000	12,00	110,000	20,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	20,000	54,000
M18	2,500	14,000	11,000	15,50	125,000	25,000	62,000
M20	2,500	16,000	12,000	17,50	140,000	25,000	62,000
M22	2,500	18,000	14,500	19,50	140,000	27,000	62,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

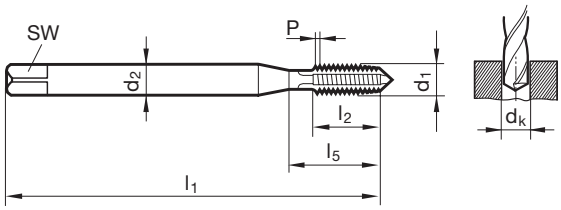
Catalogo n° 73126

Massiv	1xD	DIN	B	HSS-E	luci-	R	ISO2/6H
N		371			do		

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori passanti
- per profondità di filetto fino a 1xD
- soprattutto per lamiere e occhielli in lamiera



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 2,3	0,400	2,800	2,100	1,90	45,000	9,000	14,500
M 2,5	0,450	2,800	2,100	2,05	50,000	9,000	14,500
M 2,6	0,450	2,800	2,100	2,15	50,000	9,000	14,500
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 3,5	0,600	4,000	3,000	2,90	56,000	12,000	20,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

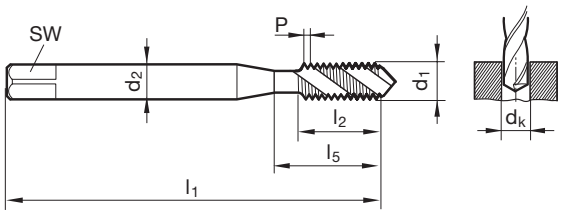
Catalogo n° 53668

Intensiv HX | DIN 371/376 | C | HSS-E-PM | Al-TiN | R | 6HX

P	M	K	N	S	H
		○		●	●

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 10°
- evacuazione truciolo nella direzione del codolo
- leghe speciali, acciai temprati
- nickel e leghe di nickel
- ampco > 21, ghisa refrigerate, Inconel



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

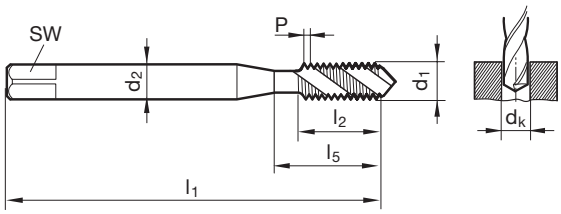
Catalogo n° 53666

Intensiv HDX | DIN 371/376 | C | HSS-E-PM | TiCN | R | 6HX

P	M	K	N	S	H
	●			●	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 15°
- evacuazione truciolo nella direzione del codolo
- leghe speciali
- titanio e leghe di titanio
- materiali duri fino a 1400 N / mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

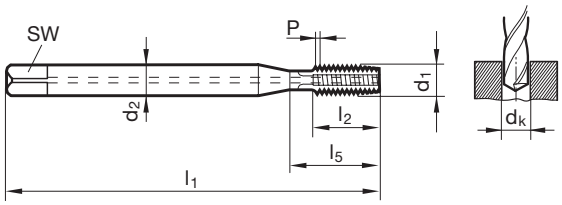
Catalogo n° 53670

HCX | DIN 371 | C | HSS-E-PM | TiCN | R | 6HX

P	M	K	N	S	H
●		●	○	●	○

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- con condotto interno del refrigerante ≥ M5
- uscita centrale del lubrificante
- acciaio ad alta resistenza fino a 1600 N / mm²
- materiali duri come ferro, bronzo, leghe Al-Si ad elevato contenuto di Si



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

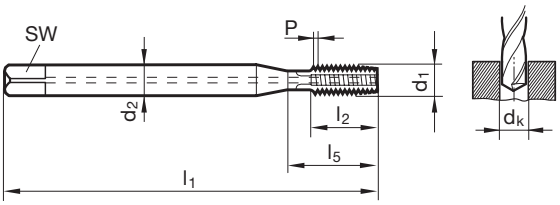
Catalogo n° 73011

H	DIN 371	C	VHM	lucido	R	6HX

P	M	K	N	S	H
			●		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- con condotto interno del refrigerante ≥ M5
- uscita centrale del lubrificante
- leghe di alluminio e leghe di alluminio a truciolo corto, Metalli NE, a truciolo corto e fragili



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	8,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	10,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	10,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	12,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	16,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	18,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

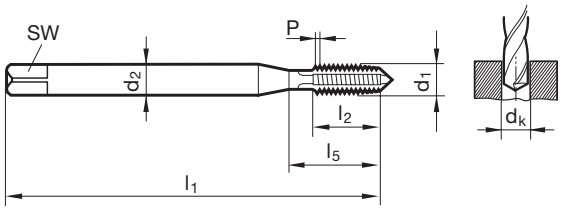
Catalogo n° 63133

Produktiv	DIN					
N	371	B	HSS-E	TiN	R	ISO2/6H

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- applicazioni generali
- acciai fino a 800 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

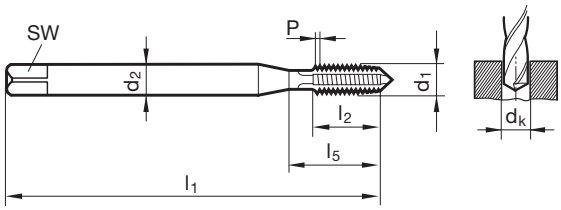
Catalogo n° 73132

Produktiv N | DIN 371 | B | HSS-E | luci-do | R | ISO3/6G

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- applicazioni generali
- acciai fino a 800 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 2,5	0,450	2,800	2,100	2,05	50,000	9,000	14,500
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

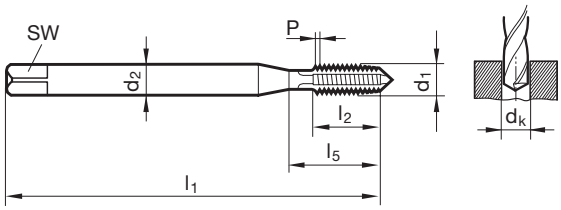
Catalogo n° 73133

Produktiv N | DIN 371 | B | HSS-E | luci-do | R | ISO2/6H

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- applicazioni generali
- acciai fino a 800 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 2	0,400	2,800	2,100	1,60	45,000	8,000	13,500
M 2,5	0,450	2,800	2,100	2,05	50,000	9,000	14,500
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 3,5	0,600	4,000	3,000	2,90	56,000	12,000	20,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 7	1,000	7,000	5,500	6,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

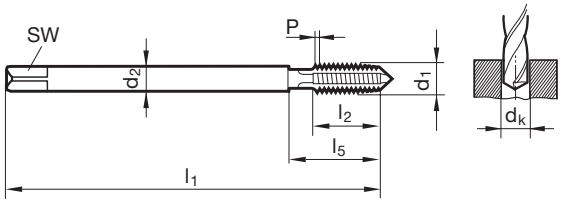
Catalogo n° 63138

Produktiv N | DIN 376 | B | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- applicazioni generali
- acciai fino a 800 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M14	2,000	11,000	9,000	12,00	110,000	26,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000
M20	2,500	16,000	12,000	17,50	140,000	32,000	62,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

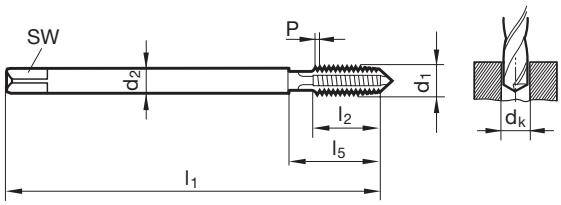
Catalogo n° 73138

Produktiv N | DIN 376 | B | HSS-E | luci-do | R | ISO2/6H

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- applicazioni generali
- acciai fino a 800 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M 2	0,400	1,400		1,60	45,000	8,000	13,500
M 2,5	0,450	1,800		2,05	50,000	9,000	14,500
M 3	0,500	2,200		2,50	56,000	10,000	18,000
M 3,5	0,600	2,500	2,100	2,90	56,000	12,000	20,000
M 4	0,700	2,800	2,100	3,30	63,000	12,000	21,000
M 5	0,800	3,500	2,700	4,20	70,000	14,000	25,000
M 6	1,000	4,500	3,400	5,00	80,000	16,000	30,000
M 8	1,250	6,000	4,900	6,80	90,000	17,000	35,000
M10	1,500	7,000	5,500	8,50	100,000	20,000	39,000
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M14	2,000	11,000	9,000	12,00	110,000	26,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000
M18	2,500	14,000	11,000	15,50	125,000	30,000	62,000
M20	2,500	16,000	12,000	17,50	140,000	32,000	62,000
M22	2,500	18,000	14,500	19,50	140,000	32,000	62,000
M24	3,000	18,000	14,500	21,00	160,000	36,000	73,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

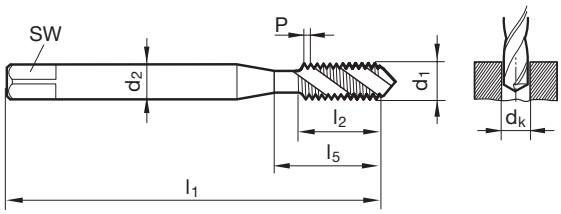
Catalogo n° 63146

Intensiv N | DIN 371 | C | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- applicazioni generali
- acciai fino a 800 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

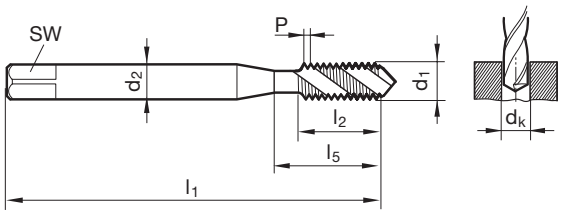
Catalogo n° 73145

Intensiv N	DIN 371	C	HSS-E	luci-do	R	ISO3/6G

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- applicazioni generali
- acciai fino a 800 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

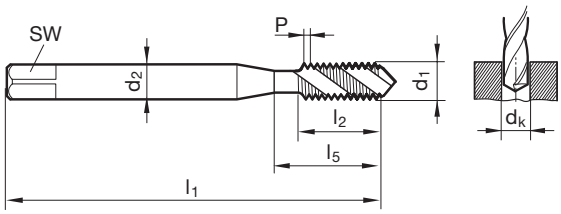
Catalogo n° 73146

Intensiv N | DIN 371 | C | HSS-E | luci-do | R | ISO2/6H

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- applicazioni generali
- acciai fino a 800 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 2	0,400	2,800	2,100	1,60	45,000	4,500	13,500
M 2,2	0,450	2,800	2,100	1,75	45,000	5,000	14,500
M 2,5	0,450	2,800	2,100	2,05	50,000	5,000	14,500
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 3,5	0,600	4,000	3,000	2,90	56,000	7,000	20,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

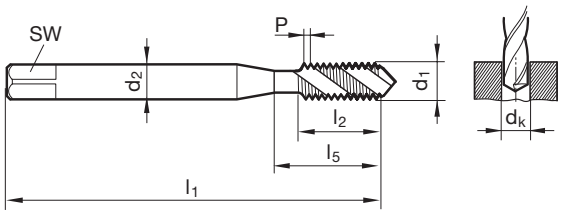
Catalogo n° 73221

Intensiv N | DIN 371 | C | HSS-E | luci-do | R | ISO2/6H

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 15°
- evacuazione truciolo nella direzione del codolo
- applicazioni generali
- acciai fino a 800 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 2	0,400	2,800	2,100	1,60	45,000	4,500	13,500
M 2,2	0,450	2,800	2,100	1,75	45,000	5,000	14,500
M 2,5	0,450	2,800	2,100	2,05	50,000	5,000	14,500
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 3,5	0,600	4,000	3,000	2,90	56,000	7,000	20,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

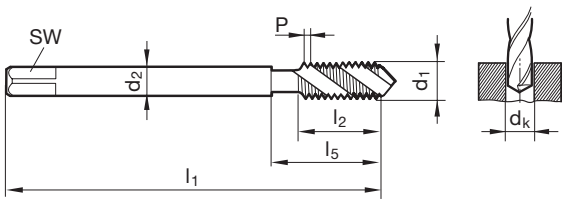
Catalogo n° 63148

Intensiv N | DIN 376 | C | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- applicazioni generali
- acciai fino a 800 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M12	1,750	9,000	7,000	10,20	110,000	18,500	49,000
M16	2,000	12,000	9,000	14,00	110,000	20,000	54,000
M20	2,500	16,000	12,000	17,50	140,000	25,000	62,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

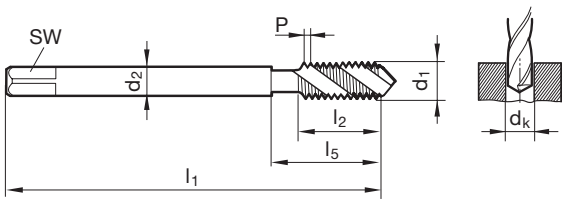
Catalogo n° 73148

Intensiv N	DIN 376	C	HSS-E	luci-do	R	ISO2/6H

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- applicazioni generali
- acciai fino a 800 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	2,200		2,50	56,000	6,000	18,000
M 4	0,700	2,800	2,100	3,30	63,000	7,500	21,000
M 5	0,800	3,500	2,700	4,20	70,000	8,500	25,000
M 6	1,000	4,500	3,400	5,00	80,000	11,000	30,000
M 8	1,250	6,000	4,900	6,80	90,000	14,000	35,000
M10	1,500	7,000	5,500	8,50	100,000	16,000	39,000
M12	1,750	9,000	7,000	10,20	110,000	18,500	49,000
M14	2,000	11,000	9,000	12,00	110,000	20,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	20,000	54,000
M18	2,500	14,000	11,000	15,50	125,000	25,000	62,000
M20	2,500	16,000	12,000	17,50	140,000	25,000	62,000
M22	2,500	18,000	14,500	19,50	140,000	27,000	62,000
M24	3,000	18,000	14,500	21,00	160,000	30,000	73,000
M27	3,000	20,000	16,000	24,00	160,000	30,000	73,000
M30	3,500	22,000	18,000	26,50	180,000	35,000	85,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

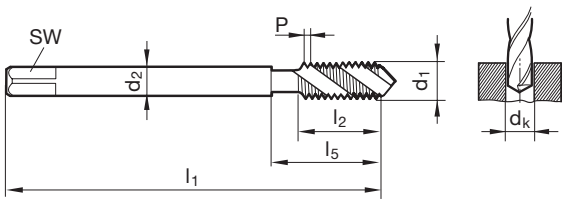
Catalogo n° 73227

Intensiv N	DIN 376	C	HSS-E	luci-do	R	ISO2/6H

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 15°
- evacuazione truciolo nella direzione del codolo
- applicazioni generali
- acciai fino a 800 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	2,200		2,50	56,000	6,000	18,000
M 4	0,700	2,800	2,100	3,30	63,000	7,500	21,000
M 5	0,800	3,500	2,700	4,20	70,000	8,500	25,000
M 6	1,000	4,500	3,400	5,00	80,000	11,000	30,000
M 8	1,250	6,000	4,900	6,80	90,000	14,000	35,000
M10	1,500	7,000	5,500	8,50	100,000	16,000	39,000
M12	1,750	9,000	7,000	10,20	110,000	18,500	49,000
M16	2,000	12,000	9,000	14,00	110,000	20,000	54,000
M18	2,500	14,000	11,000	15,50	125,000	25,000	62,000
M20	2,500	16,000	12,000	17,50	140,000	25,000	62,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

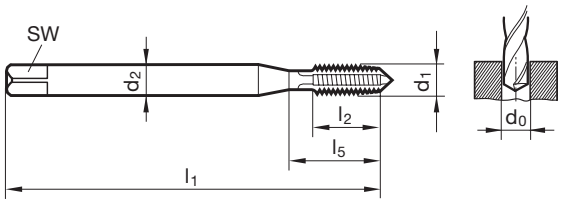
Catalogo n° 53640

Produktiv H | DIN 371/376 | B | HSS-E-PM | TiCN | R | ISO2/6H

P	M	K	N	S	H
●		○			

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai ad alta resistenza
- acciaio da 1100 a 1600 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

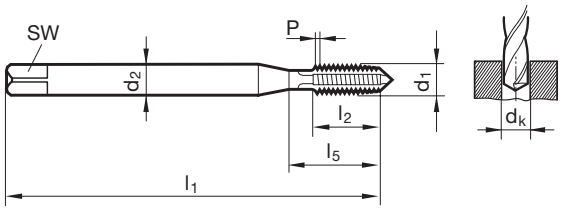
Catalogo n° 53642

Produktiv H | DIN 371 | B | HSS-E | TiCN | R | ISO2/6H

P	M	K	N	S	H
●		○			

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- leghe speciali, leghe di nickel
- materiali duri fino a 1400 N / mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 2	0,400	2,800	2,100	1,60	45,000	8,000	13,500
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

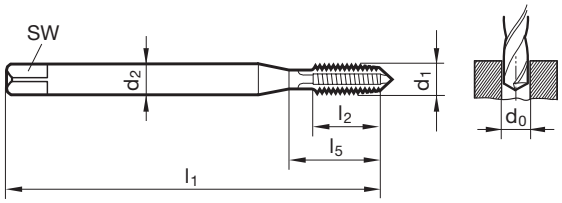
Catalogo n° 63641

Produktiv H | DIN 371 | B | HSS-E-PM | TiN | R | ISO2/6H

P	M	K	N	S	H
●		○			

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- leghe speciali, leghe di nickel
- materiali duri fino a 1400 N / mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

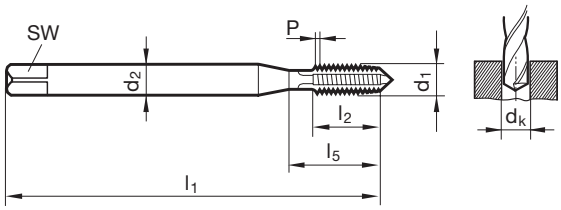
Catalogo n° 73640

Produktiv H | DIN 371 | B | HSS-E-PM | lucido | R | ISO2/6H

P	M	K	N	S	H
●		○			

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai ad alta resistenza
- acciaio da 1100 a 1600 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

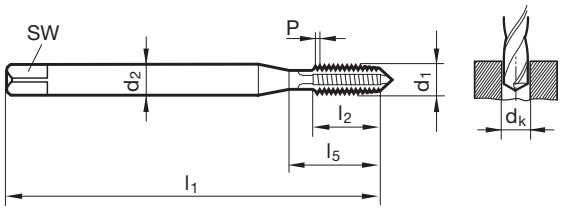
Catalogo n° 73642

Produktiv H | DIN 371 | B | HSS-E | nitru-rato | R | ISO2/6H

P	M	K	N	S	H
●		○			

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai ad alta resistenza
- acciaio da 1100 a 1600 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 2	0,400	2,800	2,100	1,60	45,000	8,000	13,500
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

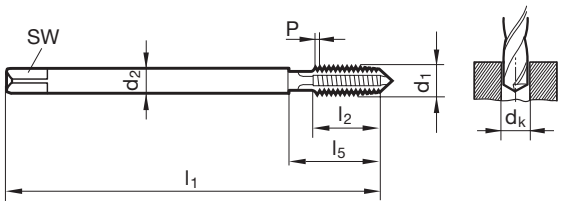
Catalogo n° 63643

Produktiv H | DIN 376 | B | HSS-E-PM | TiN | R | ISO2/6H

P	M	K	N	S	H
●		○			

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai ad alta resistenza
- acciaio da 1100 a 1600 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000
M20	2,500	16,000	12,000	17,50	140,000	32,000	62,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

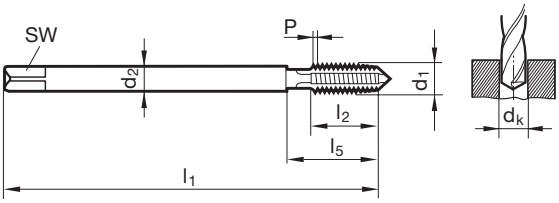
Catalogo n° 73645

Produktiv H | DIN 376 | B | HSS-E | nitru-rato | R | ISO2/6H

P	M	K	N	S	H
●		○			

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai ad alta resistenza
- acciaio da 1100 a 1600 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000
M20	2,500	16,000	12,000	17,50	140,000	32,000	62,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

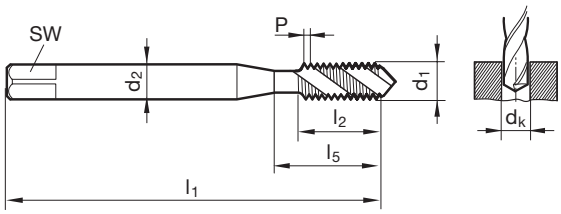
Catalogo n° 53661

Intensiv **H** | DIN 371/376 | **C** | **HSS-E** | **TiCN** | **R** | **ISO2/6H**

P	M	K	N	S	H
●		○			

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai ad alta resistenza
- acciaio da 1100 a 1600 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 2	0,400	2,800	2,100	1,60	45,000	4,500	13,500
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

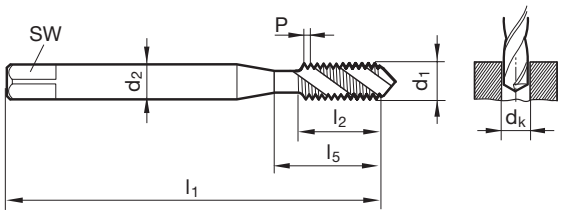
Catalogo n° 63674

Intensiv H | DIN 371 | C | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
●					

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai ad alta resistenza
- acciaio da 1100 a 1600 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

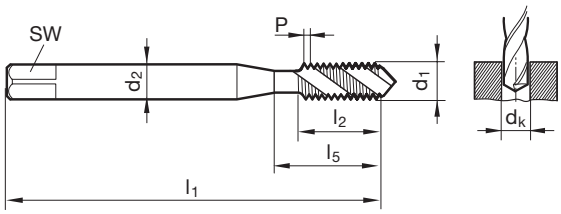
Catalogo n° 73619

H R15	DIN 371	C	HSS-E-PM	lucido	R	ISO2/6H

P	M	K	N	S	H
●		○			

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 15°
- evacuazione truciolo nella direzione del codolo
- acciai ad alta resistenza
- acciaio da 1100 a 1600 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

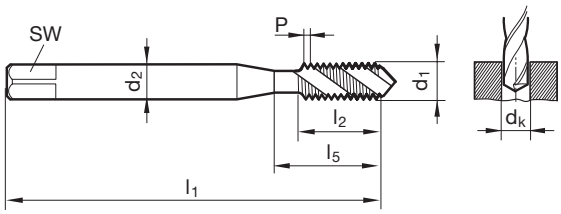
Catalogo n° 73661

Intensiv H	DIN 371	C	HSS-E	luci-do	R	ISO2/6H

P	M	K	N	S	H
●		○			

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai ad alta resistenza
- acciaio da 1100 a 1600 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

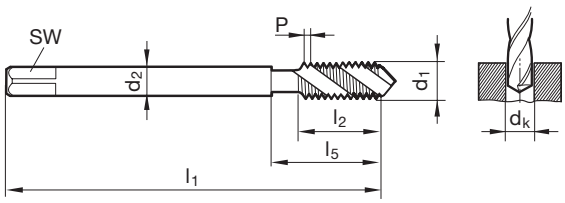
Catalogo n° 63675

Intensiv H	DIN 376	C	HSS-E	TiN	R	ISO2/6H

P	M	K	N	S	H
●		○			

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai ad alta resistenza
- acciaio da 1100 a 1600 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	18,500	49,000
M16	2,000	12,000	9,000	14,00	110,000	20,000	54,000
M20	2,500	16,000	12,000	17,50	140,000	25,000	62,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

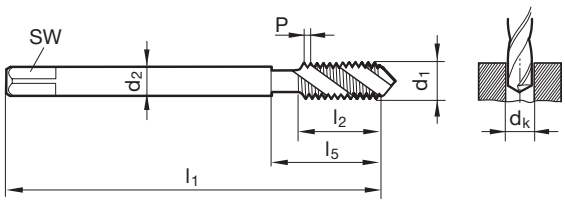
Catalogo n° 73664

Intensiv H	DIN 376	C	HSS-E	luci-do	R	ISO2/6H

P	M	K	N	S	H
●		○			

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai ad alta resistenza
- acciaio da 1100 a 1600 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	18,500	49,000
M14	2,000	11,000	9,000	12,00	110,000	20,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	20,000	54,000
M20	2,500	16,000	12,000	17,50	140,000	25,000	62,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

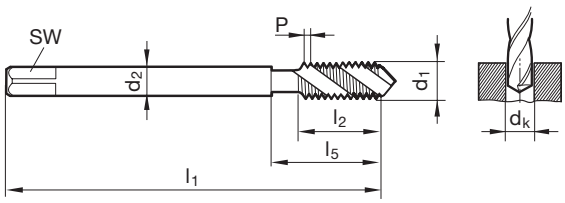
Catalogo n° 73666

H R15 | DIN 376 | C | HSS-E-PM | lucido | R | ISO2/6H

P	M	K	N	S	H
●		○			

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 15°
- evacuazione truciolo nella direzione del codolo
- acciai ad alta resistenza
- acciaio da 1100 a 1600 N/mm²



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	18,500	49,000
M16	2,000	12,000	9,000	14,00	110,000	20,000	54,000
M20	2,500	16,000	12,000	17,50	140,000	25,000	62,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

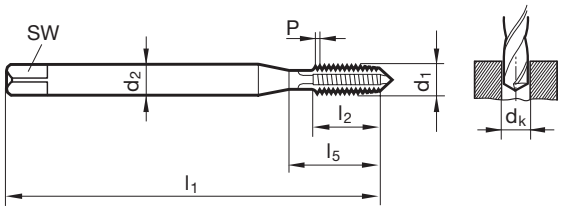
Catalogo n° 63010

H	~DIN 371	D	VHM	TiCN	R	ISO2/6H

P	M	K	N	S	H
●					●

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- per profondità di filetto fino a 1xD
- acciai temprati da 54 a 62 HRC



d1	P	d2	SW	dk	l1	l2
	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,60	56,000	12,000
M 4	0,700	4,500	3,400	3,40	63,000	14,000
M 5	0,800	6,000	4,900	4,30	70,000	17,000
M 6	1,000	6,000	4,900	5,10	80,000	20,000
M 8	1,250	8,000	6,200	6,90	90,000	20,000
M10	1,500	10,000	8,000	8,60	100,000	24,000
M12	1,750	12,000	9,000	10,40	110,000	28,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

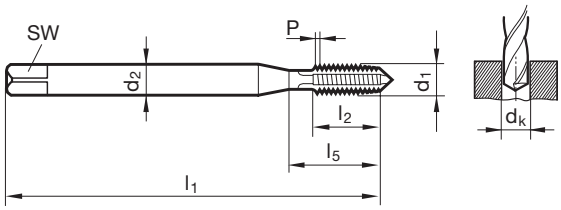
Catalogo n° 53641

Produktiv HD | DIN 371 | B | HSS-E-PM | TiCN | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

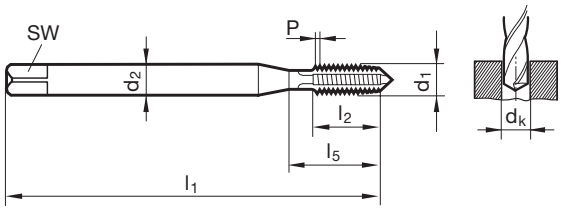
Catalogo n° 63176

Produktiv HD | DIN 371 | B | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

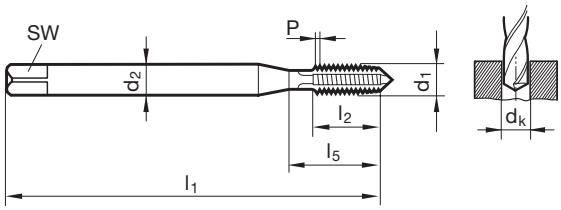
Catalogo n° 73176

Produktiv HD | DIN 371 | B | HSS-E | trattati a vapore | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

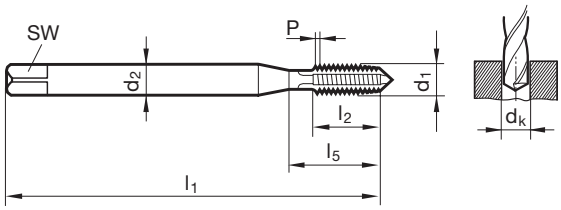
Catalogo n° 73641

Produktiv HD | DIN 371 | B | HSS-E-PM | lucido | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

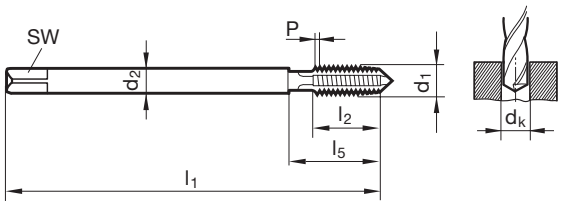
Catalogo n° 53643

Produktiv HD | DIN 376 | B | HSS-E-PM | TiCN | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M14	2,000	11,000	9,000	12,00	110,000	26,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000

Maschi a macchina per filettatura metrica ISO

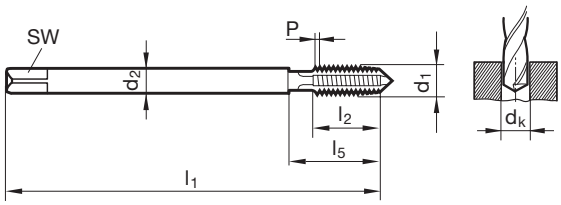
Catalogo n° 63177

Produktiv HD | DIN 376 | B | HSS-E | TiN | R | 6HX

P	M	K	N	S	H
	●		○	○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

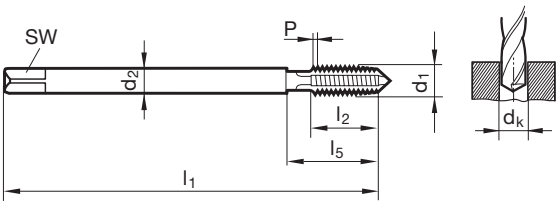
Catalogo n° 73177

Produktiv HD | DIN 376 | B | HSS-E | trattati a vapore | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M14	2,000	11,000	9,000	12,00	110,000	26,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000
M20	2,500	16,000	12,000	17,50	140,000	32,000	62,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

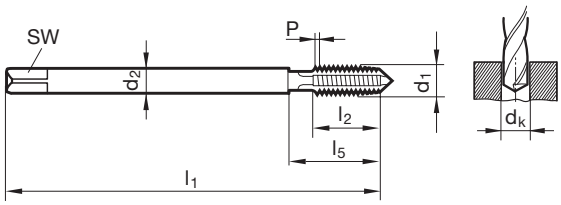
Catalogo n° 73643

Produktiv HD | DIN 376 | B | HSS-E-PM | lucido | R | ISO2/6H

P	M	K	N	S	H
	●		○	○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M14	2,000	11,000	9,000	12,00	110,000	26,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000
M18	2,500	14,000	11,000	15,50	125,000	30,000	62,000
M20	2,500	16,000	12,000	17,50	140,000	32,000	62,000
M22	2,500	18,000	14,500	19,50	140,000	32,000	62,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

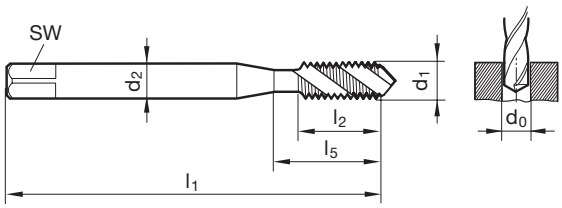
Catalogo n° 53662

Intensiv HD | DIN 371 | C | HSS-E-PM | TiCN | R | ISO2/6H

P	M	K	N	S	H
	●		○	○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

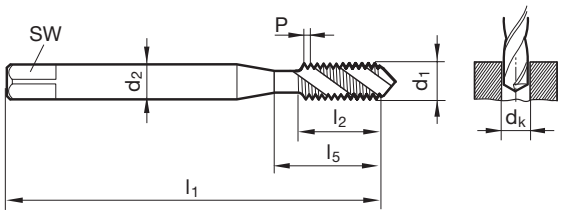
Catalogo n° 63662

Intensiv HD | DIN 371 | C | HSS-E-PM | TiN | R | ISO2/6H

P	M	K	N	S	H
	●		○	○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

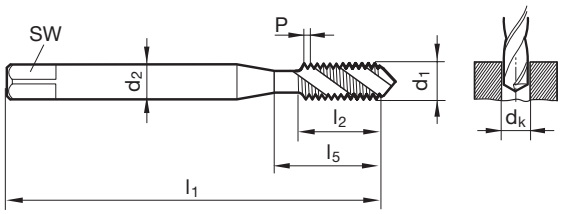
Catalogo n° 73660

Intensiv HD | DIN 371 | C | HSS-E | trattati a vapore | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

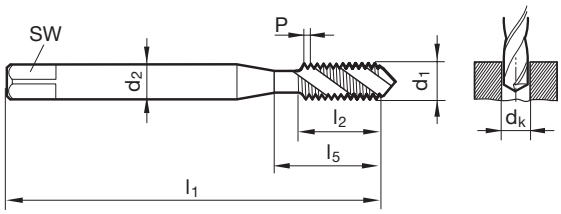
Catalogo n° 73662

Intensiv HD | DIN 371 | C | HSS-E-PM | lucido | R | ISO2/6H

P	M	K	N	S	H
	●		○	○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 3,5	0,600	4,000	3,000	2,90	56,000	7,000	20,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

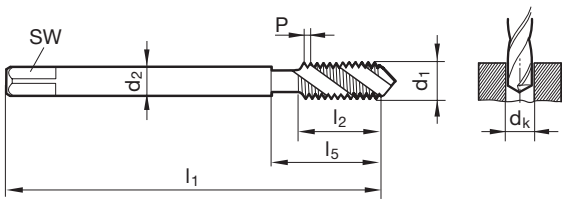
Catalogo n° 53665

Intensiv HD | DIN 376 | C | HSS-E-PM | TiCN | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M12	1,750	9,000	7,000	10,20	110,000	18,500	49,000
M14	2,000	11,000	9,000	12,00	110,000	20,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	20,000	54,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

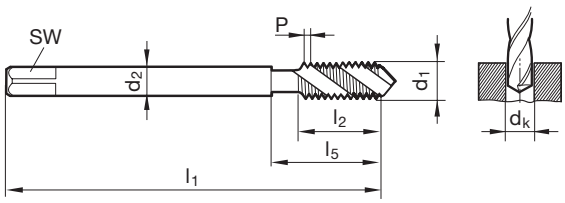
Catalogo n° 63665

Intensiv HD | DIN 376 | C | HSS-E-PM | TiN | R | ISO2/6H

P	M	K	N	S	H
	•			•	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M12	1,750	9,000	7,000	10,20	110,000	18,500	49,000
M16	2,000	12,000	9,000	14,00	110,000	20,000	54,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

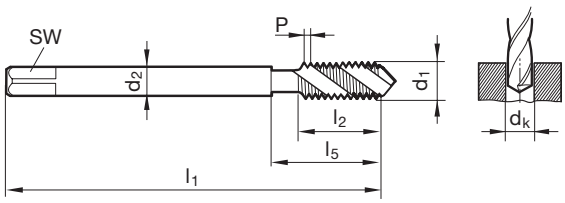
Catalogo n° 73659

Intensiv HD | DIN 376 | C | HSS-E | trattati a vapore | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	18,500	49,000
M14	2,000	11,000	9,000	12,00	110,000	20,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	20,000	54,000
M20	2,500	16,000	12,000	17,50	140,000	25,000	62,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

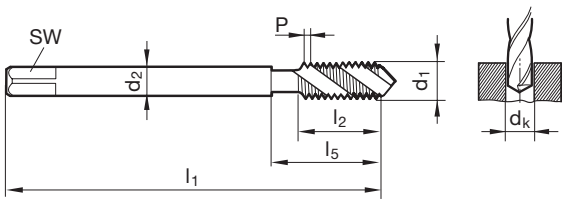
Catalogo n° 73665

Intensiv HD | DIN 376 | C | HSS-E-PM | lucido | R | ISO2/6H

P	M	K	N	S	H
	●		○	○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	18,500	49,000
M14	2,000	11,000	9,000	12,00	110,000	20,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	20,000	54,000
M18	2,500	14,000	11,000	15,50	125,000	25,000	62,000
M20	2,500	16,000	12,000	17,50	140,000	25,000	62,000
M22	2,500	18,000	14,500	19,50	140,000	27,000	62,000
M24	3,000	18,000	14,500	21,00	160,000	30,000	73,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

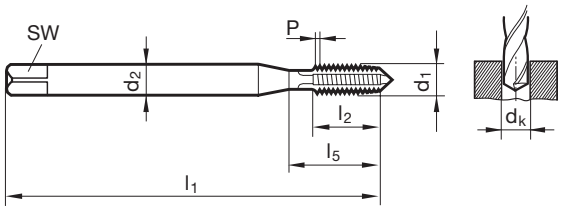
Catalogo n° 63201

GG | DIN 371 | C | HSS-E | Al-TiN | R | 6HX

P	M	K	N	S	H
		●	○		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- ghise come ghisa grigia, ghisa temprata e ghisa sferoidale



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

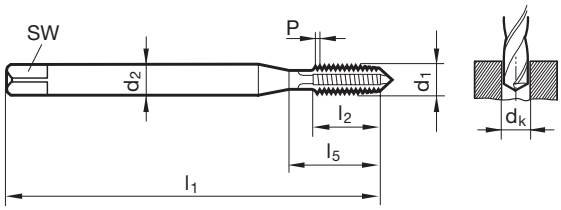
Catalogo n° 73201

GG | DIN 371 | C | HSS-E | nitru-rato | R | 6HX

P	M	K	N	S	H
		•			

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- ghise come ghisa grigia, ghisa temprata e ghisa sferoidale



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 3,5	0,600	4,000	3,000	2,90	56,000	12,000	20,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

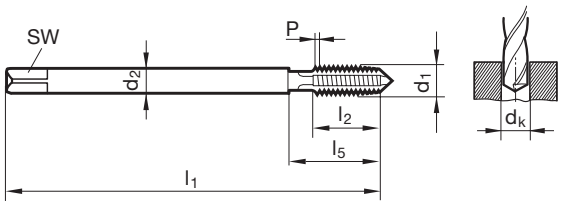
Catalogo n° 73211

GG | DIN 376 | C | HSS-E | nitru-rato | R | 6HX

P	M	K	N	S	H
		•			

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- ghise come ghisa grigia, ghisa temprata e ghisa sferoidale



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M14	2,000	11,000	9,000	12,00	110,000	26,000	53,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000
M18	2,500	14,000	11,000	15,50	125,000	30,000	62,000
M20	2,500	16,000	12,000	17,50	140,000	32,000	62,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

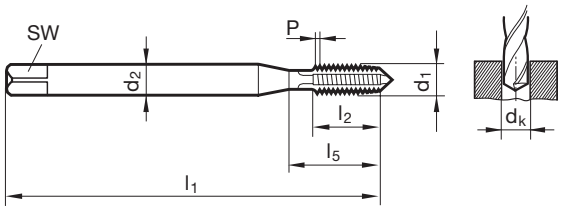
Catalogo n° 73131

Produktiv W | DIN 371 | B | HSS-E | luci-do | R | ISO2/6H

P	M	K	N	S	H
			●		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- materiali morbidi e a truciolo lungo quali alluminio, leghe di alluminio, metalli non ferrosi



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 2	0,400	2,800	2,100	1,60	45,000	8,000	13,500
M 2,3	0,400	2,800	2,100	1,90	45,000	9,000	14,500
M 2,5	0,450	2,800	2,100	2,05	50,000	9,000	14,500
M 2,6	0,450	2,800	2,100	2,15	50,000	9,000	14,500
M 3	0,500	3,500	2,700	2,50	56,000	10,000	18,000
M 3,5	0,600	4,000	3,000	2,90	56,000	12,000	20,000
M 4	0,700	4,500	3,400	3,30	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,20	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,00	80,000	16,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	17,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

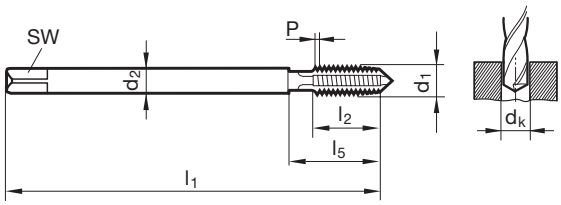
Catalogo n° 73189

Produktiv W | DIN 376 | B | HSS-E | luci-do | R | ISO2/6H

P	M	K	N	S	H
			●		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- materiali morbidi e a truciolo lungo quali alluminio, leghe di alluminio, metalli non ferrosi



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	24,000	49,000
M16	2,000	12,000	9,000	14,00	110,000	26,000	54,000
M20	2,500	16,000	12,000	17,50	140,000	32,000	62,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

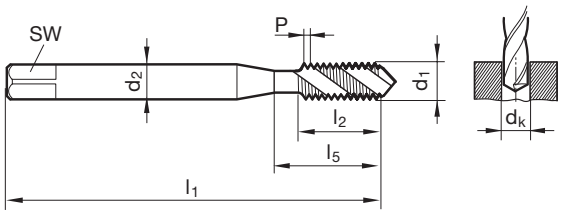
Catalogo n° 73156

Intensiv W	DIN 371	C	HSS-E	luci-do	R	ISO2/6H

P	M	K	N	S	H
			●		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 45°
- evacuazione truciolo nella direzione del codolo
- materiali morbidi e a truciolo lungo quali alluminio, leghe di alluminio, metalli non ferrosi



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 2	0,400	2,800	2,100	1,60	45,000	4,500	13,500
M 2,3	0,400	2,800	2,100	1,90	45,000	4,500	14,500
M 2,5	0,450	2,800	2,100	2,05	50,000	5,000	14,500
M 3	0,500	3,500	2,700	2,50	56,000	6,000	18,000
M 4	0,700	4,500	3,400	3,30	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,20	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,00	80,000	11,000	30,000
M 8	1,250	8,000	6,200	6,80	90,000	14,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura metrica ISO

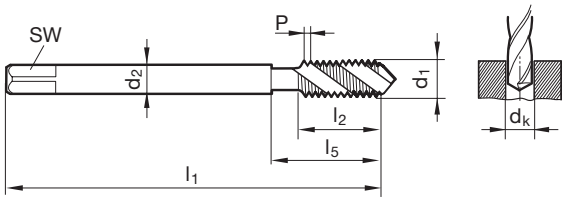
Catalogo n° 73136

Intensiv **W** | DIN **376** | **C** | **HSS-E** | **luci-do** | **R** | **ISO2/6H**

P	M	K	N	S	H
			●		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 45°
- evacuazione truciolo nella direzione del codolo
- materiali morbidi e a truciolo lungo quali alluminio, leghe di alluminio, metalli non ferrosi



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	10,20	110,000	18,500	49,000
M16	2,000	12,000	9,000	14,00	110,000	20,000	54,000
M20	2,500	16,000	12,000	17,50	140,000	25,000	62,000

Maschi a macchina

Maschi a macchina per fil. metr. ISO passo fine

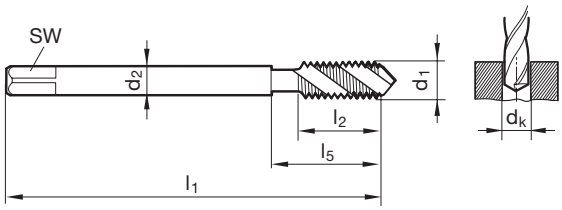
Catalogo n° 53780

Intensiv N-X | DIN 374 | C | HSS-E | TiAlN | R | 6HX

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 45°
- evacuazione truciolo nella direzione del codolo
- uso universale
- acciaio 600-1300 N / mm²
- acciai inossidabili e resist. al calore
- metalli non ferrosi
- ghise



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
6,004	M 6 X0,75	4,500	3,400	5,20	80,000	8,000	30,000
8,004	M 8 X0,75	6,000	4,900	7,20	80,000	8,000	30,000
8,005	M 8 X1	6,000	4,900	7,00	90,000	11,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	11,000	35,000
10,006	M10 X1,25	7,000	5,500	8,80	100,000	14,000	39,000
12,005	M12 X1	9,000	7,000	11,00	100,000	11,000	40,000
12,006	M12 X1,25	9,000	7,000	10,80	100,000	16,000	40,000
12,007	M12 X1,5	9,000	7,000	10,50	100,000	16,000	40,000
14,007	M14 X1,5	11,000	9,000	12,50	100,000	15,000	40,000
16,007	M16 X1,5	12,000	9,000	14,50	100,000	15,000	44,000
18,007	M18 X1,5	14,000	11,000	16,50	110,000	16,000	44,000
20,007	M20 X1,5	16,000	12,000	18,50	125,000	16,000	44,000
24,007	M24 X1,5	18,000	14,500	22,50	140,000	16,000	48,000

Maschi a macchina

Maschi a macchina per fil. metr. ISO passo fine

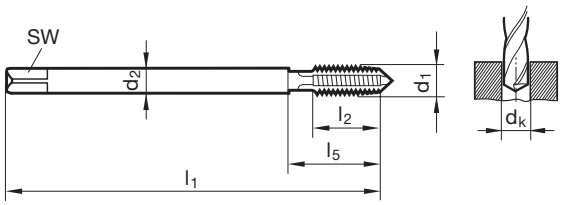
Catalogo n° 53778

Produktiv N-X | DIN 374 | B | HSS-E | Al-TiZrN | R | 6HX

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- uso universale
- acciaio 600-1300 N / mm²
- acciai inossidabili e resist. al calore
- metalli non ferrosi
- ghise



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
6,004	M 6 X0,75	4,500	3,400	5,20	80,000	13,000	30,000
8,004	M 8 X0,75	6,000	4,900	7,20	80,000	14,000	30,000
8,005	M 8 X1	6,000	4,900	7,00	90,000	16,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	16,000	35,000
10,006	M10 X1,25	7,000	5,500	8,80	100,000	20,000	39,000
12,005	M12 X1	9,000	7,000	11,00	100,000	20,000	40,000
12,006	M12 X1,25	9,000	7,000	10,80	100,000	20,000	40,000
12,007	M12 X1,5	9,000	7,000	10,50	100,000	20,000	40,000
14,007	M14 X1,5	11,000	9,000	12,50	100,000	20,000	40,000
16,007	M16 X1,5	12,000	9,000	14,50	100,000	22,000	44,000
18,007	M18 X1,5	14,000	11,000	16,50	110,000	25,000	44,000
20,007	M20 X1,5	16,000	12,000	18,50	125,000	25,000	44,000
24,007	M24 X1,5	18,000	14,500	22,50	140,000	28,000	48,000

Maschi a macchina

Maschi a macchina per fil. metr. ISO passo fine

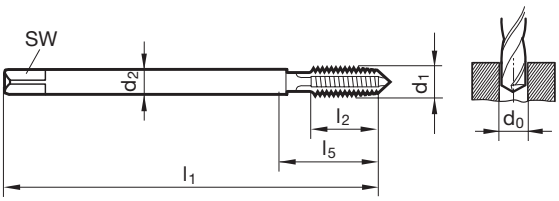
Catalogo n° 53055

Produktiv Synchro | DIN 374 | B | HSS-E-PM | TiCN | R | ISO2/6H

P	M	K	N	S	H
●	●	●	●	○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- uso universale
- materiali in acciaio fino a 1200 N/mm²



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
8,005	M 8 X1	6,000	4,900	7,00	90,000	16,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	16,000	35,000
12,005	M12 X1	9,000	7,000	11,00	100,000	20,000	40,000
12,007	M12 X1,5	9,000	7,000	10,50	100,000	20,000	40,000
14,007	M14 X1,5	11,000	9,000	12,50	100,000	20,000	40,000
16,007	M16 X1,5	12,000	9,000	14,50	100,000	22,000	44,000

Maschi a macchina

Maschi a macchina per fil. metr. ISO passo fine

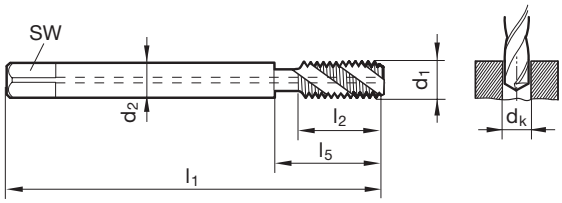
Catalogo n° 53052

Intensiv Synchro | DIN 374 | C | HSS-E-PM | TiCN | R | 6HX

P	M	K	N	S	H
●	●	●	●	○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- Scanalature con torsione destra 50°
- lunghezza del filetto più corto, adatto solo con mandrini a maschiatura sincro
- evacuazione truciolo nella direzione del codolo
- uso universale
- materiali in acciaio fino a 1200 N/mm²



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
8,005	M 8 X1	6,000	4,900	7,00	90,000	5,000	44,000
10,005	M10 X1	7,000	5,500	9,00	90,000	5,000	44,000
12,005	M12 X1	9,000	7,000	11,00	100,000	5,000	53,000
12,007	M12 X1,5	9,000	7,000	10,50	100,000	7,500	53,000
14,007	M14 X1,5	11,000	9,000	12,50	100,000	7,500	48,000
16,007	M16 X1,5	12,000	9,000	14,50	100,000	7,500	48,000
18,007	M18 X1,5	14,000	11,000	16,50	110,000	7,500	58,000
20,007	M20 X1,5	16,000	12,000	18,50	125,000	7,500	70,000

Maschi a macchina

Maschi a macchina per fil. metr. ISO passo fine

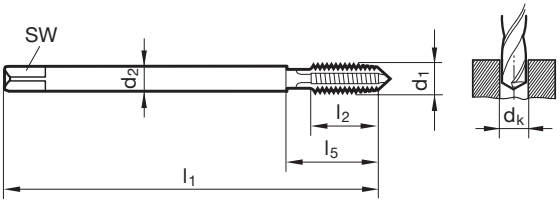
Catalogo n° 73183

Produktiv N | DIN 374 | B | HSS-E | trattati a vapore | R | ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- uso universale
- acciai fino a 1100 N/mm²



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
6,004	M 6 X0,75	4,500	3,400	5,20	80,000	13,000	30,000
8,004	M 8 X0,75	6,000	4,900	7,20	80,000	14,000	30,000
8,005	M 8 X1	6,000	4,900	7,00	90,000	16,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	16,000	35,000
12,005	M12 X1	9,000	7,000	11,00	100,000	20,000	40,000
12,007	M12 X1,5	9,000	7,000	10,50	100,000	20,000	40,000
14,007	M14 X1,5	11,000	9,000	12,50	100,000	20,000	40,000
16,007	M16 X1,5	12,000	9,000	14,50	100,000	22,000	44,000
20,007	M20 X1,5	16,000	12,000	18,50	125,000	25,000	44,000

Maschi a macchina

Maschi a macchina per fil. metr. ISO passo fine

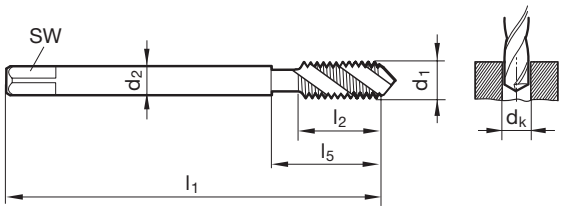
Catalogo n° 73187

Intensiv N	DIN 374	C	HSS-E	trattati a vapore	R	ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- uso universale
- acciai fino a 1100 N/mm²



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
6,004	M 6 X0,75	4,500	3,400	5,20	80,000	8,000	30,000
8,005	M 8 X1	6,000	4,900	7,00	90,000	11,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	11,000	35,000
10,006	M10 X1,25	7,000	5,500	8,80	100,000	14,000	39,000
12,005	M12 X1	9,000	7,000	11,00	100,000	11,000	40,000
12,006	M12 X1,25	9,000	7,000	10,80	100,000	16,000	40,000
12,007	M12 X1,5	9,000	7,000	10,50	100,000	16,000	40,000
14,005	M14 X1	11,000	9,000	13,00	100,000	11,000	40,000
14,007	M14 X1,5	11,000	9,000	12,50	100,000	15,000	40,000
16,007	M16 X1,5	12,000	9,000	14,50	100,000	15,000	44,000
18,007	M18 X1,5	14,000	11,000	16,50	110,000	16,000	44,000
20,007	M20 X1,5	16,000	12,000	18,50	125,000	16,000	44,000

Maschi a macchina

Maschi a macchina per fil. metr. ISO passo fine

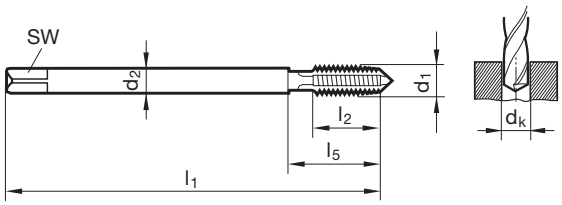
Catalogo n° 73237

N	DIN 374	C	HSS-E	luci-do	R	ISO2/6H

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- acciai fino a 800 N/mm²



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
8,004	M 8 X0,75	6,000	4,900	7,20	80,000	14,000	30,000
10,005	M10 X1	7,000	5,500	9,00	90,000	16,000	35,000
10,006	M10 X1,25	7,000	5,500	8,80	100,000	20,000	39,000
12,006	M12 X1,25	9,000	7,000	10,80	100,000	16,000	40,000
12,007	M12 X1,5	9,000	7,000	10,50	100,000	16,000	40,000
16,007	M16 X1,5	12,000	9,000	14,50	100,000	15,000	44,000
20,007	M20 X1,5	16,000	12,000	18,50	125,000	16,000	44,000
22,007	M22 X1,5	18,000	14,500	20,50	125,000	16,000	44,000
24,007	M24 X1,5	18,000	14,500	22,50	140,000	16,000	48,000

Maschi a macchina

Maschi a macchina per fil. metr. ISO passo fine

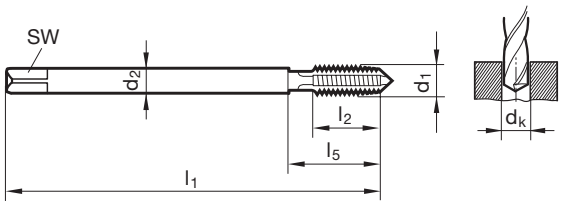
Catalogo n° 73250

Produktiv N	DIN 374	B	HSS-E	luci-do	R	ISO2/6H

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- applicazioni generali
- acciai fino a 800 N/mm²



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
4,003	M 4 X0,5	2,800	2,100	3,50	63,000	8,000	21,000
5,003	M 5 X0,5	3,500	2,700	4,50	70,000	10,000	25,000
6,003	M 6 X0,5	4,500	3,400	5,50	80,000	13,000	30,000
6,004	M 6 X0,75	4,500	3,400	5,20	80,000	13,000	30,000
8,004	M 8 X0,75	6,000	4,900	7,20	80,000	14,000	30,000
8,005	M 8 X1	6,000	4,900	7,00	90,000	16,000	35,000
9,005	M 9 X1	7,000	5,500	8,00	90,000	16,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	16,000	35,000
10,006	M10 X1,25	7,000	5,500	8,80	100,000	20,000	39,000
12,005	M12 X1	9,000	7,000	11,00	100,000	20,000	40,000
12,006	M12 X1,25	9,000	7,000	10,80	100,000	20,000	40,000
12,007	M12 X1,5	9,000	7,000	10,50	100,000	20,000	40,000
14,005	M14 X1	11,000	9,000	13,00	100,000	20,000	40,000
14,006	M14 X1,25	11,000	9,000	12,80	100,000	20,000	40,000
14,007	M14 X1,5	11,000	9,000	12,50	100,000	20,000	40,000
16,005	M16 X1	12,000	9,000	15,00	100,000	22,000	44,000
16,007	M16 X1,5	12,000	9,000	14,50	100,000	22,000	44,000
18,005	M18 X1	14,000	11,000	17,00	110,000	25,000	44,000
18,007	M18 X1,5	14,000	11,000	16,50	110,000	25,000	44,000
20,005	M20 X1	16,000	12,000	19,00	125,000	25,000	44,000
20,007	M20 X1,5	16,000	12,000	18,50	125,000	25,000	44,000
20,008	M20 X2	16,000	12,000	18,00	140,000	32,000	60,000
22,005	M22 X1	18,000	14,500	21,00	125,000	25,000	44,000
22,007	M22 X1,5	18,000	14,500	20,50	125,000	25,000	44,000
24,007	M24 X1,5	18,000	14,500	22,50	140,000	28,000	48,000
24,008	M24 X2	18,000	14,500	22,00	140,000	28,000	48,000
27,007	M27 X1,5	20,000	16,000	25,50	140,000	28,000	53,000
30,007	M30 X1,5	22,000	18,000	28,50	150,000	28,000	53,000
30,008	M30 X2	22,000	18,000	28,00	150,000	28,000	53,000
36,007	M36 X1,5	28,000	22,000	34,50	170,000	30,000	56,000

Maschi a macchina

Maschi a macchina per fil. metr. ISO passo fine

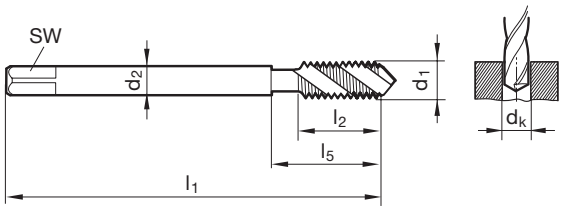
Catalogo n° 73173

Intensiv N	DIN 374	C	HSS-E	luci-do	R	ISO2/6H

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- uso universale
- acciai fino a 1100 N/mm²



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
3,002	M 3 X0,35	2,200		2,65	56,000	4,000	18,000
4,003	M 4 X0,5	2,800	2,100	3,50	63,000	5,000	21,000
5,003	M 5 X0,5	3,500	2,700	4,50	70,000	5,000	25,000
6,003	M 6 X0,5	4,500	3,400	5,50	80,000	5,000	30,000
6,004	M 6 X0,75	4,500	3,400	5,20	80,000	8,000	30,000
8,004	M 8 X0,75	6,000	4,900	7,20	80,000	8,000	30,000
8,005	M 8 X1	6,000	4,900	7,00	90,000	11,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	11,000	35,000
10,006	M10 X1,25	7,000	5,500	8,80	100,000	14,000	39,000
11,005	M11 X1	8,000	6,200	10,00	90,000	11,000	33,000
12,005	M12 X1	9,000	7,000	11,00	100,000	11,000	40,000
12,006	M12 X1,25	9,000	7,000	10,80	100,000	16,000	40,000
12,007	M12 X1,5	9,000	7,000	10,50	100,000	16,000	40,000
14,005	M14 X1	11,000	9,000	13,00	100,000	11,000	40,000
14,006	M14 X1,25	11,000	9,000	12,80	100,000	15,000	40,000
14,007	M14 X1,5	11,000	9,000	12,50	100,000	15,000	40,000
16,005	M16 X1	12,000	9,000	15,00	100,000	11,000	44,000
16,007	M16 X1,5	12,000	9,000	14,50	100,000	15,000	44,000
18,005	M18 X1	14,000	11,000	17,00	110,000	12,000	44,000
18,007	M18 X1,5	14,000	11,000	16,50	110,000	16,000	44,000
20,007	M20 X1,5	16,000	12,000	18,50	125,000	16,000	44,000
22,007	M22 X1,5	18,000	14,500	20,50	125,000	16,000	44,000
24,007	M24 X1,5	18,000	14,500	22,50	140,000	16,000	48,000
24,008	M24 X2	18,000	14,500	22,00	140,000	22,000	48,000
26,007	M26 X1,5	18,000	14,500	24,50	140,000	20,000	50,000
30,007	M30 X1,5	22,000	18,000	28,50	150,000	20,000	53,000
30,008	M30 X2	22,000	18,000	28,00	150,000	20,000	53,000

Maschi a macchina

Maschi a macchina per fil. metr. ISO passo fine

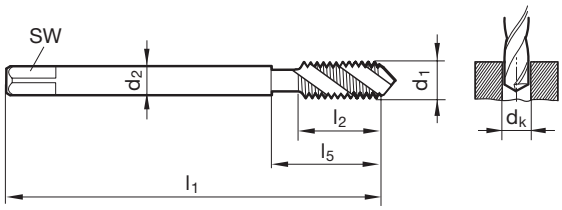
Catalogo n° 63173

Intensiv N	DIN 374	C	HSS-E	TiN	R	ISO2/6H

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- applicazioni generali
- acciai fino a 800 N/mm²



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
8,005	M 8 X1	6,000	4,900	7,00	90,000	11,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	11,000	35,000
10,006	M10 X1,25	7,000	5,500	8,80	100,000	14,000	39,000
12,005	M12 X1	9,000	7,000	11,00	100,000	11,000	40,000
12,007	M12 X1,5	9,000	7,000	10,50	100,000	16,000	40,000
14,007	M14 X1,5	11,000	9,000	12,50	100,000	15,000	40,000
16,007	M16 X1,5	12,000	9,000	14,50	100,000	15,000	44,000
20,007	M20 X1,5	16,000	12,000	18,50	125,000	16,000	44,000

Maschi a macchina

Maschi a macchina per fil. metr. ISO passo fine

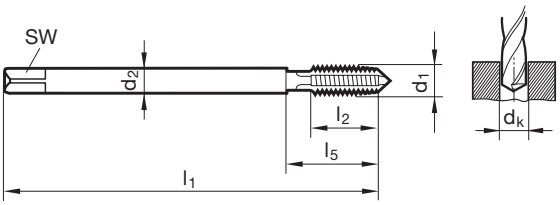
Catalogo n° 73646

Produktiv H	DIN 374	B	HSS-E	nitru-rato	R	ISO2/6H

P	M	K	N	S	H
●		○			

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai ad alta resistenza
- acciaio da 1100 a 1600 N/mm²



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
3,002	M 3 X0,35	2,200		2,65	56,000	7,000	18,000
4,003	M 4 X0,5	2,800	2,100	3,50	63,000	8,000	21,000
5,003	M 5 X0,5	3,500	2,700	4,50	70,000	10,000	25,000
6,004	M 6 X0,75	4,500	3,400	5,20	80,000	13,000	30,000
8,004	M 8 X0,75	6,000	4,900	7,20	80,000	14,000	30,000
8,005	M 8 X1	6,000	4,900	7,00	90,000	16,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	16,000	35,000
12,007	M12 X1,5	9,000	7,000	10,50	100,000	20,000	40,000
14,007	M14 X1,5	11,000	9,000	12,50	100,000	20,000	40,000
16,007	M16 X1,5	12,000	9,000	14,50	100,000	22,000	44,000
18,007	M18 X1,5	14,000	11,000	16,50	110,000	25,000	44,000
20,007	M20 X1,5	16,000	12,000	18,50	125,000	25,000	44,000
22,007	M22 X1,5	18,000	14,500	20,50	125,000	25,000	44,000

Maschi a macchina

Maschi a macchina per fil. metr. ISO passo fine

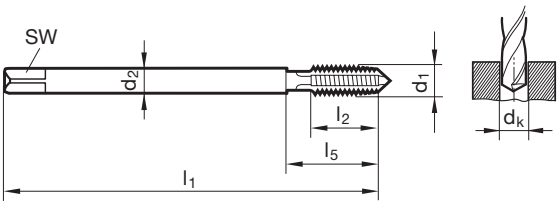
Catalogo n° 73178

Produktiv HD | DIN 374 | B | HSS-E | trattati a vapore | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
5,003	M 5 X0,5	3,500	2,700	4,50	70,000	10,000	25,000
6,004	M 6 X0,75	4,500	3,400	5,20	80,000	13,000	30,000
8,005	M 8 X1	6,000	4,900	7,00	90,000	16,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	16,000	35,000
12,005	M12 X1	9,000	7,000	11,00	100,000	20,000	40,000
12,007	M12 X1,5	9,000	7,000	10,50	100,000	20,000	40,000
14,007	M14 X1,5	11,000	9,000	12,50	100,000	20,000	40,000
16,007	M16 X1,5	12,000	9,000	14,50	100,000	22,000	44,000
18,007	M18 X1,5	14,000	11,000	16,50	110,000	25,000	44,000
20,007	M20 X1,5	16,000	12,000	18,50	125,000	25,000	44,000

Maschi a macchina

Maschi a macchina per fil. metr. ISO passo fine

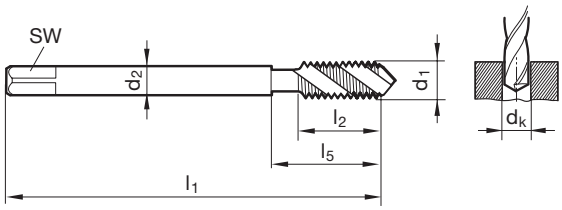
Catalogo n° 73180

Intensiv HD | DIN 374 | C | HSS-E | trattati a vapore | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
8,005	M 8 X1	6,000	4,900	7,00	90,000	11,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	11,000	35,000
12,005	M12 X1	9,000	7,000	11,00	100,000	11,000	40,000
12,007	M12 X1,5	9,000	7,000	10,50	100,000	16,000	40,000
14,007	M14 X1,5	11,000	9,000	12,50	100,000	15,000	40,000
16,007	M16 X1,5	12,000	9,000	14,50	100,000	15,000	44,000
18,007	M18 X1,5	14,000	11,000	16,50	110,000	16,000	44,000
20,007	M20 X1,5	16,000	12,000	18,50	125,000	16,000	44,000

Maschi a macchina

Maschi a macchina per fil. metr. ISO passo fine

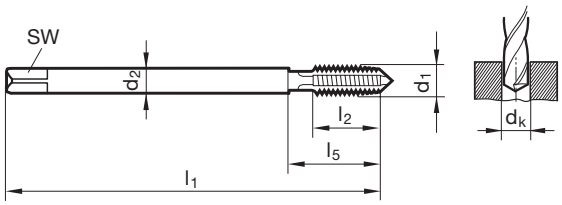
Catalogo n° 73194

GG | DIN 374 | C | HSS-E | nitru-rato | R | 6HX

P	M	K	N	S	H
		•			

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- ghise come ghisa grigia, ghisa temprata e ghisa sferoidale



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
8,005	M 8 X1	6,000	4,900	7,00	90,000	16,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	16,000	35,000
12,007	M12 X1,5	9,000	7,000	10,50	100,000	20,000	40,000
14,007	M14 X1,5	11,000	9,000	12,50	100,000	20,000	40,000
16,007	M16 X1,5	12,000	9,000	14,50	100,000	22,000	44,000
18,007	M18 X1,5	14,000	11,000	16,50	110,000	25,000	44,000
20,007	M20 X1,5	16,000	12,000	18,50	125,000	25,000	44,000

Maschi a macchina

Maschi a macchina per filettatura UNC

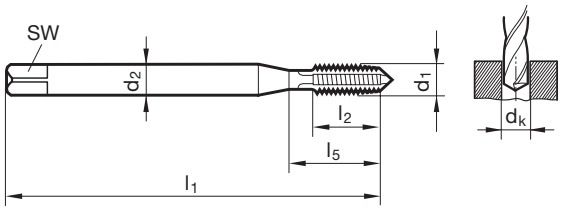
Catalogo n° 73308

Produktiv	~DIN					
N	371	B	HSS-E	trattati a vapore	R	2B

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- uso universale
- acciai fino a 1100 N/mm²



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
2,845	4 -40	3,500	2,700	2,35	56,000	11,000	18,000
3,505	6 -32	4,000	3,000	2,85	56,000	12,000	20,000
4,166	8 -32	4,500	3,400	3,50	63,000	12,000	21,000
4,826	10 -24	6,000	4,900	3,90	70,000	14,000	25,000
6,350	1/4 -20	7,000	5,500	5,10	80,000	16,000	30,000
7,938	5/16-18	8,000	6,200	6,60	90,000	18,000	35,000
9,525	3/8 -16	10,000	8,000	8,00	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura UNC

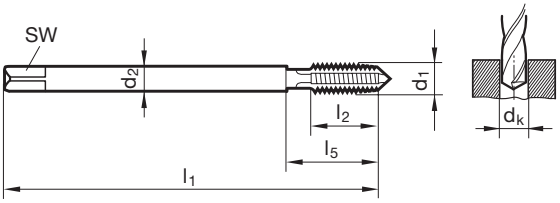
Catalogo n° 73309

Produktiv	~DIN					
N	376	B	HSS-E	trattati a vapore	R	2B

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- uso universale
- acciai fino a 1100 N/mm²



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
12,700	1/2 -13	9,000	7,000	10,80	110,000	25,000	49,000
15,875	5/8 -11	12,000	9,000	13,50	110,000	30,000	53,000
19,050	3/4 -10	14,000	11,000	16,50	125,000	33,000	62,000

Maschi a macchina

Maschi a macchina per filettatura UNC

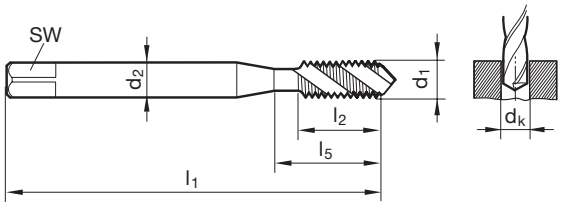
Catalogo n° 73322

Intensiv	~DIN					
N	371	C	HSS-E	trattati a vapore	R	2B

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- uso universale
- acciai fino a 1100 N/mm²



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
2,845	4 -40	3,500	2,700	2,35	56,000	7,000	18,000
3,505	6 -32	4,000	3,000	2,85	56,000	8,000	20,000
4,166	8 -32	4,500	3,400	3,50	63,000	8,000	21,000
4,826	10 -24	6,000	4,900	3,90	70,000	11,000	25,000
6,350	1/4 -20	7,000	5,500	5,10	80,000	13,000	30,000
7,938	5/16-18	8,000	6,200	6,60	90,000	14,000	35,000
9,525	3/8 -16	10,000	8,000	8,00	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura UNC

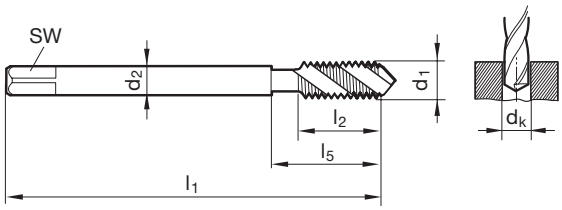
Catalogo n° 73323

Intensiv N	~DIN 376	C	HSS-E	trattati a vapore	R	2B

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- uso universale
- acciai fino a 1100 N/mm²



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
12,700	1/2 -13	9,000	7,000	10,80	110,000	20,000	49,000
15,875	5/8 -11	12,000	9,000	13,50	110,000	24,000	53,000
19,050	3/4 -10	14,000	11,000	16,50	125,000	25,000	62,000

Maschi a macchina

Maschi a macchina per filettatura UNC

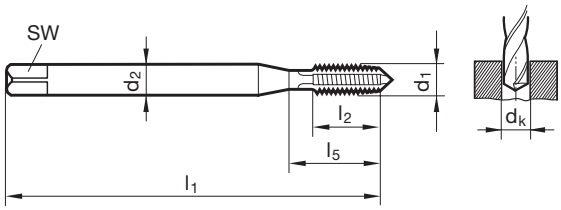
Catalogo n° 73297

Produktiv HD | ~DIN 371 | B | HSS-E | trattati a vapore | R | 2B

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
2,845	4 -40	3,500	2,700	2,35	56,000	11,000	18,000
3,505	6 -32	4,000	3,000	2,85	56,000	12,000	20,000
4,166	8 -32	4,500	3,400	3,50	63,000	12,000	21,000
4,826	10 -24	6,000	4,900	3,90	70,000	14,000	25,000
6,350	1/4 -20	7,000	5,500	5,10	80,000	16,000	30,000
7,938	5/16-18	8,000	6,200	6,60	90,000	18,000	35,000
9,525	3/8 -16	10,000	8,000	8,00	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura UNC

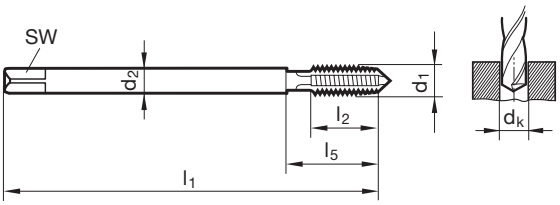
Catalogo n° 73298

Produktiv HD | ~DIN 376 | B | HSS-E | trattati a vapore | R | 2B

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
12,700	1/2 -13	9,000	7,000	10,80	110,000	25,000	49,000
15,875	5/8 -11	12,000	9,000	13,50	110,000	30,000	53,000
19,050	3/4 -10	14,000	11,000	16,50	125,000	33,000	62,000
25,400	1 - 8	18,000	14,500	22,25	160,000	38,000	73,000

Maschi a macchina

Maschi a macchina per filettatura UNC

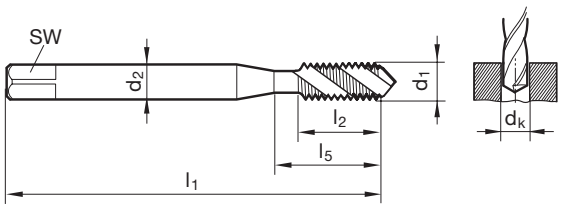
Catalogo n° 73304

Intensiv **HD** | ~DIN **371** | **C** | **HSS-E** | **trattati a vapore** | **R** | **2B**

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
2,845	4 -40	3,500	2,700	2,35	56,000	7,000	18,000
3,505	6 -32	4,000	3,000	2,85	56,000	8,000	20,000
4,166	8 -32	4,500	3,400	3,50	63,000	8,000	21,000
4,826	10 -24	6,000	4,900	3,90	70,000	11,000	25,000
6,350	1/4 -20	7,000	5,500	5,10	80,000	13,000	30,000
7,938	5/16-18	8,000	6,200	6,60	90,000	14,000	35,000
9,525	3/8 -16	10,000	8,000	8,00	100,000	16,000	39,000

Maschi a macchina

Maschi a macchina per filettatura UNC

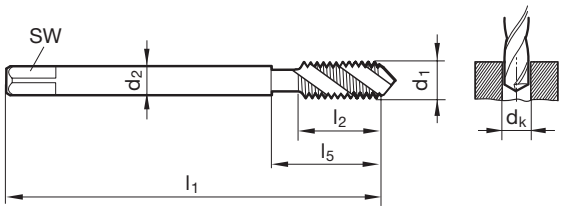
Catalogo n° 73305

Intensiv **HD** | ~DIN **376** | **C** | **HSS-E** | **trattati a vapore** | **R** | **2B**

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
12,700	1/2 -13	9,000	7,000	10,80	110,000	20,000	49,000
15,875	5/8 -11	12,000	9,000	13,50	110,000	24,000	53,000
19,050	3/4 -10	14,000	11,000	16,50	125,000	25,000	62,000

Maschi a macchina

Maschi a macchina per filettatura UNC

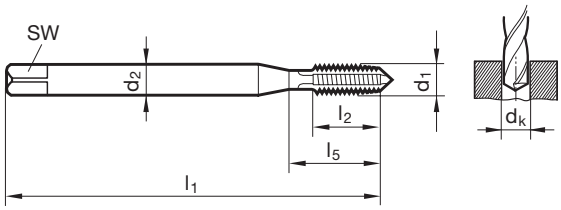
Catalogo n° 73326

GG	~DIN 371	C	HSS-E	nitru-rato	R	2B

P	M	K	N	S	H
		•			

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- ghise come ghisa grigia, ghisa temprata e ghisa sferoidale



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
4,166	8 -32	4,500	3,400	3,50	63,000	12,000	21,000
4,826	10 -24	6,000	4,900	3,90	70,000	14,000	25,000
6,350	1/4 -20	7,000	5,500	5,10	80,000	16,000	30,000
7,938	5/16-18	8,000	6,200	6,60	90,000	18,000	35,000
9,525	3/8 -16	10,000	8,000	8,00	100,000	20,000	39,000

Maschi a macchina

Maschi a macchina per filettatura UNC

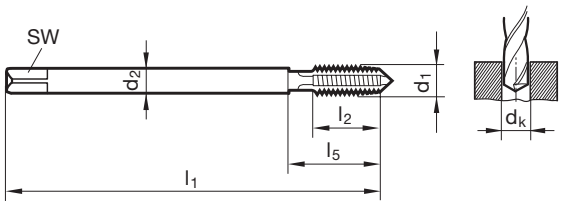
Catalogo n° 73327

GG | ~DIN 376 | C | HSS-E | nitru-rato | R | 2B

P	M	K	N	S	H
		•			

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- ghise come ghisa grigia, ghisa temprata e ghisa sferoidale



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
12,700	1/2 -13	9,000	7,000	10,80	110,000	25,000	49,000
15,875	5/8 -11	12,000	9,000	13,50	110,000	30,000	53,000
19,050	3/4 -10	14,000	11,000	16,50	125,000	33,000	62,000
25,400	1 - 8	18,000	14,500	22,25	160,000	38,000	73,000

Maschi a macchina

Maschi a macchina per filettatura UNF

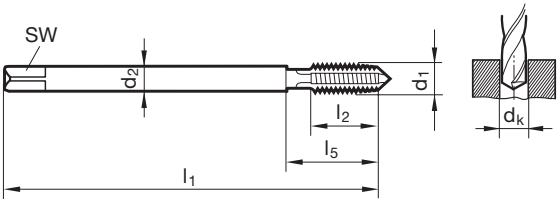
Catalogo n° 73310

Produktiv	~DIN					
N	374	B	HSS-E	trattati a vapore	R	2B

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- uso universale
- acciai fino a 1100 N/mm²



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
4,826	10 -32	3,500	2,700	4,10	70,000	14,000	25,000
6,350	1/4 -28	4,500	3,400	5,50	80,000	16,000	30,000
9,525	3/8 -24	7,000	5,500	8,50	90,000	18,000	35,000
15,875	5/8 -18	12,000	9,000	14,50	100,000	22,000	44,000

Maschi a macchina

Maschi a macchina per filettatura UNF

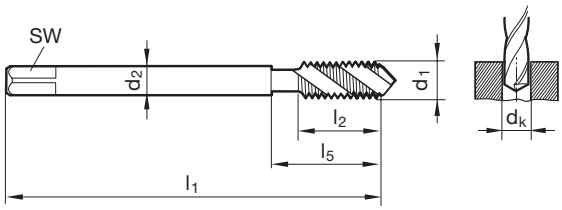
Catalogo n° 73324

Intensiv N	~DIN 374	C	HSS-E	trattati a vapore	R	2B

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- uso universale
- acciai fino a 1100 N/mm²



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
4,826	10 -32	3,500	2,700	4,10	70,000	8,500	25,000
6,350	1/4 -28	4,500	3,400	5,50	80,000	9,000	30,000
7,938	5/16-24	6,000	4,900	6,90	90,000	11,000	35,000
9,525	3/8 -24	7,000	5,500	8,50	90,000	11,000	35,000
11,113	7/16-20	8,000	6,200	9,90	100,000	13,000	42,000
12,700	1/2 -20	9,000	7,000	11,50	100,000	13,000	40,000
15,875	5/8 -18	12,000	9,000	14,50	100,000	15,000	44,000

Maschi a macchina

Maschi a macchina per filettatura UNF

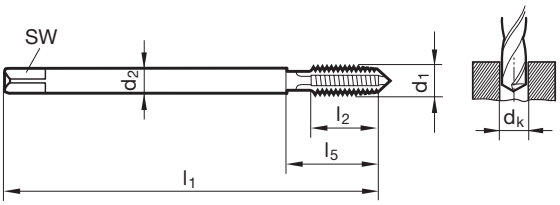
Catalogo n° 73299

Produktiv HD | ~DIN 374 | B | HSS-E | trattati a vapore | R | 2B

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
4,826	10 -32	3,500	2,700	4,10	70,000	14,000	25,000
6,350	1/4 -28	4,500	3,400	5,50	80,000	16,000	30,000
9,525	3/8 -24	7,000	5,500	8,50	90,000	18,000	35,000
15,875	5/8 -18	12,000	9,000	14,50	100,000	22,000	44,000

Maschi a macchina

Maschi a macchina per filettatura UNF

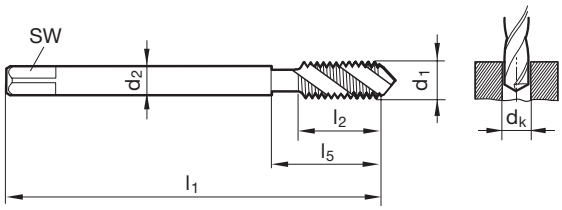
Catalogo n° 73306

Intensiv **HD** | ~DIN **374** | **C** | **HSS-E** | **trattati a vapore** | **R** | **2B**

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
4,826	10 -32	3,500	2,700	4,10	70,000	8,500	25,000
6,350	1/4 -28	4,500	3,400	5,50	80,000	9,000	30,000
7,938	5/16-24	6,000	4,900	6,90	90,000	11,000	35,000
9,525	3/8 -24	7,000	5,500	8,50	90,000	11,000	35,000
11,113	7/16-20	8,000	6,200	9,90	100,000	13,000	42,000
12,700	1/2 -20	9,000	7,000	11,50	100,000	13,000	40,000
15,875	5/8 -18	12,000	9,000	14,50	100,000	15,000	44,000
19,050	3/4 -16	14,000	11,000	17,50	110,000	16,000	44,000

Maschi a macchina

Maschi a macchina per filettatura NPT

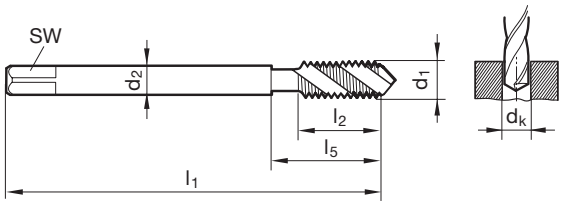
Catalogo n° 73293

VA | WN | C | HSS-E | trattati a vapore | R

P	M	K	N	S	H
○	●	○		○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra di circa 25°
- per profondità di filetto fino a 2xD
- evacuazione truciolo nella direzione del codolo



Codice	d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
10,620	1/8	27,000	11,000	9,000	8,50	90,000	15,000	29,000
14,140	1/4	18,000	14,000	11,000	11,20	100,000	21,000	40,000
17,570	3/8	18,000	16,000	12,000	14,40	110,000	21,000	35,000
21,900	1/2	14,000	18,000	14,500	18,00	125,000	27,000	44,000
27,230	3/4	14,000	22,000	18,000	23,40	140,000	27,000	52,000

Maschi a macchina

Maschi a macchina per filettatura Whitworth BSP

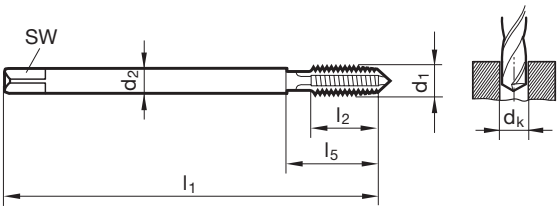
Catalogo n° 73321

Produktiv **N** | DIN **5156** | **B** | **HSS-E** | **trattati a vapore** | **R**

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- uso universale
- acciai fino a 1100 N/mm²



Codice	d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
9,728	G 1/8	28,000	7,000	5,500	8,80	90,000	18,000	35,000
13,157	G 1/4	19,000	11,000	9,000	11,80	100,000	20,000	40,000
16,662	G 3/8	19,000	12,000	9,000	15,25	100,000	22,000	44,000
20,955	G 1/2	14,000	16,000	12,000	19,00	125,000	25,000	44,000
26,441	G 3/4	14,000	20,000	16,000	24,50	140,000	28,000	53,000
33,249	G1	11,000	25,000	20,000	30,75	160,000	30,000	56,000

Maschi a macchina

Maschi a macchina per filettatura Whitworth BSP

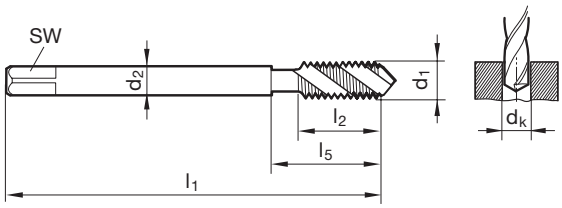
Catalogo n° 73325

Intensiv **N** | DIN **5156** | **C** | **HSS-E** | **trattati a vapore** | **R**

P	M	K	N	S	H
●	○	○	○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- uso universale
- acciai fino a 1100 N/mm²



Codice	d1	P	d2	SW	dk	l1	l2	l5
		G/inch	mm	mm	mm	mm	mm	mm
9,728	G 1/8	28,000	7,000	5,500	8,80	90,000	11,000	35,000
13,157	G 1/4	19,000	11,000	9,000	11,80	100,000	14,000	40,000
16,662	G 3/8	19,000	12,000	9,000	15,25	100,000	14,000	44,000
20,955	G 1/2	14,000	16,000	12,000	19,00	125,000	18,000	44,000
26,441	G 3/4	14,000	20,000	16,000	24,50	140,000	20,000	53,000
33,249	G1	11,000	25,000	20,000	30,75	160,000	24,000	56,000

Maschi a macchina

Maschi a macchina per filettatura Whitworth BSP

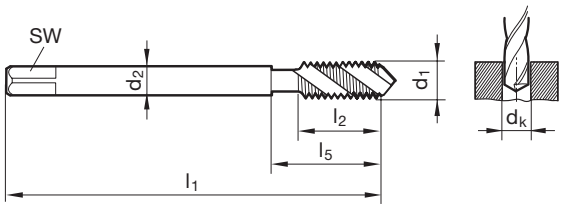
Catalogo n° 53788

Intensiv N-X | DIN 5156 | C | HSS-E | TiAlN | R

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 45°
- evacuazione truciolo nella direzione del codolo
- uso universale
- acciaio 600-1300 N / mm²
- acciai inossidabili e resist. al calore
- metalli non ferrosi
- ghise



Codice	d1	P	d2	SW	dk	l1	l2	l5
		G/inch	mm	mm	mm	mm	mm	mm
7,723	G 1/16	28,000	6,000	4,900	6,80	90,000	11,000	30,000
9,728	G 1/8	28,000	7,000	5,500	8,80	90,000	11,000	35,000
13,157	G 1/4	19,000	11,000	9,000	11,80	100,000	14,000	40,000
16,662	G 3/8	19,000	12,000	9,000	15,25	100,000	14,000	44,000
20,955	G 1/2	14,000	16,000	12,000	19,00	125,000	18,000	44,000
22,911	G 5/8	14,000	18,000	14,500	21,00	125,000	18,000	48,000
26,441	G 3/4	14,000	20,000	16,000	24,50	140,000	20,000	53,000
30,201	G 7/8	14,000	22,000	18,000	28,25	150,000	22,000	53,000
33,249	G1	11,000	25,000	20,000	30,75	160,000	24,000	56,000

Maschi a macchina

Maschi a macchina per filettatura Whitworth BSP

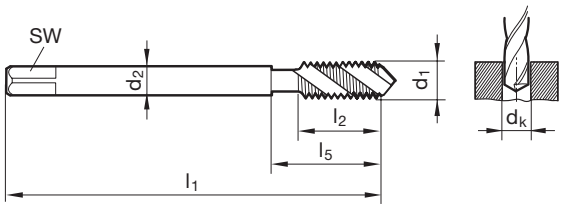
Catalogo n° 73286

Intensiv N	DIN 5156	C	HSS-E	luci-do	R

P	M	K	N	S	H
●			○		

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- applicazioni generali
- acciai fino a 800 N/mm²



Codice	d1	P	d2	SW	dk	l1	l2	l5
		G/inch	mm	mm	mm	mm	mm	mm
9,728	G 1/8	28,000	7,000	5,500	8,80	90,000	11,000	35,000
13,157	G 1/4	19,000	11,000	9,000	11,80	100,000	14,000	40,000
16,662	G 3/8	19,000	12,000	9,000	15,25	100,000	14,000	44,000
20,955	G 1/2	14,000	16,000	12,000	19,00	125,000	18,000	44,000
26,441	G 3/4	14,000	20,000	16,000	24,50	140,000	20,000	53,000
33,249	G1	11,000	25,000	20,000	30,75	160,000	24,000	56,000
41,910	G1 1/4	11,000	32,000	24,000	39,50	170,000	25,000	57,000
47,803	G1 1/2	11,000	36,000	29,000	45,25	190,000	27,000	60,000

Maschi a macchina

Maschi a macchina per filettatura Whitworth BSP

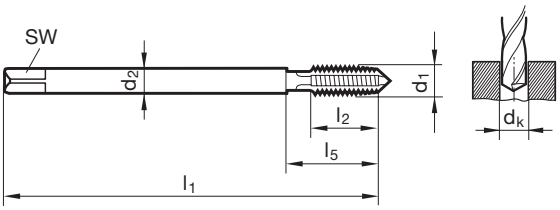
Catalogo n° 73300

Produktiv **HD** | DIN **5156** | **B** | **HSS-E** | **trattati a vapore** | **R**

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



Codice	d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
9,728	G 1/8	28,000	7,000	5,500	8,80	90,000	18,000	35,000
13,157	G 1/4	19,000	11,000	9,000	11,80	100,000	20,000	40,000
16,662	G 3/8	19,000	12,000	9,000	15,25	100,000	22,000	44,000
20,955	G 1/2	14,000	16,000	12,000	19,00	125,000	25,000	44,000
26,441	G 3/4	14,000	20,000	16,000	24,50	140,000	28,000	53,000
33,249	G1	11,000	25,000	20,000	30,75	160,000	30,000	56,000

Maschi a macchina

Maschi a macchina per filettatura Whitworth BSP

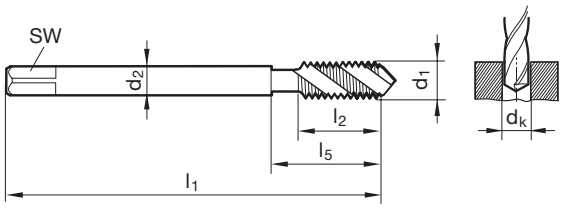
Catalogo n° 73288

Intensiv HD | DIN 5156 | C | HSS-E | trattati a vapore | R

P	M	K	N	S	H
	●			○	

Parametri di lav. ind. a pag. 348

- per fori ciechi
- scanalature con torsione destra 40°
- evacuazione truciolo nella direzione del codolo
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



Codice	d1	P	d2	SW	dk	l1	l2	l5
		G/inch	mm	mm	mm	mm	mm	mm
9,728	G 1/8	28,000	7,000	5,500	8,80	90,000	11,000	35,000
13,157	G 1/4	19,000	11,000	9,000	11,80	100,000	14,000	40,000
16,662	G 3/8	19,000	12,000	9,000	15,25	100,000	14,000	44,000
20,955	G 1/2	14,000	16,000	12,000	19,00	125,000	18,000	44,000
26,441	G 3/4	14,000	20,000	16,000	24,50	140,000	20,000	53,000
33,249	G1	11,000	25,000	20,000	30,75	160,000	24,000	56,000

Maschi a macchina

Maschi a macchina per filettatura Whitworth BSP

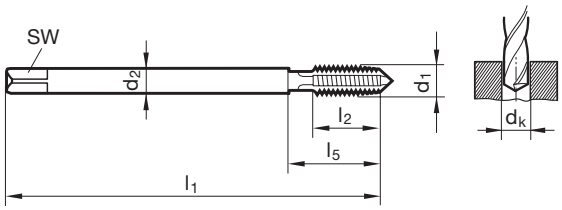
Catalogo n° 73345

GG	DIN 5156	C	HSS-E	nitru-rato	R

P	M	K	N	S	H
		•			

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- ghise come ghisa grigia, ghisa temprata e ghisa sferoidale



Codice	d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
9,728	G 1/8	28,000	7,000	5,500	8,80	90,000	18,000	35,000
13,157	G 1/4	19,000	11,000	9,000	11,80	100,000	20,000	40,000
16,662	G 3/8	19,000	12,000	9,000	15,25	100,000	22,000	44,000
20,955	G 1/2	14,000	16,000	12,000	19,00	125,000	25,000	44,000
26,441	G 3/4	14,000	20,000	16,000	24,50	140,000	28,000	53,000
33,249	G1	11,000	25,000	20,000	30,75	160,000	30,000	56,000

Maschi a macchina

Maschi a macchina per filettatura Whitworth BSP

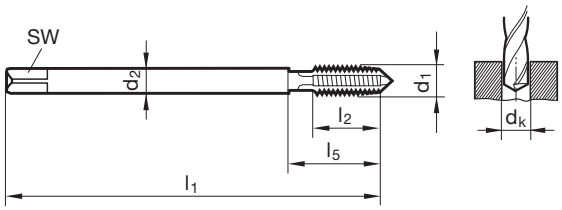
Catalogo n° 53787

Produktiv N-X | DIN 5156 | B | HSS-E | Al-TiZrN | R

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- uso universale
- acciaio 600-1300 N / mm²
- acciai inossidabili e resist. al calore
- metalli non ferrosi
- ghise



Codice	d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
7,723	G 1/16	28,000	6,000	4,900	6,80	90,000	18,000	30,000
9,728	G 1/8	28,000	7,000	5,500	8,80	90,000	18,000	35,000
13,157	G 1/4	19,000	11,000	9,000	11,80	100,000	20,000	40,000
16,662	G 3/8	19,000	12,000	9,000	15,25	100,000	22,000	44,000
20,955	G 1/2	14,000	16,000	12,000	19,00	125,000	25,000	44,000
22,911	G 5/8	14,000	18,000	14,500	21,00	125,000	25,000	48,000
26,441	G 3/4	14,000	20,000	16,000	24,50	140,000	28,000	53,000
30,201	G 7/8	14,000	22,000	18,000	28,25	150,000	28,000	53,000
33,249	G1	11,000	25,000	20,000	30,75	160,000	30,000	56,000

Maschi a macchina

Maschi a macchina per filettatura Pg

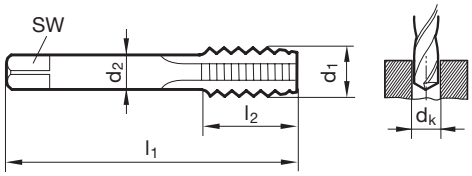
Catalogo n° 73296

N	DIN 40432	B	HSS-E	luci-do	R

P	M	K	N	S	H
●		○	○		

Parametri di lav. ind. a pag. 348

- per fori passanti
- con smusso
- evacuazione truciolo nel senso di avanzamento
- uso universale
- acciai fino a 1100 N/mm²



Codice	d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm
12,500	PG 7	20,000	9,000	7,000	11,40	70,000	22,000
15,200	PG 9	18,000	12,000	9,000	14,00	70,000	22,000
18,600	PG 11	18,000	14,000	11,000	17,30	80,000	22,000
20,400	PG 13,5	18,000	16,000	12,000	19,00	80,000	22,000
22,500	PG 16	18,000	18,000	14,500	21,30	80,000	22,000

Maschi a macchina

Maschi corti per filettatura NPT

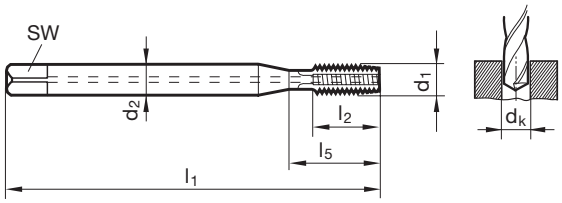
Catalogo n° 73295

N	WN	C	HSS-E	luci-do	R

P	M	K	N	S	H
●		○	○		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- per profondità di filetto fino a 1xD
- uso universale
- acciai fino a 1100 N/mm²



Codice	d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
8,190	1/16	27,000	6,000	4,900	6,15	56,000	14,000	27,000
10,620	1/8	27,000	7,000	5,500	8,40	63,000	15,000	29,000
14,140	1/4	18,000	11,000	9,000	11,10	63,000	21,000	33,000
17,570	3/8	18,000	12,000	9,000	14,30	70,000	21,000	35,000
21,900	1/2	14,000	16,000	12,000	17,90	80,000	27,000	41,000
27,230	3/4	14,000	20,000	16,000	23,30	100,000	27,000	42,000
34,180	1	11,500	25,000	20,000	29,00	110,000	32,000	53,000

Maschi a macchina a rullare

Maschi a macchina a rullare con canalini di lubr. per fil. metrica ISO

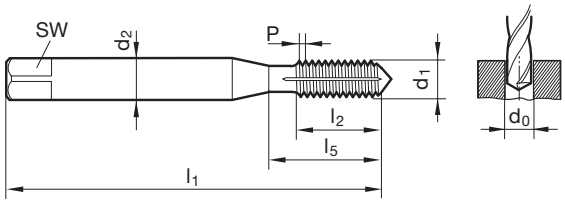
Catalogo n° 73120

Durativ | ~DIN 371 | C | HSS-E | luci-do | R | 6HX

P	M	K	N	S	H
●	●		●		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- per grandi profondità del filetto
- uso universale
- materiali in acciaio fino a 1000 N/mm²
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,80	56,000	10,000	18,000
M 3,5	0,600	4,000	3,000	3,25	56,000	12,000	20,000
M 4	0,700	4,500	3,400	3,70	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,65	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,55	80,000	16,000	30,000
M 8	1,250	8,000	6,200	7,40	90,000	17,000	35,000
M10	1,500	10,000	8,000	9,30	100,000	20,000	39,000

Maschi a macchina a rullare

Maschi a macchina a rullare con canalini di lubr. per fil. metrica ISO

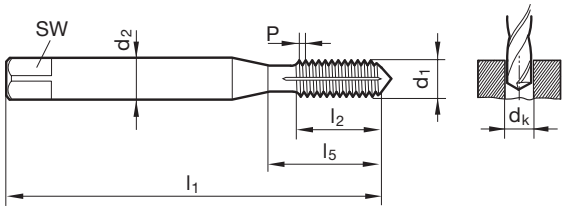
Catalogo n° 63120

Durativ | ~DIN 371 | C | HSS-E | TiN | R | 6HX

P	M	K	N	S	H
●	●		●		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- per grandi profondità del filetto
- uso universale
- materiali in acciaio fino a 1000 N/mm²
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,80	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,70	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,65	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,55	80,000	16,000	30,000
M 8	1,250	8,000	6,200	7,40	90,000	17,000	35,000
M10	1,500	10,000	8,000	9,30	100,000	20,000	39,000

Maschi a macchina a rullare

Maschi a macchina a rullare con canalini di lubr. per fil. metrica ISO

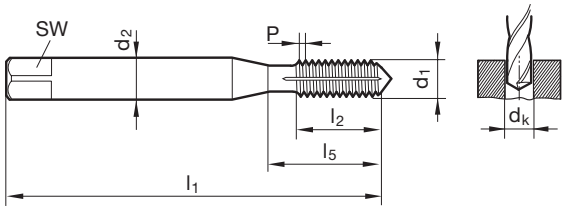
Catalogo n° 63119

Durativ | ~DIN 371 | C | HSS-E | TiN | R | 6GX

P	M	K	N	S	H
●	●		●		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- per grandi profondità del filetto
- uso universale
- materiali in acciaio fino a 1000 N/mm²
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,80	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,70	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,65	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,55	80,000	16,000	30,000
M 8	1,250	8,000	6,200	7,40	90,000	17,000	35,000
M10	1,500	10,000	8,000	9,30	100,000	20,000	39,000

Maschi a macchina a rullare

Maschi a macchina a rullare con canalini di lubr. per fil. metrica ISO

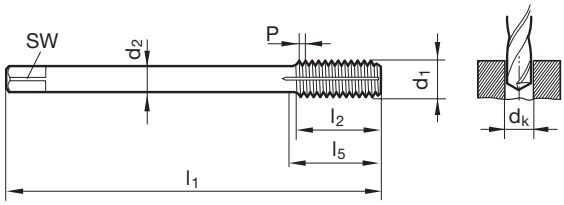
Catalogo n° 63122

Durativ | ~DIN 376 | C | HSS-E | TiN | R | 6HX

P	M	K	N	S	H
●	●		●		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- per grandi profondità del filetto
- uso universale
- materiali in acciaio fino a 1000 N/mm²
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M12	1,750	9,000	7,000	11,20	110,000	24,000	49,000
M14	2,000	11,000	9,000	13,10	110,000	26,000	53,000
M16	2,000	12,000	9,000	15,10	110,000	26,000	54,000

Maschi a macchina a rullare

Maschi a macchina a rullare con canalini di lubr. per fil. metrica ISO

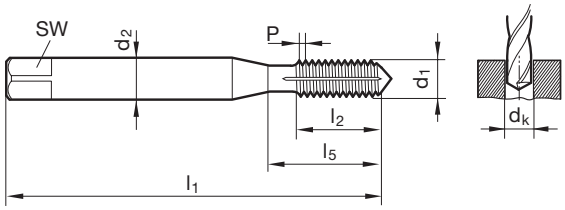
Catalogo n° 53620

Durativ | ~DIN 371 | C | HSS-E-PM | Al-CrN | R | 6HX

P	M	K	N	S	H
●	●		●		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- per grandi profondità del filetto
- uso universale
- materiali in acciaio fino a 1000 N/mm²
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,80	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,70	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,65	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,55	80,000	16,000	30,000
M 8	1,250	8,000	6,200	7,40	90,000	17,000	35,000
M10	1,500	10,000	8,000	9,30	100,000	20,000	39,000

Maschi a macchina a rullare

Maschi a macchina a rullare con canalini di lubr. per fil. metrica ISO

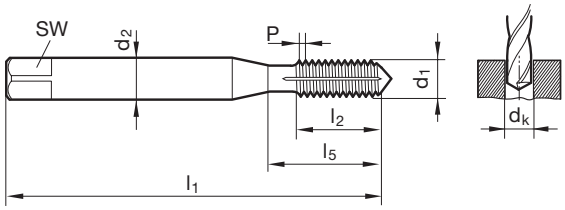
Catalogo n° 53621

Durativ | ~DIN 371 | C | HSS-E-PM | Al-CrN | R | 6GX

P	M	K	N	S	H
●	●		●		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- per grandi profondità del filetto
- uso universale
- materiali in acciaio fino a 1000 N/mm²
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,80	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,70	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,65	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,55	80,000	16,000	30,000
M 8	1,250	8,000	6,200	7,40	90,000	17,000	35,000
M10	1,500	10,000	8,000	9,30	100,000	20,000	39,000

Maschi a macchina a rullare

Maschi a macchina a rullare con canalini di lubr. per fil. metrica ISO

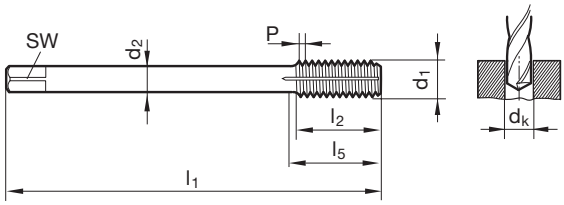
Catalogo n° 53622

Durativ | ~DIN 376 | C | HSS-E-PM | Al-CrN | R | 6HX

P	M	K	N	S	H
●	●		●		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- per grandi profondità del filetto
- uso universale
- materiali in acciaio fino a 1000 N/mm²
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M12	1,750	9,000	7,000	11,20	110,000	24,000	49,000
M14	2,000	11,000	9,000	13,10	110,000	26,000	53,000
M16	2,000	12,000	9,000	15,10	110,000	26,000	54,000
M20	2,500	16,000	12,000	18,90	140,000	32,000	62,000

Maschi a macchina a rullare

Maschi a rullare forati per fil. metrica ISO

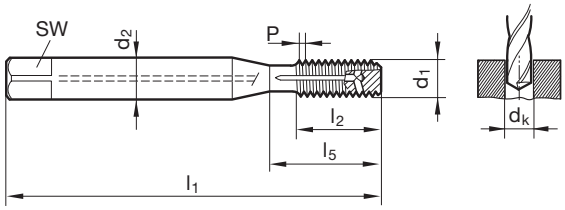
Catalogo n° 63013

Durativ | ~DIN 371 | C | VHM | TiCN | R | 6HX

P	M	K	N	S	H
●	●		●		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- per grandi profondità del filetto
- uso universale
- materiali in acciaio fino a 1000 N/mm²
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	3,500	2,700	2,80	56,000	6,000	18,000
M 4	0,700	4,500	3,400	3,70	63,000	7,500	21,000
M 5	0,800	6,000	4,900	4,65	70,000	8,500	25,000
M 6	1,000	6,000	4,900	5,55	80,000	11,000	30,000
M 8	1,250	8,000	6,200	7,40	90,000	14,000	35,000
M10	1,500	10,000	8,000	9,30	100,000	16,000	39,000

Maschi a macchina a rullare

Maschi a macchina a rullare senza canalini di lub. per fil. metrica ISO

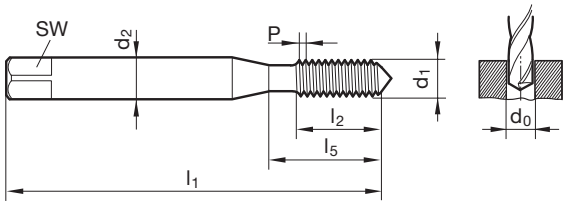
Catalogo n° 73121

Durativ | DIN 371 | C | HSS-E | luci-do | R | 6HX

P	M	K	N	S	H
●	●		●		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- per grandi profondità del filetto
- uso universale
- materiali in acciaio fino a 1000 N/mm²
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 2	0,400	2,800	2,100	1,85	45,000	8,000	13,500
M 2,2	0,450	2,800	2,100	2,03	45,000	9,000	14,500
M 2,3	0,400	2,800	2,100	2,10	45,000	9,000	14,500
M 2,5	0,450	2,800	2,100	2,30	50,000	9,000	14,500
M 3	0,500	3,500	2,700	2,80	56,000	10,000	18,000
M 3,5	0,600	4,000	3,000	3,25	56,000	12,000	20,000
M 4	0,700	4,500	3,400	3,70	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,65	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,55	80,000	16,000	30,000
M 8	1,250	8,000	6,200	7,40	90,000	17,000	35,000
M10	1,500	10,000	8,000	9,30	100,000	20,000	39,000

Maschi a macchina a rullare

Maschi a macchina a rullare senza canalini di lub. per fil. metrica ISO

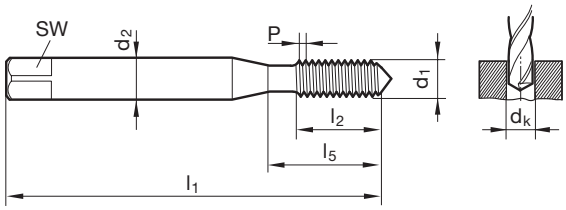
Catalogo n° 63121

Durativ | DIN 371 | C | HSS-E | TiN | R | 6HX

P	M	K	N	S	H
●	●		●		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- per grandi profondità del filetto
- uso universale
- materiali in acciaio fino a 1000 N/mm²
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 2	0,400	2,800	2,100	1,85	45,000	8,000	13,500
M 3	0,500	3,500	2,700	2,80	56,000	10,000	18,000
M 4	0,700	4,500	3,400	3,70	63,000	12,000	21,000
M 5	0,800	6,000	4,900	4,65	70,000	14,000	25,000
M 6	1,000	6,000	4,900	5,55	80,000	16,000	30,000
M 8	1,250	8,000	6,200	7,40	90,000	17,000	35,000
M10	1,500	10,000	8,000	9,30	100,000	20,000	39,000

Maschi a macchina a rullare

Maschi a macchina a rullare senza canalini di lub. per fil. metrica ISO

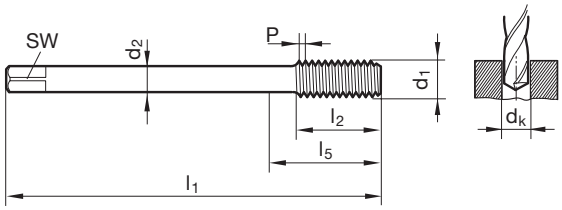
Catalogo n° 63123

Durativ | ~DIN 376 | C | HSS-E | TiN | R | 6HX

P	M	K	N	S	H
●	●		●		

Parametri di lav. ind. a pag. 348

- per fori passanti e ciechi
- per grandi profondità del filetto
- uso universale
- materiali in acciaio fino a 1000 N/mm²
- acciai inossidabili e resist. al calore
- materiali a truciolo lungo duri



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M12	1,750	9,000	7,000	11,20	110,000	24,000	49,000
M16	2,000	12,000	9,000	15,10	110,000	26,000	54,000
M20	2,500	16,000	12,000	18,90	140,000	32,000	62,000

Frese a filettare

Frese a filettare con fase di svasatura per filettatura metrica ISO

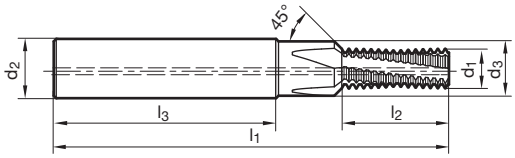
Catalogo n° 73810

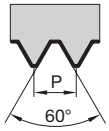
TMC SP | 2xD | WN | VHM | luci-do | R | HA

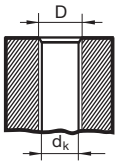
P	M	K	N	S	H
●	●	●	●	●	

Parametri di lav. ind. a pag. 348

- frese a filettare con smusso 45°, con taglienti e refrigerazione interna assiale
- uso universale







Codice	D	P mm	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	Z
3,000	M 3	0,500	2,300	6,000	3,400	2,50	48,000	6,800	36,000	3
4,000	M 4	0,700	3,000	6,000	4,500	3,30	48,000	8,800	36,000	3
5,000	M 5	0,800	4,000	6,000	5,500	4,20	54,000	10,800	36,000	3
6,000	M 6	1,000	4,800	8,000	6,600	5,00	62,000	13,500	36,000	3
8,000	M 8	1,250	6,400	10,000	9,000	6,80	74,000	18,100	40,000	3
10,000	M10	1,500	7,950	12,000	11,000	8,50	80,000	21,800	45,000	4
12,000	M12	1,750	9,950	14,000	13,500	10,20	90,000	25,400	45,000	4
14,000	M14	2,000	11,200	16,000	15,500	12,00	102,000	31,000	48,000	4
16,000	M16	2,000	12,800	18,000	17,500	14,00	102,000	35,000	48,000	4
20,000	M20	2,500	14,500	20,000	21,500	17,50	125,000	41,300	50,000	4

Frese a filettare

Frese a filettare con fase di svasatura per filettatura metrica ISO

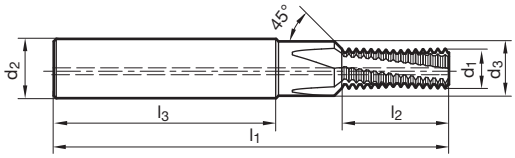
Catalogo n° 53810

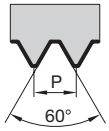
TMC SP | 2xD | WN | VHM | TiCN | R | HA

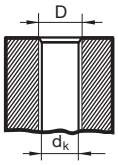
P	M	K	N	S	H
●	●	●	●	●	○

Parametri di lav. ind. a pag. 348

- frese a filettare con smusso 45°, con taglienti e refrigerazione interna assiale
- applicazione universale nella maggior parte dei materiali







Codice	D	P mm	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	Z
3,000	M 3	0,500	2,300	6,000	3,400	2,50	48,000	6,800	36,000	3
4,000	M 4	0,700	3,000	6,000	4,500	3,30	48,000	8,800	36,000	3
5,000	M 5	0,800	4,000	6,000	5,500	4,20	54,000	10,800	36,000	3
6,000	M 6	1,000	4,800	8,000	6,600	5,00	62,000	13,500	36,000	3
8,000	M 8	1,250	6,400	10,000	9,000	6,80	74,000	18,100	40,000	3
10,000	M10	1,500	7,950	12,000	11,000	8,50	80,000	21,800	45,000	4
12,000	M12	1,750	9,950	14,000	13,500	10,20	90,000	25,400	45,000	4
14,000	M14	2,000	11,200	16,000	15,500	12,00	102,000	31,000	48,000	4
16,000	M16	2,000	12,800	18,000	17,500	14,00	102,000	35,000	48,000	4
20,000	M20	2,500	14,500	20,000	21,500	17,50	125,000	41,300	50,000	4

Frese a filettare

Frese a filettare con fase di svasatura per fil. metr. ISO passo fine

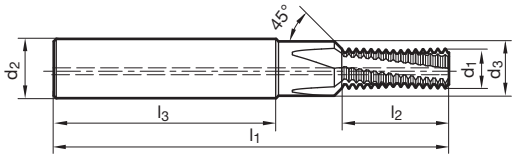
Catalogo n° 53820

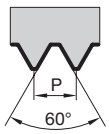
TMC SP | 2xD | WN | VHM | TiCN | R | HA

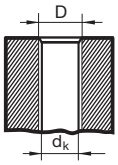
P	M	K	N	S	H
●	●	●	●	●	○

Parametri di lav. ind. a pag. 348

- frese a filettare con smusso 45°, con taglienti e refrigerazione interna assiale
- applicazione universale nella maggior parte dei materiali



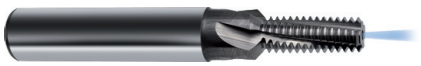




Codice	D	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	Z
4,003	M 4 X0,5	3,000	6,000	4,500	3,50	48,000	8,800	36,000	3
5,003	M 5 X0,5	4,000	6,000	5,500	4,50	54,000	10,800	36,000	3
6,003	M 6 X0,5	4,800	8,000	6,600	5,50	62,000	12,800	36,000	3
6,004	M 6 X0,75	4,800	8,000	6,600	5,20	62,000	13,100	36,000	3
8,004	M 8 X0,75	6,400	10,000	9,000	7,20	74,000	16,900	40,000	3
8,005	M 8 X1	6,400	10,000	9,000	7,00	74,000	17,500	40,000	3
10,005	M10 X1	7,950	12,000	11,000	9,00	80,000	21,500	45,000	4
10,006	M10 X1,25	7,950	12,000	11,000	8,80	80,000	21,900	45,000	4
12,005	M12 X1	9,950	14,000	13,500	11,00	90,000	25,500	45,000	4
12,007	M12 X1,5	9,950	14,000	13,500	10,50	90,000	26,300	45,000	4
14,007	M14 X1,5	11,200	16,000	15,500	12,50	102,000	30,800	48,000	4
16,007	M16 X1,5	12,800	18,000	17,500	14,50	102,000	33,800	48,000	4

Frese a filettare

Frese a filettare con fase di svasatura per fil. metr. ISO passo fine



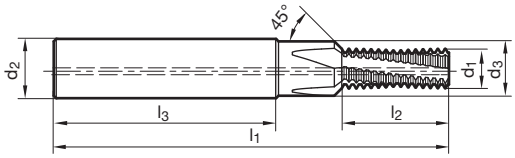
Catalogo n° 73820

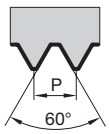
TMC SP | 2xD | WN | VHM | luci-do | R | HA

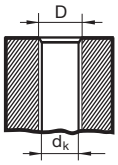
P	M	K	N	S	H
●	●	●	●	●	

Parametri di lav. ind. a pag. 348

- frese a filettare con smusso 45°, con taglienti e refrigerazione interna assiale
- applicazione universale nella maggior parte dei materiali







Codice	D	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	Z
4,003	M 4 X0,5	3,000	6,000	4,500	3,50	48,000	8,800	36,000	3
5,003	M 5 X0,5	4,000	6,000	5,500	4,50	54,000	10,800	36,000	3
6,003	M 6 X0,5	4,800	8,000	6,600	5,50	62,000	12,800	36,000	3
6,004	M 6 X0,75	4,800	8,000	6,600	5,20	62,000	13,100	36,000	3
8,004	M 8 X0,75	6,400	10,000	9,000	7,20	74,000	16,900	40,000	3
8,005	M 8 X1	6,400	10,000	9,000	7,00	74,000	17,500	40,000	3
10,005	M10 X1	7,950	12,000	11,000	9,00	80,000	21,500	45,000	4
10,006	M10 X1,25	7,950	12,000	11,000	8,80	80,000	21,900	45,000	4
12,005	M12 X1	9,950	14,000	13,500	11,00	90,000	25,500	45,000	4
12,007	M12 X1,5	9,950	14,000	13,500	10,50	90,000	26,300	45,000	4
14,007	M14 X1,5	11,200	16,000	15,500	12,50	102,000	30,800	48,000	4
16,007	M16 X1,5	12,800	18,000	17,500	14,50	102,000	33,800	48,000	4

Frese a filettare

Frese a filettare senza fase di svasatura per filettatura metrica ISO

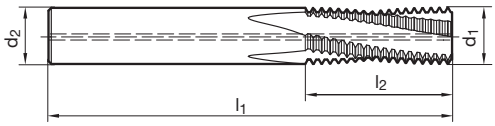
Catalogo n° 73830

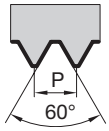
TM SP | 2xD | WN | VHM | luci-do | R | HA

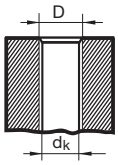
P	M	K	N	S	H
●	●	●	●	●	

Parametri di lav. ind. a pag. 348

- frese a filettare senza smusso, con taglienti e refrigerazione interna assiale
- applicazione universale nella maggior parte dei materiali







Codice	d1	P mm	d1 mm	d2 mm	dk mm	l1 mm	l2 mm	Z
6,000	M 6	1,000	4,800	6,000	5,00	54,000	13,500	3
8,000	M 8	1,250	6,400	8,000	6,80	62,000	18,100	3
8,005	M 8 X1	1,000	6,400	8,000	7,00	62,000	14,500	3
10,000	M10	1,500	7,950	10,000	8,50	74,000	21,800	3
10,005	M10 X1	1,000	7,950	10,000	9,00	74,000	14,500	3
10,006	M10 X1,25	1,250	7,950	10,000	8,80	74,000	18,100	3
12,000	M12	1,750	9,950	10,000	10,20	74,000	25,400	4
14,000	M14	2,000	11,200	12,000	12,00	90,000	31,000	4
14,007	M14 X1,5	1,500	11,200	12,000	12,50	90,000	23,300	4
16,000	M16	2,000	12,800	14,000	14,00	90,000	35,000	4
16,007	M16 X1,5	1,500	12,800	14,000	14,50	90,000	26,300	4
20,000	M20	2,500	14,950	16,000	17,50	102,000	41,300	4
20,007	M20 X1,5	1,500	14,950	16,000	18,50	102,000	24,800	4

Frese a filettare

Frese a filettare senza fase di svasatura per filettatura metrica ISO

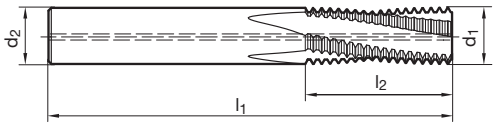
Catalogo n° 53830

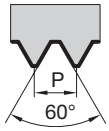
TM SP | 2xD | WN | VHM | TiCN | R | HA

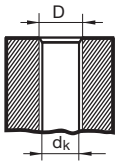
P	M	K	N	S	H
●	●	●	●	●	○

Parametri di lav. ind. a pag. 348

- frese a filettare senza smusso, con taglienti e refrigerazione interna assiale
- applicazione universale nella maggior parte dei materiali





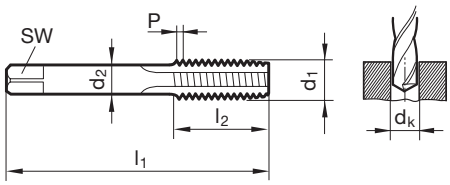


Codice	d1	P mm	d1 mm	d2 mm	dk mm	l1 mm	l2 mm	Z
6,000	M 6	1,000	4,800	6,000	5,00	54,000	13,500	3
8,000	M 8	1,250	6,400	8,000	6,80	62,000	18,100	3
8,005	M 8 X1	1,000	6,400	8,000	7,00	62,000	14,500	3
10,000	M10	1,500	7,950	10,000	8,50	74,000	21,800	3
10,005	M10 X1	1,000	7,950	10,000	9,00	74,000	14,500	3
10,006	M10 X1,25	1,250	7,950	10,000	8,80	74,000	18,100	3
12,000	M12	1,750	9,950	10,000	10,20	74,000	25,400	4
14,000	M14	2,000	11,200	12,000	12,00	90,000	31,000	4
14,007	M14 X1,5	1,500	11,200	12,000	12,50	90,000	23,300	4
16,000	M16	2,000	12,800	14,000	14,00	90,000	35,000	4
16,007	M16 X1,5	1,500	12,800	14,000	14,50	90,000	26,300	4
20,000	M20	2,500	14,950	16,000	17,50	102,000	41,300	4
20,007	M20 X1,5	1,500	14,950	16,000	18,50	102,000	24,800	4

Maschi a mano

Serie du maschi a mano per filettature metriche ISO destri

Catalogo n° 73531



N	DIN 352	HSS	lucido	R	ISO2/6H

P	M	K	N	S	H
●	○	●	●		

Parametri di lav. ind. a pag. 358

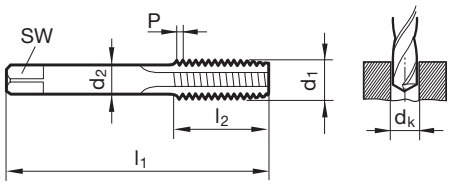
- per fori passanti e ciechi
- Kit maschi, dritti, specializzati per l'utilizzo manuale, ma anche per l'inserimento in macchina
- sbozzatore e medio sono graduati con diametri esterni e medi
- il finitore può essere utilizzato da solo come maschio a macchina corto
- sbozzatore 73101
- medio 73102
- finitore 73103

d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm
M 1	0,250	2,500	2,100	0,75	32,000	5,500
M 1,2	0,250	2,500	2,100	0,95	32,000	5,500
M 1,4	0,300	2,500	2,100	1,10	32,000	7,000
M 1,6	0,350	2,500	2,100	1,25	32,000	8,000
M 1,7	0,350	2,500	2,100	1,35	32,000	8,000
M 2	0,400	2,800	2,100	1,60	36,000	8,000
M 2,3	0,400	2,800	2,100	1,90	36,000	9,000
M 2,5	0,450	2,800	2,100	2,05	40,000	9,000
M 2,6	0,450	2,800	2,100	2,15	40,000	9,000
M 3	0,500	3,500	2,700	2,50	40,000	10,000
M 3,5	0,600	4,000	3,000	2,90	45,000	12,000
M 4	0,700	4,500	3,400	3,30	45,000	12,000
M 4,5	0,750	6,000	4,900	3,70	50,000	14,000
M 5	0,800	6,000	4,900	4,20	50,000	14,000
M 6	1,000	6,000	4,900	5,00	56,000	16,000
M 7	1,000	6,000	4,900	6,00	56,000	16,000
M 8	1,250	6,000	4,900	6,80	63,000	17,000
M10	1,500	7,000	5,500	8,50	70,000	20,000
M12	1,750	9,000	7,000	10,20	75,000	24,000
M14	2,000	11,000	9,000	12,00	80,000	26,000
M16	2,000	12,000	9,000	14,00	80,000	26,000
M18	2,500	14,000	11,000	15,50	95,000	30,000
M20	2,500	16,000	12,000	17,50	95,000	32,000
M24	3,000	18,000	14,500	21,00	110,000	36,000

Maschi a mano

Serie di maschi a mano per filettature metriche ISO sinistri

Catalogo n° 73532



N | DIN 352 | HSS | lucido | L | ISO2/6H

P	M	K	N	S	H
●	○	●	●		

Parametri di lav. ind. a pag. 358

- per fori passanti e ciechi
- Kit maschi, dritti, specializzati per l'utilizzo manuale, ma anche per l'inserimento in macchina
- sbozzatore e medio sono graduati con diametri esterni e medi
- il finitore può essere utilizzato da solo come maschio a macchina corto
- sbozzatore 73105
- medio 73106
- finitore 73107

d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm
M 4	0,700	4,500	3,400	3,30	45,000	12,000
M 5	0,800	6,000	4,900	4,20	50,000	14,000
M 6	1,000	6,000	4,900	5,00	56,000	16,000
M 8	1,250	6,000	4,900	6,80	63,000	17,000
M10	1,500	7,000	5,500	8,50	70,000	20,000
M12	1,750	9,000	7,000	10,20	75,000	24,000
M14	2,000	11,000	9,000	12,00	80,000	26,000
M16	2,000	12,000	9,000	14,00	80,000	26,000

Maschi a mano

Maschio a mano per filettatura metrica fine ISO, kit

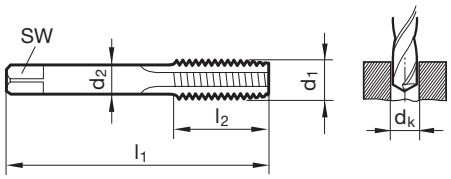
N | DIN 2180 | HSS | lucido | R | ISO2/6H

P	M	K	N	S	H
●	○	●	●		

Parametri di lav. ind. a pag. 358

Catalogo n° 73521

- per fori passanti e ciechi
- Kit maschi, dritti, specializzati per l'utilizzo manuale, ma anche per l'inserimento in macchina
- il finitore può essere utilizzato da solo come maschio a macchina corto
- sbozzatore 73110
- Finitore 73111

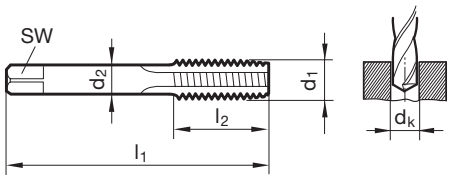


Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm
5,003	M 5 X0,5	6,000	4,900	4,50	50,000	11,000
6,003	M 6 X0,5	6,000	4,900	5,50	56,000	12,000
6,004	M 6 X0,75	6,000	4,900	5,20	56,000	12,000
8,004	M 8 X0,75	6,000	4,900	7,20	56,000	14,000
8,005	M 8 X1	6,000	4,900	7,00	63,000	17,000
10,005	M10 X1	7,000	5,500	9,00	63,000	16,000
10,006	M10 X1,25	7,000	5,500	8,80	63,000	20,000
11,005	M11 X1	8,000	6,200	10,00	63,000	18,000
12,005	M12 X1	9,000	7,000	11,00	70,000	20,000
16,007	M16 X1,5	12,000	9,000	14,50	70,000	20,000
18,007	M18 X1,5	14,000	11,000	16,50	80,000	22,000

Maschi a mano

Maschio a macchina per filettatura UNC, kit

Catalogo n° 73535



N	~DIN 352	HSS	lucido	R	2B

P	M	K	N	S	H
●	○	●	●		

Parametri di lav. ind. a pag. 358

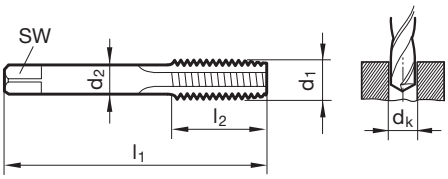
- per fori passanti e ciechi
- Kit maschi, dritti, specializzati per l'utilizzo manuale, ma anche per l'inserimento in macchina
- sbozzatore e medio sono graduati con diametri esterni e medi
- il finitore può essere utilizzato da solo come maschio a macchina corto
- sbozzatore 73301
- medio 73302
- finitore 73303

Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm
2,845	4 -40	3,500	2,700	2,35	40,000	11,000
3,175	5 -40	4,000	2,700	2,65	40,000	11,000
3,505	6 -32	4,000	3,000	2,85	45,000	12,000
4,166	8 -32	4,500	3,400	3,50	45,000	12,000
4,826	10 -24	6,000	4,900	3,90	50,000	14,000
6,350	1/4 -20	6,000	4,900	5,10	56,000	16,000
7,938	5/16-18	6,000	4,900	6,60	63,000	18,000
9,525	3/8 -16	7,000	5,500	8,00	70,000	20,000
11,113	7/16-14	8,000	6,200	9,40	70,000	22,000
12,700	1/2 -13	9,000	7,000	10,80	75,000	25,000
15,875	5/8 -11	12,000	9,000	13,50	80,000	30,000
19,050	3/4 -10	16,000	11,000	16,50	95,000	33,000

Maschi a mano

Maschio a macchina per filettatura BSW, kit

Catalogo n° 73534



N	~DIN 352	HSS	luci-do	R

P	M	K	N	S	H
●	○	●	●		

Parametri di lav. ind. a pag. 358

- per fori passanti e ciechi
- Kit maschi, dritti, specializzati per l'utilizzo manuale, ma anche per l'inserimento in macchina
- sbozzatore e medio sono graduati con diametri esterni e medi
- il finitore può essere utilizzato da solo come maschio a macchina corto
- sbozzatore 73311
- medio 73312
- finitore 73313

Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm
3,175	W 1/8	4,000	2,700	2,50	40,000	11,000
3,969	W 5/32	4,500	3,400	3,20	45,000	12,000
4,762	W 3/16	6,000	4,900	3,60	50,000	14,000
6,350	W 1/4	6,000	4,900	5,10	56,000	16,000
7,938	W 5/16	6,000	4,900	6,50	63,000	18,000
9,525	W 3/8	7,000	5,500	7,90	70,000	20,000
11,113	W 7/16	8,000	6,200	9,20	70,000	22,000
12,700	W 1/2	9,000	7,000	10,50	75,000	25,000
14,287	W 9/16	11,000	9,000	12,00	80,000	28,000
15,876	W 5/8	12,000	9,000	13,50	80,000	30,000
19,051	W 3/4	16,000	11,000	16,25	95,000	33,000

Maschi a mano

Maschio a mano per filettatura gas, kit

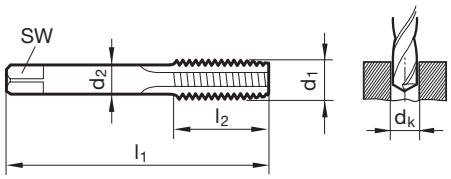
N | DIN 5157 | HSS | lucido | R

P	M	K	N	S	H
●	○	●	●		

Parametri di lav. ind. a pag. 358

Catalogo n° 73522

- per fori passanti e ciechi
- Kit maschi, dritti, specializzati per l'utilizzo manuale, ma anche per l'inserimento in macchina
- il finitore può essere utilizzato da solo come maschio a macchina corto
- sbozzatore 73315
- Finitore 73316



Codice	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm
9,728	G 1/8	7,000	5,500	8,80	63,000	18,000
13,157	G 1/4	11,000	9,000	11,80	70,000	20,000
16,662	G 3/8	12,000	9,000	15,25	70,000	20,000
20,955	G 1/2	16,000	12,000	19,00	80,000	22,000

Utensili combinati

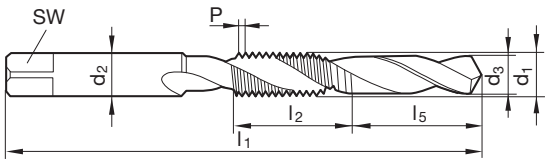
Utensili combinati per fil. metrica ISO

Catalogo n° 73248

N	WN	D	HSS-E	luci-do	R	ISO2/6H

P	M	K	N	S	H
●	○	●	●		

- per fori passanti
- acciai fino a 800 N/mm²



d1	P mm	Codice	d2 mm	d3 mm	SW mm	l1 mm	l5 mm	l2 mm
M 3	0,500	3,000	3,500	2,500	2,700	62,000	11,000	12,000
M 4	0,700	4,000	4,500	3,300	3,400	66,000	10,000	16,000
M 5	0,800	5,000	6,000	4,200	4,900	75,000	12,000	18,000
M 6	1,000	6,000	6,000	5,000	4,900	81,000	14,000	20,000
M 8	1,250	8,000	6,000	6,800	4,900	93,000	20,000	12,000
M10	1,500	10,000	7,000	8,500	5,500	99,000	22,000	14,000
M12	1,750	12,000	9,000	10,200	7,000	106,000	25,000	16,000

Maschi a macchina per per dadi

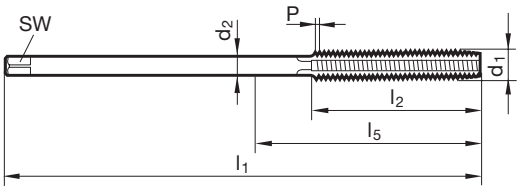
Maschi a macchina per dadi per fil. metrica ISO

Catalogo n° 73243

N	DIN 357	HSS-E	lucido	R	ISO2/6H

P	M	K	N	S	H
●	○	●	●		

- per fori passanti
- per dadi con profondità di filetto fino a 1xD
- Imbocco circa 20 filetti



d1	P	d2	SW	dk	l1	l2	l5
	mm	mm	mm	mm	mm	mm	mm
M 3	0,500	2,200		2,50	70,000	22,000	30,000
M 3,5	0,600	2,500	2,100	2,90	80,000	25,000	31,000
M 4	0,700	2,800	2,100	3,30	90,000	25,000	33,000
M 5	0,800	3,500	2,700	4,20	100,000	28,000	38,000
M 6	1,000	4,500	3,400	5,00	110,000	32,000	44,000
M 8	1,250	6,000	4,900	6,80	125,000	40,000	61,000
M10	1,500	7,000	5,500	8,50	140,000	45,000	85,000
M12	1,750	9,000	7,000	10,20	180,000	50,000	120,000
M14	2,000	11,000	9,000	12,00	200,000	56,000	130,000
M16	2,000	12,000	9,000	14,00	200,000	63,000	145,000
M18	2,500	14,000	11,000	15,50	220,000	63,000	155,000

Filiere

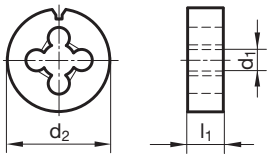
Filiere per filettatura metrica ISO

Catalogo n° 73400

DIN EN 22568 | HSS | luci-do | R

P	M	K	N	S	H
●	○		●		

• lavorazione generale



d1	P mm	d2 mm	l1 mm	Workpiece Ø mm	Codice
M 1	0,250	16,000	5,000	0,970	1,000
M 1,2	0,250	16,000	5,000	1,170	1,200
M 2,2	0,450	16,000	5,000	2,130	2,200
M 2,3	0,400	16,000	5,000	2,250	2,300
M 3	0,500	20,000	5,000	2,920	3,000
M 3,5	0,600	20,000	5,000	3,410	3,500
M 4	0,700	20,000	5,000	3,910	4,000
M 5	0,800	20,000	7,000	4,900	5,000
M 6	1,000	20,000	7,000	5,880	6,000
M 7	1,000	25,000	9,000	6,880	7,000
M 8	1,250	25,000	9,000	7,870	8,000
M10	1,500	30,000	11,000	9,850	10,000
M12	1,750	38,000	14,000	11,830	12,000
M14	2,000	38,000	14,000	13,820	14,000
M16	2,000	45,000	18,000	15,820	16,000
M18	2,500	45,000	18,000	17,790	18,000
M20	2,500	45,000	18,000	19,790	20,000
M24	3,000	55,000	22,000	23,770	24,000
M30	3,500	65,000	25,000	29,730	30,000

Filiere

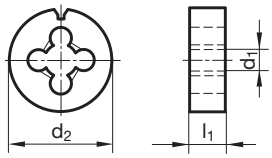
Filiere per filettatura metrica ISO

Catalogo n° 73410

DIN EN 22568 | HSS | lucido | R | 6g

P	M	K	N	S	H
●		○	●		

- esecuzione lappata per metalli NE
- lavorazione generale



d1	P mm	d2 mm	l1 mm	Workpiece Ø mm	Codice
M 3	0,500	20,000	5,000	2,920	3,000
M 4	0,700	20,000	5,000	3,910	4,000
M 6	1,000	20,000	7,000	5,880	6,000
M 8	1,250	25,000	9,000	7,870	8,000
M10	1,500	30,000	11,000	9,850	10,000
M12	1,750	38,000	14,000	11,830	12,000
M14	2,000	38,000	14,000	13,820	14,000
M18	2,500	45,000	18,000	17,790	18,000

Filiere

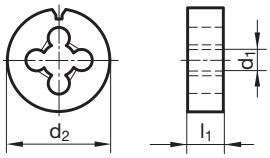
Filiere per filettatura metrica ISO

Catalogo n° 73413

DIN EN 22568 | HSS-E | nitru-rato | R | 6g

P	M	K	N	S	H
●	●		●		

- esecuzione lappata per metalli NE
- lavorazione generale



d1	P mm	d2 mm	l1 mm	Workpiece Ø mm	Codice
M 2,5	0,450	16,000	5,000	2,430	2,500
M 3	0,500	20,000	5,000	2,920	3,020
M 4	0,700	20,000	5,000	3,910	4,020
M 5	0,800	20,000	7,000	4,900	5,000
M 6	1,000	20,000	7,000	5,880	6,000
M 8	1,250	25,000	9,000	7,870	8,000
M10	1,500	30,000	11,000	9,850	10,000
M12	1,750	38,000	14,000	11,830	12,000
M14	2,000	38,000	14,000	13,820	14,000
M16	2,000	45,000	18,000	15,820	16,000
M20	2,500	45,000	18,000	19,790	20,000

UTENSILI A FRESARE

SUPER F-UT

CODICI ISO

P	acciaio, acciaio legato in alta percentuale
M	acciaio inossidabile
K	ghisa grigia, ghisa sferoidale e ghisa malleabile
N	alluminio ed altri metalli non ferrosi
S	leghe speciali, superleghe e leghe di titanio
H	acciaio temprato e ghisa temprata

Nelle pagine successive, contenenti programma, trovate per ciascun utensile consigli sull'idoneità in base ai seguenti gruppi di impiego:

● Idoneità ottima

○ Idoneità limitata

LEGENDA DEI PITTOGRAMMI

MATERIALE TAGLIENTE

VHM

Int. in metallo duro

TRATT. DI SUPERFICIE

luci-do | AlTiN nano | TiAl-SiN | TiAlN | Al-TiN+

TOLLERANZA SUL Ø

h10 | e8

CONDIZIONI DI FRESATURA

HPC

DIREZIONE DI TAGLIO

R

a destra

FORMA DEL CODOLO

HB | HA

ANGOLI DELL'ELICA

36° 38° 37° | 35° 38° | 30° 32° | 41° 43° 45° | 45° | 36° 38° | 40° 42° | 30° 29° 31° | 39° 40° 41° | 44° 45° 46°

NORMA

DIN 6527L | DIN 6527K | WN

Norma di fabricca

TIPO

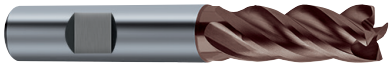
N | NX | N-F | N-3 | N-5 | Ti | H

VA | VA-X | VA-X IK | VA-XF | VA-IK | Al | AL-F | AL-3 | FS

P	M	K	N	S	H	Tipo	Forma dell'attac-co	Angolo elica °	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Frese SuperF-UT NX

•	•	•	•	•		SuperF-UT NX	HA	36/38/37	**Metallo duro**	TiAlSiN	DIN 6527L	4,000 - 20,000	**54590**	518



•	•	•	•	•		SuperF-UT NX	HB	36/38/37	**Metallo duro**	TiAlSiN	DIN 6527L	4,000 - 20,000	**54591**	519

Frese SuperF-UT N

•		•				SuperF-UT N	HB	35/38	**Metallo duro**	TiAlN	DIN 6527K	6,000 - 20,000	**64550**	520

•		•				SuperF-UT N	HA	35/38	**Metallo duro**	TiAlN	DIN 6527L	4,000 - 20,000	**54551**	521

•		•				SuperF-UT N	HB	35/38	**Metallo duro**	TiAlN	DIN 6527L	4,000 - 25,000	**64551**	522

•		•				SuperF-UT N	HA	35/38	**Metallo duro**	TiAlN	Norma di fab.	6,000 - 20,000	**54562**	523

•		•				SuperF-UT N	HB	35/38	**Metallo duro**	TiAlN	Norma di fab.	6,000 - 20,000	**54563**	524

•		•				SuperF-UT N	HA	35/38	**Metallo duro**	TiAlN	Norma di fab.	10,000 - 25,000	**54552**	525

•		○		○		SuperF-UT N-F	HA	30/32	**Metallo duro**	TiAlN	DIN 6527L	6,000 - 25,000	**54566**	526

•		○		○		SuperF-UT N-F	HB	30/32	**Metallo duro**	TiAlN	DIN 6527L	6,000 - 25,000	**54567**	527

•	○	•	○			SuperF-UT N-3	HA	41/43/45	**Metallo duro**	TiAlN	Norma di fab.	3,000 - 20,000	**54564**	528

•	○	•	○			SuperF-UT N-3	HB	41/43/45	**Metallo duro**	TiAlN	Norma di fab.	3,000 - 20,000	**54565**	529

•	•	•	•	•		SuperF-UT N-5	HA	45	**Metallo duro**	TiAlN	Norma di fab.	4,000 - 20,000	**54579**	530

•	•	•	•	•		SuperF-UT N-5	HB	45	**Metallo duro**	TiAlN	Norma di fab.	4,000 - 20,000	**54580**	531

P	M	K	N	S	H	Tipo	Forma dell'attac-co	Angolo elica °	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina
Frese SuperF-UT FS														
														
•	•	•	•	•	•	SuperF-UT FS	HA	44/45/46	**Metallo duro**	TiAlN	Norma di fab.	8,000 - 25,000	**64558**	552
														
•	•	•	•	•	•	SuperF-UT FS	HB	44/45/46	**Metallo duro**	TiAlN	Norma di fab.	8,000 - 25,000	**64559**	553
Frese SuperF-UT Ti														
														
•		○		•		SuperF-UT Ti	HA	35/38	**Metallo duro**	AlTiN+	DIN 6527L	6,000 - 20,000	**54560**	532
														
•		○		•		SuperF-UT Ti	HB	35/38	**Metallo duro**	AlTiN+	DIN 6527L	6,000 - 20,000	**54561**	533
Frese SuperF-UT H														
														
•		•			•	SuperF-UT H	HA	40/42	**Metallo duro**	TiAlSiN	DIN 6527L	6,000 - 20,000	**54572**	550
														
•		•			•	SuperF-UT H	HB	40/42	**Metallo duro**	TiAlSiN	DIN 6527L	6,000 - 20,000	**54573**	551
Frese VA-X Super-UT														
														
	•			•		SuperF-UT VA-X	HB	36/38	**Metallo duro**	AlTiN nano	DIN 6527K	4,000 - 20,000	**54576**	534
														
	•			•		SuperF-UT VA-X	HA	36/38	**Metallo duro**	AlTiN nano	DIN 6527L	3,000 - 25,000	**54558**	535
														
	•			•		SuperF-UT VA-X	HB	36/38	**Metallo duro**	AlTiN nano	DIN 6527L	3,000 - 25,000	**54559**	536
														
	•			•		SuperF-UT VA-X IK	HA	36/38	**Metallo duro**	AlTiN nano	DIN 6527L	6,000 - 25,000	**54574**	537
														
	•			•		SuperF-UT VA-X IK	HB	36/38	**Metallo duro**	AlTiN nano	DIN 6527L	6,000 - 25,000	**54575**	538
														
	•			•		SuperF-UT VA-XF	HA	36/38	**Metallo duro**	AlTiN nano	DIN 6527L	6,000 - 25,000	**54568**	539

P	M	K	N	S	H	Tipo	Forma dell'attac-co	Angolo elica °	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Frese VA-X Super-UT

	•			•		SuperF-UT VA-XF	HB	36/38	**Metallo duro**	AlTiN nano	DIN 6527L	6,000 - 25,000	**54569**	540

•	○		○			SuperF-UT S	HA	40/42	**Metallo duro**	AlTiN nano	DIN 6527L	4,000 - 20,000	**54556**	541

•	○		○			SuperF-UT VA	HB	40/42	**Metallo duro**	TiAlN	DIN 6527L	4,000 - 20,000	**64557**	542

•	○		○			SuperF-UT VA-IK	HB	40/42	**Metallo duro**	TiAlN	DIN 6527L	6,000 - 20,000	**64567**	543

Frese SuperF-UT Alluminio

			•			SuperF-UT Al	HA	40/42	**Metallo duro**	lucido	DIN 6527L	4,000 - 20,000	**74554**	544

			•			SuperF-UT Al	HB	40/42	**Metallo duro**	lucido	DIN 6527L	4,000 - 20,000	**74555**	545

			•			SuperF-UT Al-F	HA	29/30/31	**Metallo duro**	lucido	Norma di fab.	6,000 - 25,000	**54570**	546

			•			SuperF-UT Al-F	HB	29/30/31	**Metallo duro**	lucido	Norma di fab.	6,000 - 25,000	**54571**	547

			•			SuperF-UT Al-3	HA	39/40/41	**Metallo duro**	lucido	Norma di fab.	3,000 - 20,000	**74552**	548

			•			SuperF-UT Al-3	HB	39/40/41	**Metallo duro**	lucido	Norma di fab.	3,000 - 20,000	**74553**	549

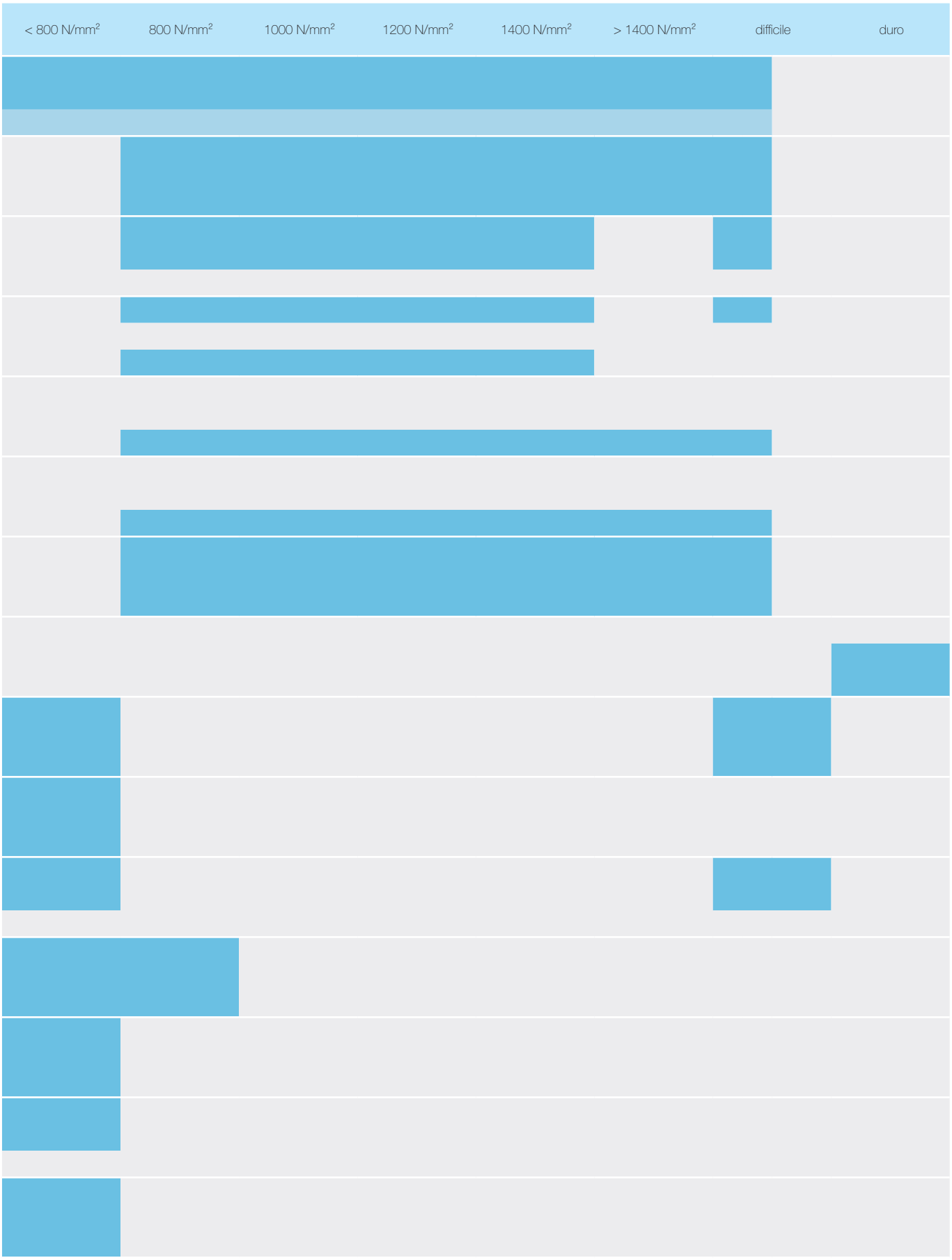
Applicazione

Per materiale

Tipo	Catalogo n°	Applicazione	metalli non ferrosi, alluminiumio	acciaio	ghise	acciaio inossidabile resistente e acido	nichel, leghe di titanio	acciai temprati
SuperF-UT NX	**54590 54591**	per cave	ottimale	ottimale	ottimale	ottimale	ottimale	adatto bene
		per sgrossatura	ottimale	ottimale	ottimale	ottimale	ottimale	adatto bene
		per finitura	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
SuperF-UT N	**64550 54551 64551 54562 54563 54552**	per cave	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
		per sgrossatura	adatto bene	ottimale	ottimale	adatto bene	adatto bene	adatto bene
		per finitura	ottimale	ottimale	ottimale	adatto bene	adatto bene	adatto bene
SuperF-UT N-F	**54566 54567**	per cave	adatto bene	ottimale	ottimale	adatto bene	ottimale	adatto bene
		per sgrossatura	adatto bene	ottimale	ottimale	adatto bene	ottimale	ottimale
		per finitura	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
SuperF-UT N-3	**54564 54565**	per cave	ottimale	ottimale	ottimale	ottimale	ottimale	adatto bene
		per sgrossatura	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
		per finitura	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
SuperF-UT N-5	**54579 54580**	per cave	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
		per sgrossatura	adatto bene	ottimale	ottimale	ottimale	ottimale	adatto bene
		per finitura	ottimale	ottimale	ottimale	ottimale	ottimale	ottimale
SuperF-UT FS	**64558 64559**	per cave	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
		per sgrossatura	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
		per finitura	ottimale	ottimale	ottimale	ottimale	ottimale	ottimale
SuperF-UT Ti	**54560 54561**	per cave	adatto bene	adatto bene	adatto bene	adatto bene	ottimale	adatto bene
		per sgrossatura	adatto bene	adatto bene	adatto bene	adatto bene	ottimale	adatto bene
		per finitura	adatto bene	adatto bene	adatto bene	adatto bene	ottimale	adatto bene
SuperF-UT H	**54572 54573**	per cave	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	ottimale
		per sgrossatura	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	ottimale
		per finitura	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	ottimale
SuperF-UT VA-X	**54576 54558 54559**	per cave	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
		per sgrossatura	ottimale	ottimale	adatto bene	ottimale	adatto bene	adatto bene
		per finitura	ottimale	ottimale	adatto bene	ottimale	adatto bene	adatto bene
SuperF-UT VA-X IK	**54574 54575**	per cave	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
		per sgrossatura	ottimale	ottimale	adatto bene	ottimale	adatto bene	adatto bene
		per finitura	ottimale	ottimale	adatto bene	ottimale	adatto bene	adatto bene
SuperF-UT VA-XF	**54568 54569**	per cave	ottimale	ottimale	adatto bene	ottimale	adatto bene	adatto bene
		per sgrossatura	ottimale	ottimale	adatto bene	ottimale	adatto bene	adatto bene
		per finitura	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
SuperF-UT VA	**54556 64557 64567**	per cave	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
		per sgrossatura	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
		per finitura	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
SuperF-UT Al-3	**74552 74553**	per cave	ottimale	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
		per sgrossatura	ottimale	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
		per finitura	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
SuperF-UT Al-F	**54570 54571**	per cave	ottimale	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
		per sgrossatura	ottimale	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
		per finitura	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
SuperF-UT Al	**74554 74555**	per cave	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
		per sgrossatura	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene
		per finitura	ottimale	adatto bene	adatto bene	adatto bene	adatto bene	adatto bene

ottimale adatto bene

Per resistenza alla trazione



Raccomandazioni generali

Le frese F-UT STOCK sono state progettate per applicazioni sotto condizioni ottimali di lavorazione, esempi:

- alte prestazioni
- sufficiente refrigerazione
- pezzo e serraggio rigido

Nel caso in cui non ci sono sufficienti condizioni di lavorazione, noi raccomandiamo l'utilizzo della Super F-UT con il nuovo profilo di sgrossatura e finitura, esempio N-F e VA-XF.
Per lavorare gli acciai (di solito si usa la Super F-UT tipo N) con una fresa raggiata noi raccomandiamo la Super F-UT Ti, n° catalogo 54560 o 54561.

Noi raccomandiamo anche la fresatura sincronizzata.

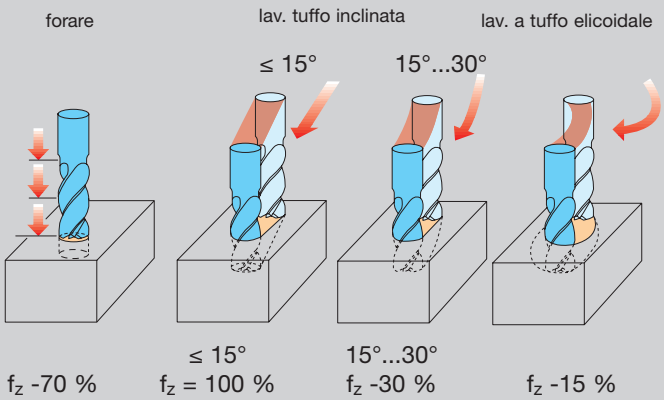
Foratura:
➢ ridurre l'avanzamento v_f (mm/min.)
➢ con profondità di foro > 0.5 x D o per passare a lavorazione radiale bisogna anche scaricare

Attenzione: pericolo di rottura con repentino aumento di carico!

Lavorazione a tuffo inclinata fino a 15° (da preferire):
➢ l'avanzamento v_f (mm/min.) può anche non essere ridotto

Lavorazione a tuffo inclinata da 15° a 30°:
➢ ridurre l'avanzamento v_f (mm/min.) in base al grafico qui a lato

Lavorazione a tuffo per interpolazione:
➢ per lavorare ad interpolazione/a tuffo elicoidale consigliamo un incremento radiale da 0.1 to 0.2 per giro
➢ ridurre l'avanzamento v_f (mm/min.) in base al grafico qui a lato
➢ scegliere preferibilmente un diametro del foro di 1.8 x D



Formule:

Rivoluzione per min . n [min^{-1}]

$$n = \frac{v_c \cdot 1000}{\pi \cdot D}$$

Avanzamento per min . vf [mm/min]

$$v_f = f_z \cdot n \cdot Z_c$$

f_z = avanzamento per dente [mm/Z]
Z_c = no efficace . di denti
D = diametro utensile [mm]

Volume Chip Q [mm^3/min]

$$Q = \frac{a_p \cdot a_e \cdot v_f}{1000}$$

Coppia M_c [Nm]

$$M_c = \frac{P_c \cdot 30 \cdot 10^3}{\pi \cdot n}$$

P_c = forza di taglio [kW]
v_c = velocità di taglio [m/min]
a_p = profondità di taglio [mm]
a_e = larghezza di taglio [mm]
π = Pi

FRESA SUPER F-UT NX

RAMPA

Angolo di rampa fino a 45°
Ottima asportazione truciolo!

FORATURA

Ottime caratteristiche di foratura da 2xD
Non c'è più bisogno di utensili pilota!
Ideale per i pre-fori di alesatura.

CAVA

Alto avanzamento per lavorazioni a tuffo e case
Elevata asportazione del truciolo e del diam.
sottodimensionamento per cave di precisione
Ottima ripetibilità garantita dallo smusso di rinforzato
del tagliente.

SGROSSATURA

Adatta anche per lavorazione su macchine meno
rigide dato il basso assorbimento di potenza.
Incremento della velocità di taglio fino al 100%
per lavorazione di acciaio.
Elevata asportazione del truciolo

FINITURA

Profili con elevata qualità delle superfici
Incremento vita utensili fino al 100%
Elevati parametri di lavorazione anche anche per la
lavorazione di acciai legati e bonificati

Fresatura HPC

High Performance Cutting (HPC) è un processo di fresatura che aumenta avanzamento e velocità e generalmente opera su profondità di fresatura più vaste, rispetto ai soliti processi di fresatura.

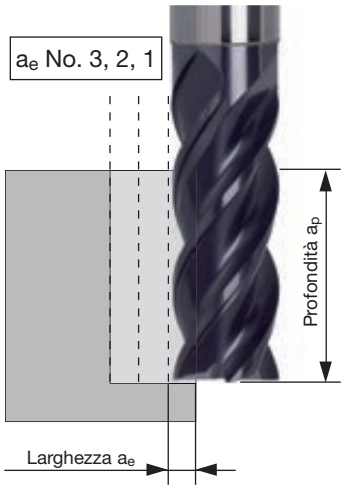
Pro:

- Meno stress sull'utensile e sulla macchina, grazie alla minore larghezza di taglio
- Temperatura più bassa durante la fresatura
- Possibile utilizzo dell'intera lunghezza di taglio
- Vita utensile più duratura

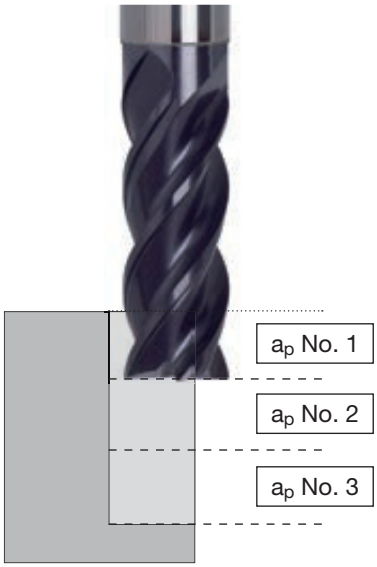
Contro:

- Controllo dinamico della macchina utensile necessario per la fresatura di profili complessi

HPC



Convenzionale



ae	fattore fz	fattore v_c	Q in %
100%	1,00	1,00	100
50%	1,00	1,20	59
40%	1,08	1,25	54
30%	1,20	1,30	45
20%	1,48	1,35	39
10%	2,00	1,50	27

Osservazione:
Le basi di tutti i parametri di taglio convertiti nella fresatura HPC sono quelli per la fresatura di cave con la SuperF-UT

Esempio:
Fresa: SuperF-UT N Ø12, Kat.-Nr. 54551
Materiale: 42CrMo4
Parametri di taglio „HPC Base":
v_C = 135 m/min
fz = 0,065 mm/Z

Formula per utilizzo in HPC:
Parametri di taglio HPC calcolati con ae al 10 % del diam:
v_C = 135 m/min x 1,5 = 203 m/min
fz = 0,065 mm/Z x 2 = 0,13 mm/Z

Fresa F-UT tipo HPC per fresatura universale

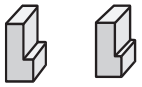
Condizioni stabili:
- buona refrigerazione
- potenza sufficiente
- scarico truciolo breve

Condizioni instabili:
- refrigerazione standard
- potenza media
- scarico trucioli da medio a lungo

Tabella di conversione per fresatura HPC

ae	fattore fz	fattore Vc	Q in %
100%	1,00	1,00	100
50%	1,00	1,20	59
40%	1,08	1,25	54
30%	1,20	1,30	45
20%	1,48	1,35	39
10%	2,00	1,50	27

Materiali	Durezza / Res. alla trazione	RF 100 consiglia-ta	Impiego	v_c [m/min]	fz [mm/z] con Ø nominale							
					3	6	8	10	12	16	20	25
P Acc. da costruzione, automatici, da bonifica e da cementaz. non legati 1.0035 S185, 1.0486 P275N, 1.0345 P235GH, 1.0050, 1.0070, 1.8937 1.0718 11SMnPb30, 1.0736 11SMn37 1.0402 C22, 1.1178 C30E, 1.0503 C45, 1.1191 C30E 1.0301 C10, 1.1121 C10E, 1.1750 C75W, 1.2076 102Cr6, 1.2307 29CrMoV9	fino a 850 N/mm²	N	condizioni stabili	180	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
		N-F	condizioni instabili	180	0,013	0,025	0,032	0,042	0,049	0,063	0,070	0,105
P Acciai automatici, acc. da cementazione legati, acc. nitrurati 1.0727 46 S20, 1.0728 60 S20, 1.0757 46SPb20 1.0601 C60, 1.1221 C60E, 1.7043 38Cr4 1.5752 15NiCr13, 1.7131 16MnCr5, 1.7264 20CrMo5 1.8504 34CrAl6, 1.8519 31CrMoV9, 1.8550 34CrAlNi7	850-1.200 N/mm²	N	condizioni stabili	160	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
		N-F	condizioni instabili	160	0,013	0,025	0,032	0,042	0,049	0,063	0,070	0,105
P Acciai da bonifica legati, acc. utensili ed acc. super rapidi 1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4, 1.5710 36NiCr6, 1.7035 41Cr4, 1.7225 42CrMo4, 1.2080 X210Cr12, 1.2083 X42Cr13, 1.2419 105WCr6, 1.2379 X155CrVMo12-1, 1.3243 S 6-5-2-5, 1.3343 S 6-5-2, 1.3344 S 6-5-3 acciaio per molle = 1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4	850-1.400 N/mm²	N	condizioni stabili	135	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		N-F	condizioni instabili	135	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
H Acciai temprati Acciai per utensili, acciaio bonificato, acciaio per molle, acciaio ad alta velocità, acciai temprati, etc. Z.B.: 1.2344 X40CrMoV5-1; 1.2767 X45NiCrMo4; 1.2379 X155CrVMo12-1 ;1.2080 X210Cr12 1.3343 S 6-5-2	fino a 54 HRC	N	condizioni stabili	70	0,012	0,025	0,030	0,040	0,045	0,060	0,070	0,100
		N-F	condizioni instabili	70	0,008	0,018	0,021	0,028	0,032	0,042	0,049	0,070
M Acciai inossidabili 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	fino a 750 N/mm²	VA-X	condizioni stabili	120	0,015	0,030	0,040	0,050	0,060	0,070	0,090	0,130
		VA-XF	condizioni instabili	120	0,011	0,021	0,028	0,035	0,042	0,049	0,063	0,091
M Acciai inossidabili 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	VA-X	condizioni stabili	80	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
		VA-XF	condizioni instabili	80	0,011	0,018	0,025	0,032	0,035	0,046	0,056	0,084
M Acciai inossidabili 1.4438 X2CrNiMo18-15-4, 1.4404 X2CrNiMo17-12-2, 1.4571 X6CrNiTi18-10 USA = 310, 316, 316B, 316L, 317	oltre 850 N/mm²	VA-X	condizioni stabili	70	0,012	0,025	0,030	0,040	0,045	0,060	0,070	0,100
		VA-XF	condizioni instabili	70	0,008	0,018	0,021	0,028	0,032	0,042	0,049	0,070
S Leghe speciali (a base Nikel "Ni") Nimonic, Inconel, Monel, Hastelloy	fino a 1.300 N/mm²	Ti	condizioni stabili	30	0,010	0,015	0,020	0,025	0,030	0,040	0,050	0,060
		N-F	condizioni instabili	30	0,007	0,011	0,014	0,018	0,021	0,028	0,035	0,042
Ti Leghe di titanio ("Ti") 3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7164 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5	fino a 1.300 N/mm²	Ti	condizioni stabili	60	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
		N-F	condizioni instabili	60	0,011	0,018	0,025	0,032	0,035	0,046	0,056	0,084
K Ghise, ghisa grigia, ghisa temprata e ghisa sferoidale 0.6010 EN-GL100 (GG10), 0.6020 EN-GJL-200 (GG20), 0.7050 EN-GJS-500-7 (GGG50), 0.8535 EN-GJMW-350-4 (GTW35)	fino a 240 HB 30	N	condizioni stabili	160	0,020	0,040	0,050	0,065	0,080	0,095	0,110	0,160
		N-F	condizioni instabili	160	0,014	0,028	0,035	0,046	0,056	0,067	0,077	0,112
K Ghise, ghisa grigia, ghisa temprata e ghisa sferoidale 0.6025 EN-GL250 (GG25), 0.6035 EN-GJL-350 (GG35), 0.7070 EN-GJS-700-2 (GGG70), 0.8170 EN-GJMB-700-2 (GTS70)	oltre 240 HB 30	N	condizioni stabili	140	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		N-F	condizioni instabili	140	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
N Alluminio, leghe alu per lav. plastiche, leghe di alu 3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1 3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	fino a 3% Si	Al	condizioni stabili	500	0,020	0,040	0,050	0,065	0,080	0,095	0,110	0,160
		Al-F	condizioni instabili	500	0,014	0,028	0,035	0,046	0,056	0,067	0,077	0,112
N Leghe alu-ghisa 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	oltre 3% Si	Al	stabile Verhältnisse	230	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		Al-F	condizioni instabili	230	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
N Leghe di magnesio MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-	Al	condizioni stabili	180	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		Al-F	condizioni instabili	180	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
N Mettuttei non ferrosi (rame, ottone o bronzo, a truciolo coto e lungo) 2.0070 SE-Cu, 2.1020 CuSn6, 2.1096 G-CuSn5ZnPb, 2.0380 CuZn39Pb2, 2.0401 CuZn39Pb3, 2.0410 CuZn43Pb2, 2.0250 CuZn20, 2.0280 CuZn33, 2.0332 CuZn37Pb0,5, 2.1090 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn, 2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	fino a 850 N/mm²	Al	condizioni stabili	250	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
		Al-F	condizioni instabili	250	0,011	0,018	0,025	0,032	0,035	0,046	0,056	0,084



a_p = 1 x D - 3 x D
a_e = 0,1 x D - 0,5 x D

Fresa F-UT tipo NX per fresatura universale

Raffreddamento periferico raccomandato per un'ottimale evacuazione del truciolo e durata utensile maggiore.

TUFFO E CAVA

Materiali	Durezza / Res. alla trazione	Prof.cava (ap max.)	Cava max. angolo in °	Vel. taglio v_c [m/min]	fz [mm/z] con Ø nominale							
					4	6	8	10	12	14	16	20
P Acc. da costruzione, automatici bonifica e cementaz no legati 1.0345 P235GH, 1.0050, 1.0503 C45, 1.2076 102Cr6	fino a 850 N/mm²	1xD	45°	270	0,015	0,020	0,030	0,040	0,045	0,050	0,055	0,060
P Acciai automatici, acc. da cementazione legati, acc. nitrurati 1.1221 C60E, 1.7043 38Cr4, 1.7131 16MnCr5, 1.8550 34CrAlNi7	850-1.200 N/mm²	1xD	45°	240	0,010	0,015	0,020	0,030	0,035	0,040	0,045	0,050
P Acciai da bonifica legati, acc. utensili ed acc. super rapidi 1.7003 38Cr2, 1.5710 36NiCr6, 1.7225 42CrMo4, 1.2419 105WCr6	850-1.400 N/mm²	1xD	30°	200	0,007	0,010	0,015	0,020	0,025	0,030	0,035	0,040
M Acciai inossidabili 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9	fino a 750 N/mm²	1xD	10°	60	0,007	0,010	0,015	0,020	0,025	0,030	0,035	0,040
M Acciai inossidabili 1.4301X5CrNi18-10, 1.4571 X6CrNi18-10, 1.4404 X2CrNiMo17-12-2	750-950 N/mm²	0,5xD	5°	50	0,005	0,008	0,012	0,018	0,023	0,026	0,030	0,035
Ti Leghe di titanio ("Ti") 3.7114 TiAl5Sn2,5, 3.7124 TiCu2, 3.7154 TiAl6Zr5, 3.7164 TiAl6V4	fino a 1.300 N/mm²	0,5xD	10°	45	0,005	0,008	0,012	0,018	0,023	0,026	0,030	0,035
K Ghise, ghisa grigia, ghisa temprata e ghisa sferoidale 0.6025 EN-GL250 (GG25), 0.7070 EN-GJS-700-2 (GGG70)	oltre 240 HB	1xD	45°	150	0,015	0,020	0,030	0,040	0,045	0,050	0,055	0,060
N Alluminio, leghe Alu per lav.plastiche, leghe Alu 3.0255 Al99,5, 3.2315 AlMgSi1, 3.1325 AlCuMg1, 3.3245 AlMg3Si	fino a 3% Si	1xD	30°	180	0,010	0,015	0,020	0,030	0,035	0,040	0,045	0,050
N Leghe alu-ghisa 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9	oltre 3% Si	1xD	45°	140	0,015	0,020	0,030	0,040	0,045	0,050	0,055	0,060

CAVE

Materiali	Durezza / Res. alla trazione	Prof. taglio (ap max.)	Larg. taglio (ae max.)	Vel. taglio v_c [m/min]	fz [mm/z] con Ø nominale							
					4	6	8	10	12	14	16	20
P Acc. da costruzione, automatici bonifica e cementaz no legati 1.0345 P235GH, 1.0050, 1.0503 C45, 1.2076 102Cr6	fino a 850 N/mm²	1xD	1xD	270	0.015	0.025	0.035	0.050	0.055	0.060	0.080	0.100
P Acciai automatici, acc. da cementazione legati, acc. nitrurati 1.1221 C60E, 1.7043 38Cr4, 1.7131 16MnCr5, 1.8550 34CrAlNi7	850-1.200 N/mm²	1xD	1xD	240	0.015	0.025	0.035	0.050	0.055	0.060	0.080	0.100
P Acciai da bonifica legati, acc. utensili ed acc. super rapidi 1.7003 38Cr2, 1.5710 36NiCr6, 1.7225 42CrMo4, 1.2419 105WCr6	850-1.400 N/mm²	1xD	1xD	200	0.015	0.025	0.030	0.045	0.050	0.055	0.070	0.085
M Acciai inossidabili 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9	fino a 750 N/mm²	1xD	1xD	120	0.015	0.020	0.030	0.045	0.055	0.060	0.065	0.075
M Acciai inossidabili 1.4301X5CrNi18-10, 1.4571 X6CrNi18-10, 1.4404 X2CrNiMo17-12-2	750-950 N/mm²	1xD	1xD	80	0.015	0.020	0.025	0.030	0.040	0.050	0.060	0.070
Ti Leghe di titanio ("Ti") 3.7114 TiAl5Sn2,5, 3.7124 TiCu2, 3.7154 TiAl6Zr5, 3.7164 TiAl6V4	fino a 1.300 N/mm²	1xD	1xD	60	0.015	0.020	0.025	0.030	0.040	0.050	0.060	0.070
K Ghise, ghisa grigia, ghisa temprata e ghisa sferoidale 0.6025 EN-GL250 (GG25), 0.7070 EN-GJS-700-2 (GGG70)	oltre 240 HB	1xD	1xD	160	0.015	0.025	0.035	0.050	0.055	0.060	0.080	0.100
N Alluminio, leghe Alu per lav.plastiche, leghe Alu 3.0255 Al99,5, 3.2315 AlMgSi1, 3.1325 AlCuMg1, 3.3245 AlMg3Si	fino a 3% Si	1xD	1xD	500	0.025	0.030	0.040	0.065	0.080	0.085	0.095	0.110
N Leghe alu-ghisa 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9	oltre 3% Si	1xD	1xD	340	0.015	0.020	0.030	0.055	0.065	0.07w0	0.080	0.100

HPC-SGROSSATURA E HSC-FINITURA

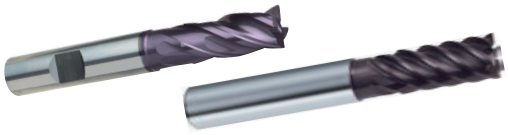
* per lavorazioni HSC la vel. di taglio può essere aumentata del 50%, l'avanzamento può essere ridotto in base tuttee richieste della superficie.
** per fresatura trocoidale e imachining con ae = 0.1-0.2xd la Vel. taglio e l'avanzamento possono essere aumentati del 50 %.

Materiali	Durezza / Res. alla trazione	Prof. taglio (ap max.)	Larg. taglio (ae max.)	Vel. taglio v_c [m/min]	fz [mm/z] con Ø nominale							
					4	6	8	10	12	14	16	20
P Acc. da costruzione, automatici bonifica e cementaz no legati 1.0345 P235GH, 1.0050, 1.0503 C45, 1.2076 102Cr6	fino a 850 N/mm²	2xD	0.4xD	350	0.020	0.030	0.045	0.060	0.075	0.080	0.090	0.110
P Acciai automatici, acc. da cementazione legati, acc. nitrurati 1.1221 C60E, 1.7043 38Cr4, 1.7131 16MnCr5, 1.8550 34CrAlNi7	850-1.200 N/mm²	2xD	0.4xD	290	0.020	0.030	0.045	0.060	0.075	0.080	0.090	0.110
P Acciai da bonifica legati, acc. utensili ed acc. super rapidi 1.7003 38Cr2, 1.5710 36NiCr6, 1.7225 42CrMo4, 1.2419 105WCr6	850-1.400 N/mm²	2xD	0.3xD	240	0.015	0.025	0.030	0.050	0.065	0.075	0.085	0.100
M Acciai inossidabili 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9	fino a 750 N/mm²	2xD	0.3xD	140	0.020	0.025	0.035	0.055	0.065	0.070	0.080	0.090
M Acciai inossidabili 1.4301X5CrNi18-10, 1.4571 X6CrNi18-10, 1.4404 X2CrNiMo17-12-2	750-950 N/mm²	2xD	0.25xD	120	0.015	0.020	0.030	0.040	0.050	0.060	0.065	0.075
Ti Leghe di titanio ("Ti") 3.7114 TiAl5Sn2,5, 3.7124 TiCu2, 3.7154 TiAl6Zr5, 3.7164 TiAl6V4	fino a 1.300 N/mm²	2xD	0.4xD	120	0.015	0.020	0.030	0.040	0.050	0.060	0.065	0.075
K Ghise, ghisa grigia, ghisa temprata e ghisa sferoidale 0.6025 EN-GL250 (GG25), 0.7070 EN-GJS-700-2 (GGG70)	oltre 240 HB	2xD	0.4xD	180	0.020	0.030	0.045	0.060	0.075	0.080	0.090	0.110
N Alluminio, leghe Alu per lav.plastiche, leghe Alu 3.0255 Al99,5, 3.2315 AlMgSi1, 3.1325 AlCuMg1, 3.3245 AlMg3Si	fino a 3% Si	2xD	0.5xD	600	0.025	0.040	0.060	0.080	0.100	0.110	0.120	0.150
N Leghe alu-ghisa 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9	oltre 3% Si	2xD	0.4xD	420	0.020	0.030	0.045	0.060	0.075	0.080	0.090	0.110

FORATURA

Materiali	Durezza / Res. alla trazione	Prof. foratura (ap max.)	entspänen ab 1xD	Vel. taglio v_c [m/min]	fz [mm/z] con Ø nominale							
					4	6	8	10	12	14	16	20
P Acc. da costruzione, automatici bonifica e cementaz no legati 1.0345 P235GH, 1.0050, 1.0503 C45, 1.2076 102Cr6	fino a 850 N/mm²	2xD	Ja	270	0,015	0,020	0,030	0,040	0,045	0,045	0,050	0,060
P Acciai automatici, acc. da cementazione legati, acc. nitrurati 1.1221 C60E, 1.7043 38Cr4, 1.7131 16MnCr5, 1.8550 34CrAlNi7	850-1.200 N/mm²	2xD	Ja	240	0,010	0,015	0,020	0,035	0,040	0,040	0,045	0,050
P Acciai da bonifica legati, acc. utensili ed acc. super rapidi 1.7003 38Cr2, 1.5710 36NiCr6, 1.7225 42CrMo4, 1.2419 105WCr6	850-1.400 N/mm²	1xD	-	200	0,005	0,010	0,015	0,025	0,030	0,030	0,035	0,040
K Ghise, ghisa grigia, ghisa temprata e ghisa sferoidale 0.6025 EN-GL250 (GG25), 0.7070 EN-GJS-700-2 (GGG70)	oltre 240 HB	2xD	Ja	150	0,015	0,020	0,030	0,040	0,045	0,045	0,050	0,060
N Alluminio, leghe Alu per lav.plastiche, leghe Alu 3.0255 Al99,5, 3.2315 AlMgSi1, 3.1325 AlCuMg1, 3.3245 AlMg3Si	fino a 3% Si	1xD	-	180	0,010	0,015	0,020	0,035	0,040	0,040	0,045	0,050
N Leghe alu-ghisa 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9	oltre 3% Si	1xD	-	140	0,015	0,020	0,030	0,040	0,045	0,045	0,050	0,060

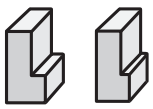
F-UT Frese di finitura / Frese di superfinitura



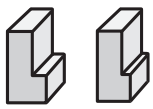
Condizioni stabili:
- buona refrigerazione
- potenza sufficiente
- scarico truciolo breve

* Frese #54207,#54227 per super finitura in acciai temprati > 54 HRC

Materiali	Durezza / Res. alla trazione	RF 100 consiglia-ta	Impiego	v_c [m/min]	fz [mm/z] con Ø nominale							
					3	6	8	10	12	16	20	25
P Acc. da costruzione, automatici, da bonifica e da cementaz. non legati 1.0035 S185, 1.0486 P275N, 1.0345 P235GH, 1.0050, 1.0070, 1.8937 1.0718 11SMnPb30, 1.0736 11SMn37 1.0402 C22, 1.1178 C30E, 1.0503 C45, 1.1191 C30E 1.0301 C10, 1.1121 C10E, 1.1750 C75W, 1.2076 102Cr6, 1.2307 29CrMoV9	fino a 850 N/mm²	N / FS	condizioni stabili	280	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
			condizioni instabili	-								
P Acciai automatici, acc. da cementazione legati, acc. nitrurati 1.0727 46 S20, 1.0728 60 S20, 1.0757 46SPb20 1.0601 C60, 1.1221 C60E, 1.7043 38Cr4 1.5752 15NiCr13, 1.7131 16MnCr5, 1.7264 20CrMo5 1.8504 34CrAl6, 1.8519 31CrMoV9, 1.8550 34CrAlNi7	850-1.200 N/mm²	N / FS	condizioni stabili	220	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
			condizioni instabili	-								
P Acciai da bonifica legati, acc. utensili ed acc. super rapidi 1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4, 1.5710 36NiCr6, 1.7035 41Cr4, 1.7225 42CrMo4, 1.2080 X210Cr12, 1.2083 X42Cr13, 1.2419 105WCr6, 1.2379 X155CrVMo12-1, 1.3243 S 6-5-2-5, 1.3343 S 6-5-2, 1.3344 S 6-5-3 acciaio per molle = 1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4	850-1.400 N/mm²	N / FS	condizioni stabili	200	0,015	0,030	0,040	0,050	0,060	0,070	0,090	0,130
			condizioni instabili	-								
H Acciai temprati Acciai per utensili, acciaio bonificato, acciaio per molle, acciaio ad alta velocità, acciai temprati, etc. Z.B.: 1.2344 X40CrMoV5-1; 1.2767 X45NiCrMo4; 1.2379 X155CrVMo12-1 ;1.2080 X210Cr12 1.3343 S 6-5-2	fino a 54 HRC	N / FS	condizioni stabili	150	0,015	0,030	0,040	0,050	0,060	0,070	0,090	0,130
		- / H*	condizioni instabili	110	0,007	0,017	0,024	0,030	0,036	0,045	0,057	0,065
M Acciai inossidabili 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	fino a 750 N/mm²	VA-X / FS	condizioni stabili	180	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
			condizioni instabili	-								
M Acciai inossidabili 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	VA-X / FS	condizioni stabili	140	0,015	0,030	0,040	0,050	0,060	0,070	0,090	0,130
			condizioni instabili	-								
M Acciai inossidabili 1.4438 X2CrNiMo18-15-4, 1.4404 X2CrNiMo17-12-2, 1.4571 X6CrNiTi18-10 USA = 310, 316, 316B, 316L, 317	oltre 850 N/mm²	VA-X / FS	condizioni stabili	120	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
			condizioni instabili	-								
S Leghe speciali (a base Nikel "Ni") Nimonic, Inconel, Monel, Hastelloy	fino a 1.300 N/mm²	N / FS	condizioni stabili	45	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
			condizioni instabili	-								
Ti Leghe di titanio ("Ti") 3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7164 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5	fino a 1.300 N/mm²	N / FS	condizioni stabili	130	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
			condizioni instabili	-								
K Ghise, ghisa grigia, ghisa temprata e ghisa sferoidale 0.6010 EN-GL100 (GG10), 0.6020 EN-GJL-200 (GG20), 0.7050 EN-GJS-500-7 (GGG50), 0.8535 EN-GJMW-350-4 (GTW35)	fino a 240 HB 30	N / FS	condizioni stabili	220	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
			condizioni instabili	-								
K Ghise, ghisa grigia, ghisa temprata e ghisa sferoidale 0.6025 EN-GL250 (GG25), 0.6035 EN-GJL-350 (GG35), 0.7070 EN-GJS-700-2 (GGG70), 0.8170 EN-GJMB-700-2 (GTS70)	oltre 240 HB 30	N / FS	condizioni stabili	200	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
			condizioni instabili	-								
N Alluminio, leghe alu per lav. plastiche, leghe di alu 3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1 3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	fino a 3% Si	Al / FS	condizioni stabili	1000	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
			condizioni instabili	-								
N Leghe alu-ghisa 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	oltre 3% Si	Al / FS	condizioni stabili	350	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
			condizioni instabili	-								
N Leghe di magnesio MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-	Al / FS	condizioni stabili	280	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
			condizioni instabili	-								
N Mettuttei non ferrosi (rame, ottone o bronzo, a truciolo coto e lungo) 2.0070 SE-Cu, 2.1020 CuSn6, 2.1096 G-CuSn5ZnPb, 2.0380 CuZn39Pb2, 2.0401 CuZn39Pb3, 2.0410 CuZn43Pb2, 2.0250 CuZn20, 2.0280 CuZn33, 2.0332 CuZn37Pb0,5, 2.1090 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn, 2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	fino a 850 N/mm²	N / FS	condizioni stabili	400	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
			condizioni instabili	-								

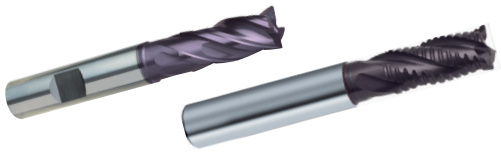


Frese di finitura:
a_p = 1 x D - 2 x D
a_e = 0,1 x D - 0,3 x D



Frese di superfinitura:
a_p = 1 x D - 3 x D
a_e = 0,05 x D - 0,1 x D

F-UT Frese di sgrossatura



Condizioni stabili:
- buona refrigerazione
- potenza sufficiente
- scarico truciolo breve

Condizioni instabili:
- refrigerazione standard
- potenza media
- scarico trucioli da medio a lungo

Materiali	Durezza / Res. alla trazione	RF 100 consiglia-ta	Impiego	v_c [m/min]	fz [mm/z] con Ø nominale							
					3	6	8	10	12	16	20	25
P Acc. da costruzione, automatici, da bonifica e da cementaz. non legati 1.0035 S185, 1.0486 P275N, 1.0345 P235GH, 1.0050, 1.0070, 1.8937 1.0718 11SMnPb30, 1.0736 11SMn37 1.0402 C22, 1.1178 C30E, 1.0503 C45, 1.1191 C30E 1.0301 C10, 1.1121 C10E, 1.1750 C75W, 1.2076 102Cr6, 1.2307 29CrMoV9	fino a 850 N/mm²	N	condizioni stabili	200	0,020	0,040	0,055	0,070	0,085	0,100	0,120	0,170
		N-F	condizioni instabili	200	0,014	0,028	0,039	0,049	0,060	0,070	0,084	0,119
P Acciai automatici, acc. da cementazione legati, acc. nitrurati 1.0727 46 S20, 1.0728 60 S20, 1.0757 46SPb20 1.0601 C60, 1.1221 C60E, 1.7043 38Cr4 1.5752 15NiCr13, 1.7131 16MnCr5, 1.7264 20CrMo5 1.8504 34CrAl6, 1.8519 31CrMoV9, 1.8550 34CrAlNi7	850-1.200 N/mm²	N	condizioni stabili	180	0,020	0,040	0,055	0,070	0,085	0,100	0,120	0,170
		N-F	condizioni instabili	180	0,014	0,028	0,039	0,049	0,060	0,070	0,084	0,119
P Acciai da bonifica legati, acc. utensili ed acc. super rapidi 1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4, 1.5710 36NiCr6, 1.7035 41Cr4, 1.7225 42CrMo4, 1.2080 X210Cr12, 1.2083 X42Cr13, 1.2419 105WCr6, 1.2379 X155CrVMo12-1, 1.3243 S 6-5-2-5, 1.3343 S 6-5-2, 1.3344 S 6-5-3 acciaio per molle = 1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4	850-1.400 N/mm²	N	condizioni stabili	160	0,020	0,040	0,050	0,065	0,080	0,095	0,110	0,160
		N-F	condizioni instabili	160	0,014	0,028	0,035	0,046	0,056	0,067	0,077	0,112
H Acciai temprati Acciai per utensili, acciaio bonificato, acciaio per molle, acciaio ad alta velocità, acciai temprati, etc. Z.B.: 1.2344 X40CrMoV5-1; 1.2767 X45NiCrMo4; 1.2379 X155CrVMo12-1 ;1.2080 X210Cr12 1.3343 S 6-5-2	fino a 54 HRC	N	condizioni stabili	110	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
		N-F	condizioni instabili	110	0,011	0,018	0,025	0,032	0,035	0,046	0,056	0,084
M Acciai inossidabili 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	fino a 750 N/mm²	VA-X	condizioni stabili	140	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
		VA-XF	condizioni instabili	140	0,013	0,025	0,032	0,042	0,049	0,063	0,070	0,105
M Acciai inossidabili 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	VA-X	condizioni stabili	120	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		VA-XF	condizioni instabili	120	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
M Acciai inossidabili 1.4438 X2CrNiMo18-15-4, 1.4404 X2CrNiMo17-12-2, 1.4571 X6CrNiTi18-10 USA = 310, 316, 316B, 316L, 317	oltre 850 N/mm²	VA-X	condizioni stabili	100	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
		VA-XF	condizioni instabili	100	0,011	0,018	0,025	0,032	0,035	0,046	0,056	0,084
S Leghe speciali (a base Nikel "Ni") Nimonic, Inconel, Monel, Hastelloy	fino a 1.300 N/mm²	Ti	condizioni stabili	35	0,010	0,020	0,030	0,035	0,040	0,055	0,065	0,080
		N-F	condizioni instabili	35	0,007	0,014	0,021	0,025	0,028	0,039	0,046	0,056
Ti Leghe di titanio ("Ti") 3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7164 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5	fino a 1.300 N/mm²	Ti	condizioni stabili	90	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		N-F	condizioni instabili	90	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
K Ghise, ghisa grigia, ghisa temprata e ghisa sferoidale 0.6010 EN-GL100 (GG10), 0.6020 EN-GJL-200 (GG20), 0.7050 EN-GJS-500-7 (GGG50), 0.8535 EN-GJMW-350-4 (GTW35)	fino a 240 HB 30	N	condizioni stabili	180	0,020	0,040	0,055	0,070	0,085	0,100	0,120	0,170
		N-F	condizioni instabili	180	0,014	0,028	0,039	0,049	0,060	0,070	0,084	0,119
K Ghise, ghisa grigia, ghisa temprata e ghisa sferoidale 0.6025 EN-GL250 (GG25), 0.6035 EN-GJL-350 (GG35), 0.7070 EN-GJS-700-2 (GGG70), 0.8170 EN-GJMB-700-2 (GTS70)	oltre 240 HB 30	N	condizioni stabili	160	0,020	0,040	0,050	0,065	0,080	0,095	0,110	0,160
		N-F	condizioni instabili	160	0,014	0,028	0,035	0,046	0,056	0,067	0,077	0,112
N Alluminio, leghe alu per lav. plastiche, leghe di alu 3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1 3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	fino a 3% Si	Al	condizioni stabili	600	0,020	0,040	0,055	0,070	0,085	0,100	0,120	0,170
		Al-F	condizioni instabili	600	0,014	0,028	0,039	0,049	0,060	0,070	0,084	0,119
N Leghe alu-ghisa 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	oltre 3% Si	Al	condizioni stabili	280	0,020	0,040	0,050	0,065	0,080	0,095	0,110	0,160
		Al-F	condizioni instabili	280	0,014	0,028	0,035	0,046	0,056	0,067	0,077	0,112
N Leghe di magnesio MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-	Al	condizioni stabili	220	0,020	0,040	0,050	0,065	0,080	0,095	0,110	0,160
		Al-F	condizioni instabili	220	0,014	0,028	0,035	0,046	0,056	0,067	0,077	0,112
N Mettuttei non ferrosi (rame, ottone o bronzo, a truciolo coto e lungo) 2.0070 SE-Cu, 2.1020 CuSn6, 2.1096 G-CuSn5ZnPb, 2.0380 CuZn39Pb2, 2.0401 CuZn39Pb3, 2.0410 CuZn43Pb2, 2.0250 CuZn20, 2.0280 CuZn33, 2.0332 CuZn37Pb0,5, 2.1090 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn, 2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	fino a 850 N/mm²	Al	condizioni stabili	300	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		Al-F	condizioni instabili	300	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098

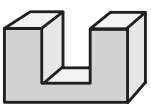
a_p = ≤ 1 x D
a_e = 0,5 - 0,9 x D
a_p = 1 x D - 2 x D
f_z = 70%

F-UT Frese per cave

Condizioni stabili:
- buona refrigerazione
- potenza sufficiente
- scarico truciolo breve

Condizioni instabili:
- refrigerazione standard
- potenza media
- scarico trucioli da medio a lungo

Materiali	Durezza / Res. alla trazione	RF 100 consiglia-ta	Impiego	v_c [m/min]	z [mm/z] con Ø nominale							
					3	6	8	10	12	16	20	25
P Acc. da costruzione, automatici, da bonifica e da cementaz. non legati 1.0035 S185, 1.0486 P275N, 1.0345 P235GH, 1.0050, 1.0070, 1.8937 1.0718 11SMnPb30, 1.0736 11SMn37 1.0402 C22, 1.1178 C30E, 1.0503 C45, 1.1191 C30E 1.0301 C10, 1.1121 C10E, 1.1750 C75W, 1.2076 102Cr6, 1.2307 29CrMoV9	fino a 850 N/mm²	N-3	condizioni stabili	180	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
		N-F	condizioni instabili	180	0,013	0,025	0,032	0,042	0,049	0,063	0,070	0,105
P Acciai automatici, acc. da cementazione legati, acc. nitrurati 1.0727 46 S20, 1.0728 60 S20, 1.0757 46SPb20 1.0601 C60, 1.1221 C60E, 1.7043 38Cr4 1.5752 15NiCr13, 1.7131 16MnCr5, 1.7264 20CrMo5 1.8504 34CrAl6, 1.8519 31CrMoV9, 1.8550 34CrAlNi7	850-1.200 N/mm²	N-3	condizioni stabili	160	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
		N-F	condizioni instabili	160	0,013	0,025	0,032	0,042	0,049	0,063	0,070	0,105
P Acciai da bonifica legati, acc. utensili ed acc. super rapidi 1.5131 50MnSi4, 1.7003 38Cr2, 1.7030 28Cr4, 1.5710 36NiCr6, 1.7035 41Cr4, 1.7225 42CrMo4, 1.2080 X210Cr12, 1.2083 X42Cr13, 1.2419 105WCr6, 1.2379 X155CrVMo12-1, 1.3243 S 6-5-2-5, 1.3343 S 6-5-2, 1.3344 S 6-5-3 acciaio per molle = 1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4	850-1.400 N/mm²	N-3	condizioni stabili	135	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		N-F	condizioni instabili	135	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
H Acciai temprati Acciai per utensili, acciaio bonificato, acciaio per molle, acciaio ad alta velocità, acciai temprati, etc. Z.B.: 1.2344 X40CrMoV5-1; 1.2767 X45NiCrMo4; 1.2379 X155CrVMo12-1 ;1.2080 X210Cr12 1.3343 S 6-5-2	fino a 54 HRC	N-3	condizioni stabili	70	0,012	0,025	0,030	0,040	0,045	0,060	0,070	0,100
		N-F	condizioni instabili	70	0,008	0,018	0,021	0,028	0,032	0,042	0,049	0,070
M Acciai inossidabili 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	fino a 750 N/mm²	VA-X	condizioni stabili	120	0,015	0,030	0,040	0,050	0,060	0,070	0,090	0,130
		VA-XF	condizioni instabili	120	0,011	0,021	0,028	0,035	0,042	0,049	0,063	0,091
M Acciai inossidabili 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	VA-X	condizioni stabili	80	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
		VA-XF	condizioni instabili	80	0,011	0,018	0,025	0,032	0,035	0,046	0,056	0,084
M Acciai inossidabili 1.4438 X2CrNiMo18-15-4, 1.4404 X2CrNiMo17-12-2, 1.4571 X6CrNiTi18-10 USA = 310, 316, 316B, 316L, 317	oltre 850 N/mm²	VA-X	condizioni stabili	70	0,012	0,025	0,030	0,040	0,045	0,060	0,070	0,100
		VA-XF	condizioni instabili	70	0,008	0,018	0,021	0,028	0,032	0,042	0,049	0,070
S Leghe speciali (a base Nikel "Ni") Nimonic, Inconel, Monel, Hastelloy	fino a 1.300 N/mm²	Ti	condizioni stabili	30	0,010	0,015	0,020	0,025	0,030	0,040	0,050	0,060
		N-F	condizioni instabili	30	0,007	0,011	0,014	0,018	0,021	0,028	0,035	0,042
Ti Leghe di titanio ("Ti") 3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7164 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5	fino a 1.300 N/mm²	Ti	condizioni stabili	60	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
		N-F	condizioni instabili	60	0,011	0,018	0,025	0,032	0,035	0,046	0,056	0,084
K Ghise, ghisa grigia, ghisa temprata e ghisa sferoidale 0.6010 EN-GL100 (GG10), 0.6020 EN-GJL-200 (GG20), 0.7050 EN-GJS-500-7 (GGG50), 0.8535 EN-GJMW-350-4 (GTW35)	fino a 240 HB 30	N	condizioni stabili	160	0,020	0,040	0,050	0,065	0,080	0,095	0,110	0,160
		N-F	condizioni instabili	160	0,014	0,028	0,035	0,046	0,056	0,067	0,077	0,112
K Ghise, ghisa grigia, ghisa temprata e ghisa sferoidale 0.6025 EN-GL250 (GG25), 0.6035 EN-GJL-350 (GG35), 0.7070 EN-GJS-700-2 (GGG70), 0.8170 EN-GJMB-700-2 (GTS70)	oltre 240 HB 30	N	condizioni stabili	140	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		N-F	condizioni instabili	140	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
N Alluminio, leghe alu per lav. plastiche, leghe di alu 3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1 3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	fino a 3% Si	Al-3	condizioni stabili	500	0,020	0,040	0,050	0,065	0,080	0,095	0,110	0,160
		Al-F	condizioni instabili	500	0,014	0,028	0,035	0,046	0,056	0,067	0,077	0,112
N Leghe alu-ghisa 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	oltre 3% Si	Al-3	condizioni stabili	230	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		Al-F	condizioni instabili	230	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
N Leghe di magnesio MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-	Al-3	condizioni stabili	180	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		Al-F	condizioni instabili	180	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
N Mettuttei non ferrosi (rame, ottone o bronzo, a truciolo coto e lungo) 2.0070 SE-Cu, 2.1020 CuSn6, 2.1096 G-CuSn5ZnPb, 2.0380 CuZn39Pb2, 2.0401 CuZn39Pb3, 2.0410 CuZn43Pb2, 2.0250 CuZn20, 2.0280 CuZn33, 2.0332 CuZn37Pb0,5, 2.1090 CuSn7ZnPb, 2.1170 CuPb5Sn5, 2.1176 CuPb10Sn, 2.0916 CuAl5, 2.0960 CuAl9Mn, 2.1050 CuSn10	fino a 850 N/mm²	Al-3	condizioni stabili	250	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
		Al-F	condizioni instabili	250	0,011	0,018	0,025	0,032	0,035	0,046	0,056	0,084



a_p = 0,5 x D - 1 x D a_p = 1 x D - 2 x D
a_e = 1 x D f_z = 70%

Frese SuperF-UT

Frese SuperF-UT NX

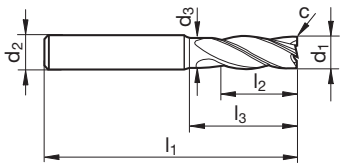
Catalogo n° 54590

HPC | NX | DIN 6527 L | VHM | TiAl-SiN | h10 | R | HA | 36° 38° 37°

P	M	K	N	S	H
●	●	●	●	●	

Parametri di lav. ind. a pag. 513-517

- geometria frontale e delle scanalature adattata per valori di taglio alti e asportazione del truciolo molto buona
- è possibile angolo di immersione estremamente inclinato fino a 45°
- lunga vita utensile grazie al rivestimento molto forte
- grande sicurezza del processo con riduzione simultanea dei tempi di lavoro
- fino a 1400 N/mm²
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
4,000	6,000	3,700	57,000	11,000	18,000	0,040	4	**4,000**
5,000	6,000	4,700	57,000	13,000	18,000	0,050	4	**5,000**
5,700	6,000	5,400	57,000	13,000	20,000	0,060	4	**5,700**
6,000	6,000	5,500	57,000	13,000	20,000	0,060	4	**6,000**
7,700	8,000	7,200	63,000	19,000	26,000	0,080	4	**7,700**
8,000	8,000	7,500	63,000	19,000	26,000	0,080	4	**8,000**
9,700	10,000	9,200	72,000	22,000	31,000	0,100	4	**9,700**
10,000	10,000	9,200	72,000	22,000	30,000	0,100	4	**10,000**
11,700	12,000	10,900	83,000	26,000	35,500	0,120	4	**11,700**
12,000	12,000	11,200	83,000	26,000	36,000	0,120	4	**12,000**
13,700	14,000	12,900	83,000	26,000	35,500	0,140	4	**13,700**
14,000	14,000	13,200	83,000	26,000	36,000	0,140	4	**14,000**
15,600	16,000	14,800	92,000	32,000	41,400	0,160	4	**15,600**
16,000	16,000	15,000	92,000	32,000	42,000	0,160	4	**16,000**
19,500	20,000	18,500	104,000	38,000	51,300	0,200	4	**19,500**
20,000	20,000	19,000	104,000	38,000	52,000	0,200	4	**20,000**

Frese SuperF-UT

Frese SuperF-UT NX

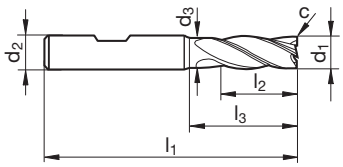
Catalogo n° 54591

HPC | NX | DIN 6527 L | VHM | TiAl-SiN | h10 | R | HB | 36° 38° 37°

P	M	K	N	S	H
●	●	●	●	●	

Parametri di lav. ind. a pag. 513-517

- geometria frontale e delle scanalature adattata per valori di taglio alti e asportazione del truciolo molto buona
- è possibile angolo di immersione estremamente inclinato fino a 45°
- lunga vita utensile grazie al rivestimento molto forte
- grande sicurezza del processo con riduzione simultanea dei tempi di lavoro
- fino a 1400 N/mm²
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
4,000	6,000	3,700	57,000	11,000	18,000	0,040	4	**4,000**
5,000	6,000	4,700	57,000	13,000	18,000	0,050	4	**5,000**
5,700	6,000	5,400	57,000	13,000	20,000	0,060	4	**5,700**
6,000	6,000	5,500	57,000	13,000	20,000	0,060	4	**6,000**
7,700	8,000	7,200	63,000	19,000	26,000	0,080	4	**7,700**
8,000	8,000	7,500	63,000	19,000	26,000	0,080	4	**8,000**
9,700	10,000	9,200	72,000	22,000	31,000	0,100	4	**9,700**
10,000	10,000	9,200	72,000	22,000	30,000	0,100	4	**10,000**
11,700	12,000	10,900	83,000	26,000	35,500	0,120	4	**11,700**
12,000	12,000	11,200	83,000	26,000	36,000	0,120	4	**12,000**
13,700	14,000	12,900	83,000	26,000	35,500	0,140	4	**13,700**
14,000	14,000	13,200	83,000	26,000	36,000	0,140	4	**14,000**
15,600	16,000	14,800	92,000	32,000	41,400	0,160	4	**15,600**
16,000	16,000	15,000	92,000	32,000	42,000	0,160	4	**16,000**
19,500	20,000	18,500	104,000	38,000	51,300	0,200	4	**19,500**
20,000	20,000	19,000	104,000	38,000	52,000	0,200	4	**20,000**

Frese SuperF-UT

Frese SuperF-UT N

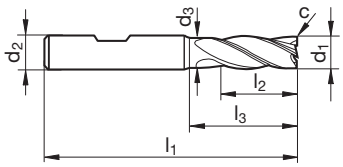
Catalogo n° 64550

HPC | N | DIN 6527 K | VHM | TiAlN | h10 | R | HB | 35° 38°

P	M	K	N	S	H
●		●			

Parametri di lav. ind. a pag. 513-517

- uso universale
- esecuzione corta stabile
- fino a 1600 N/mm²
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
6,000	6,000	5,500	54,000	10,000	17,000	0,150	4	**6,000**
8,000	8,000	7,500	58,000	12,000	21,000	0,150	4	**8,000**
10,000	10,000	9,200	66,000	14,000	24,000	0,200	4	**10,000**
12,000	12,000	11,200	73,000	16,000	26,000	0,200	4	**12,000**
14,000	14,000	13,200	75,000	18,000	28,000	0,250	4	**14,000**
16,000	16,000	15,000	82,000	22,000	32,000	0,350	4	**16,000**
18,000	18,000	17,000	84,000	24,000	34,000	0,400	4	**18,000**
20,000	20,000	19,000	92,000	26,000	40,000	0,450	4	**20,000**

Frese SuperF-UT

Frese SuperF-UT N

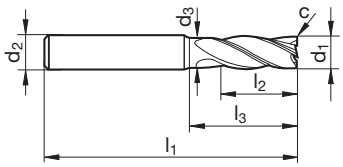
Catalogo n° 54551

HPC | N | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 35° 38°

P	M	K	N	S	H
●		●			

Parametri di lav. ind. a pag. 513-517

- uso universale
- fino a 1600 N/mm²
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
4,000	6,000	3,700	57,000	11,000	18,000	0,100	4	**4,000**
5,000	6,000	4,700	57,000	13,000	18,000	0,100	4	**5,000**
6,000	6,000	5,500	57,000	13,000	20,000	0,150	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,150	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,200	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,200	4	**12,000**
14,000	14,000	13,200	83,000	26,000	36,000	0,250	4	**14,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,350	4	**16,000**
18,000	18,000	17,000	92,000	32,000	42,000	0,400	4	**18,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,450	4	**20,000**

Frese SuperF-UT

Frese SuperF-UT N

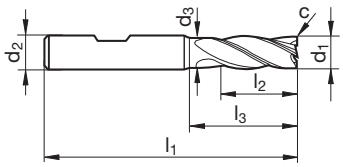
Catalogo n° 64551

HPC | N | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 35° 38°

P	M	K	N	S	H
●		●			

Parametri di lav. ind. a pag. 513-517

- uso universale
- fino a 1600 N/mm²
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
4,000	6,000	3,700	57,000	11,000	18,000	0,100	4	**4,000**
5,000	6,000	4,700	57,000	13,000	18,000	0,100	4	**5,000**
6,000	6,000	5,500	57,000	13,000	20,000	0,150	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,150	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,200	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,200	4	**12,000**
14,000	14,000	13,200	83,000	26,000	36,000	0,250	4	**14,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,350	4	**16,000**
18,000	18,000	17,000	92,000	32,000	42,000	0,400	4	**18,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,450	4	**20,000**
25,000	25,000	23,500	121,000	45,000	63,000	0,600	4	**25,000**

Frese SuperF-UT

Frese SuperF-UT N

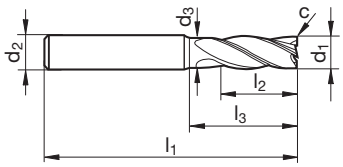
Catalogo n° 54562

HPC | N | WN | VHM | TiAlN | h10 | R | HA | 35° 38°

P	M	K	N	S	H
●		●			

Parametri di lav. ind. a pag. 513-517

- uso universale
- fino a 1600 N/mm²
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
6,000	6,000	5,500	65,000	18,000	28,000	0,150	4	**6,000**
8,000	8,000	7,500	75,000	24,000	38,000	0,150	4	**8,000**
10,000	10,000	9,200	80,000	30,000	38,000	0,200	4	**10,000**
12,000	12,000	11,200	93,000	36,000	46,000	0,200	4	**12,000**
16,000	16,000	15,000	108,000	48,000	58,000	0,350	4	**16,000**
20,000	20,000	19,000	126,000	60,000	74,000	0,450	4	**20,000**

Frese SuperF-UT

Frese SuperF-UT N

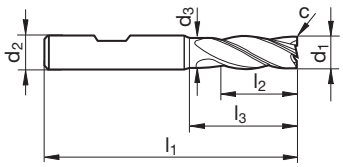
Catalogo n° 54563

HPC | N | WN | VHM | TiAlN | h10 | R | HB | 35° 38°

P	M	K	N	S	H
●		●			

Parametri di lav. ind. a pag. 513-517

- uso universale
- fino a 1600 N/mm²
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
6,000	6,000	5,500	65,000	18,000	28,000	0,150	4	**6,000**
8,000	8,000	7,500	75,000	24,000	38,000	0,150	4	**8,000**
10,000	10,000	9,200	80,000	30,000	38,000	0,200	4	**10,000**
12,000	12,000	11,200	93,000	36,000	46,000	0,200	4	**12,000**
16,000	16,000	15,000	108,000	48,000	58,000	0,350	4	**16,000**
20,000	20,000	19,000	126,000	60,000	74,000	0,450	4	**20,000**

Frese SuperF-UT

Frese SuperF-UT N

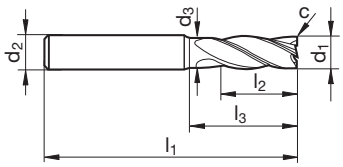
Catalogo n° 54552

HPC | N | WN | VHM | TiAlN | h10 | R | HA | 35° 38°

P	M	K	N	S	H
●		●			

Parametri di lav. ind. a pag. 513-517

- uso universale
- fino a 1600 N/mm²
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
10,000	10,000	9,200	100,000	40,000	48,000	0,200	4	**10,000**
12,000	12,000	11,200	150,000	45,000	58,000	0,200	4	**12,000**
14,000	14,000	13,200	150,000	45,000	58,000	0,250	4	**14,000**
16,000	16,000	15,000	150,000	65,000	78,000	0,350	4	**16,000**
18,000	18,000	17,000	150,000	65,000	78,000	0,400	4	**18,000**
20,000	20,000	19,000	150,000	65,000	78,000	0,450	4	**20,000**
25,000	25,000	23,500	150,000	75,000	92,000	0,600	4	**25,000**

Frese SuperF-UT

Frese SuperF-UT N-F

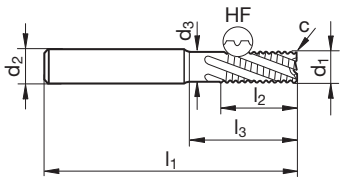
Catalogo n° 54566

N-F	DIN 6527L	VHM	TiAlN	h10	R	HA	30° 32°

P	M	K	N	S	H
●		○		○	

Parametri di lav. ind. a pag. 513-517

- fino a 48 HRC così come leghe al titanio e al nickel
- molto adatto anche per condizioni di macchina instabili e difficili
- qualità di superficie raggiungibile rugosità = 2 fino a 3 µm
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	**Codice**
6,000	6,000	5,500	57,000	13,000	20,000	0,300	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,300	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,300	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,500	4	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,500	4	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,500	4	**20,000**
25,000	25,000	23,500	121,000	45,000	63,000	0,600	4	**25,000**

Frese SuperF-UT

Frese SuperF-UT N-F

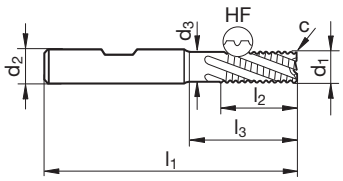
Catalogo n° 54567

N-F	DIN 6527L	VHM	TiAlN	h10	R	HB	30° 32°

P	M	K	N	S	H
●		○		○	

Parametri di lav. ind. a pag. 513-517

- fino a 48 HRC così come leghe al titanio e al nickel
- molto adatto anche per condizioni di macchina instabili e difficili
- qualità di superficie raggiungibile rugosità = 2 fino a 3 µm
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	**Codice**
6,000	6,000	5,500	57,000	13,000	20,000	0,300	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,300	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,300	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,500	4	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,500	4	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,500	4	**20,000**
25,000	25,000	23,500	121,000	45,000	63,000	0,600	4	**25,000**

Frese SuperF-UT

Frese SuperF-UT N-3

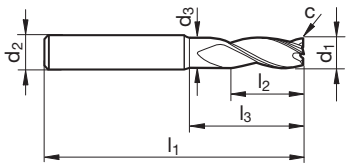
Catalogo n° 54564

N-3 | WN | VHM | TiAlN | e8 | R | HA | 41° 43° 45°

P	M	K	N	S	H
●	○	●	○		

Parametri di lav. ind. a pag. 513-517

- 3 taglienti con ingombro dei trucioli ingrandito
- per la produzione di linguette
- fino a 1400 N/mm²
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	**Codice**
3,000	6,000	2,700	57,000	8,000	15,000	0,050	3	**3,000**
3,500	6,000	3,200	57,000	10,000	15,000	0,050	3	**3,500**
3,700	6,000	3,400	57,000	11,000	15,000	0,050	3	**3,700**
4,000	6,000	3,700	57,000	11,000	18,000	0,050	3	**4,000**
4,500	6,000	4,200	57,000	11,000	18,000	0,050	3	**4,500**
4,700	6,000	4,400	57,000	13,000	18,000	0,050	3	**4,700**
5,000	6,000	4,700	57,000	13,000	18,000	0,050	3	**5,000**
5,500	6,000	5,200	57,000	13,000	19,300	0,050	3	**5,500**
5,700	6,000	5,400	57,000	13,000	19,500	0,050	3	**5,700**
6,000	6,000	5,500	57,000	13,000	20,000	0,050	3	**6,000**
6,500	8,000	6,000	63,000	16,000	24,300	0,100	3	**6,500**
7,000	8,000	6,500	63,000	16,000	24,700	0,100	3	**7,000**
7,500	8,000	7,000	63,000	19,000	25,100	0,100	3	**7,500**
8,000	8,000	7,500	63,000	19,000	26,000	0,100	3	**8,000**
8,500	10,000	8,000	72,000	19,000	29,300	0,100	3	**8,500**
9,000	10,000	8,500	72,000	19,000	29,700	0,100	3	**9,000**
9,500	10,000	9,000	72,000	22,000	30,100	0,100	3	**9,500**
10,000	10,000	9,200	72,000	22,000	30,000	0,100	3	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,100	3	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,150	3	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,150	3	**20,000**

Frese SuperF-UT

Frese SuperF-UT N-3

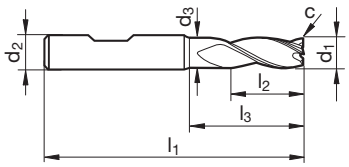
Catalogo n° 54565

N-3 | WN | VHM | TiAlN | e8 | R | HB | 41° 43° 45°

P	M	K	N	S	H
●	○	●	○		

Parametri di lav. ind. a pag. 513-517

- 3 taglienti con ingombro dei trucioli ingrandito
- per la produzione di linguette
- fino a 1400 N/mm²
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	**Codice**
3,000	6,000	2,700	57,000	8,000	15,000	0,050	3	**3,000**
3,500	6,000	3,200	57,000	10,000	15,000	0,050	3	**3,500**
3,700	6,000	3,400	57,000	11,000	15,000	0,060	3	**3,700**
4,000	6,000	3,700	57,000	11,000	18,000	0,060	3	**4,000**
4,500	6,000	4,200	57,000	11,000	18,000	0,070	3	**4,500**
4,700	6,000	4,400	57,000	13,000	18,000	0,070	3	**4,700**
5,000	6,000	4,700	57,000	13,000	18,000	0,080	3	**5,000**
5,500	6,000	5,200	57,000	13,000	20,000	0,080	3	**5,500**
5,700	6,000	5,400	57,000	13,000	20,000	0,090	3	**5,700**
6,000	6,000	5,500	57,000	13,000	20,000	0,090	3	**6,000**
6,500	8,000	6,000	63,000	16,000	26,000	0,100	3	**6,500**
7,000	8,000	6,500	63,000	16,000	26,000	0,110	3	**7,000**
7,500	8,000	7,000	63,000	19,000	26,000	0,110	3	**7,500**
8,000	8,000	7,500	63,000	19,000	26,000	0,120	3	**8,000**
8,500	10,000	8,000	72,000	19,000	31,000	0,130	3	**8,500**
9,000	10,000	8,500	72,000	19,000	31,000	0,140	3	**9,000**
9,500	10,000	9,000	72,000	22,000	31,000	0,140	3	**9,500**
10,000	10,000	9,200	72,000	22,000	30,000	0,150	3	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,180	3	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,190	3	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,240	3	**20,000**

Frese SuperF-UT

Frese SuperF-UT N-5

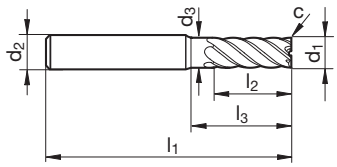
Catalogo n° 54579

HPC | N-5 | WN | VHM | TiAlN | h10 | R | HA | 45°

P	M	K	N	S	H
●	●	●	●	●	

Parametri di lav. ind. a pag. 513-517

- vantaggi maggiormente possibili con operazioni di lappatura e semi-sgrossatura specialmente a condizioni HPC
- divisione diseguale
- misura corta, vedi F-UT FS con 6 denti
- fino a 1600 N/mm²
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
4,000	6,000	3,700	65,000	12,000	26,000	0,050	5	**4,000**
5,000	6,000	4,700	65,000	15,000	26,000	0,050	5	**5,000**
6,000	6,000	5,500	65,000	18,000	28,000	0,050	5	**6,000**
8,000	8,000	7,500	75,000	24,000	38,000	0,100	5	**8,000**
10,000	10,000	9,200	80,000	30,000	38,000	0,100	5	**10,000**
12,000	12,000	11,200	93,000	36,000	46,000	0,100	5	**12,000**
16,000	16,000	15,000	108,000	48,000	58,000	0,150	5	**16,000**
20,000	20,000	19,000	126,000	60,000	74,000	0,150	5	**20,000**

Frese SuperF-UT

Frese SuperF-UT N-5

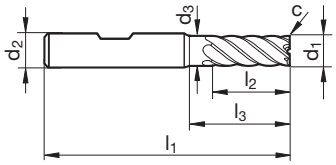
Catalogo n° 54580

HPC | N-5 | WN | VHM | TiAlN | h10 | R | HB | 45°

P	M	K	N	S	H
●	●	●	●	●	

Parametri di lav. ind. a pag. 513-517

- vantaggi maggiormente possibili con operazioni di lappatura e semi-sgrossatura specialmente a condizioni HPC
- divisione diseguale
- misura corta, vedi F-UT FS con 6 denti
- fino a 1600 N/mm²
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
4,000	6,000	3,700	65,000	12,000	26,000	0,050	5	**4,000**
5,000	6,000	4,700	65,000	15,000	26,000	0,050	5	**5,000**
6,000	6,000	5,500	65,000	18,000	28,000	0,050	5	**6,000**
8,000	8,000	7,500	75,000	24,000	38,000	0,100	5	**8,000**
10,000	10,000	9,200	80,000	30,000	38,000	0,100	5	**10,000**
12,000	12,000	11,200	93,000	36,000	46,000	0,100	5	**12,000**
16,000	16,000	15,000	108,000	48,000	58,000	0,150	5	**16,000**
20,000	20,000	19,000	126,000	60,000	74,000	0,150	5	**20,000**

Frese SuperF-UT

Frese SuperF-UT Ti

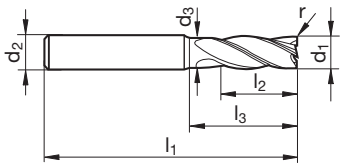
Catalogo n° 54560

HPC | Ti | DIN 6527 L | VHM | Al-TiN+ | h10 | R | HA | 35° 38°

P	M	K	N	S	H
●		○		●	

Parametri di lav. ind. a pag. 513-517

- esecuzione spigolo tagliente ottimizzata per leghe al titanio ad alta resistenza e materiali speciali
- può anche essere applicato come SuperF-UT Tipo N con raggio
- con raggi definiti
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	r	Z	Codice
6,000	6,000	5,500	57,000	13,000	20,000	0,500	4	**6,005**
6,000	6,000	5,500	57,000	13,000	20,000	0,800	4	**6,008**
6,000	6,000	5,500	57,000	13,000	20,000	1,000	4	**6,010**
6,000	6,000	5,500	57,000	13,000	20,000	1,500	4	**6,015**
6,000	6,000	5,500	57,000	13,000	20,000	2,000	4	**6,020**
8,000	8,000	7,500	63,000	19,000	26,000	0,500	4	**8,005**
8,000	8,000	7,500	63,000	19,000	26,000	0,800	4	**8,008**
8,000	8,000	7,500	63,000	19,000	26,000	1,000	4	**8,010**
8,000	8,000	7,500	63,000	19,000	26,000	1,500	4	**8,015**
8,000	8,000	7,500	63,000	19,000	26,000	2,000	4	**8,020**
10,000	10,000	9,200	72,000	22,000	30,000	0,500	4	**10,005**
10,000	10,000	9,200	72,000	22,000	30,000	0,800	4	**10,008**
10,000	10,000	9,200	72,000	22,000	30,000	1,000	4	**10,010**
10,000	10,000	9,200	72,000	22,000	30,000	1,500	4	**10,015**
10,000	10,000	9,200	72,000	22,000	30,000	2,000	4	**10,020**
12,000	12,000	11,200	83,000	26,000	36,000	0,500	4	**12,005**
12,000	12,000	11,200	83,000	26,000	36,000	0,800	4	**12,008**
12,000	12,000	11,200	83,000	26,000	36,000	1,000	4	**12,010**
12,000	12,000	11,200	83,000	26,000	36,000	1,500	4	**12,015**
12,000	12,000	11,200	83,000	26,000	36,000	2,000	4	**12,020**
12,000	12,000	11,200	83,000	26,000	36,000	2,500	4	**12,025**
12,000	12,000	11,200	83,000	26,000	36,000	3,000	4	**12,030**
12,000	12,000	11,200	83,000	26,000	36,000	4,000	4	**12,040**
16,000	16,000	15,000	92,000	32,000	42,000	0,500	4	**16,005**
16,000	16,000	15,000	92,000	32,000	42,000	0,800	4	**16,008**
16,000	16,000	15,000	92,000	32,000	42,000	1,000	4	**16,010**
16,000	16,000	15,000	92,000	32,000	42,000	1,500	4	**16,015**
16,000	16,000	15,000	92,000	32,000	42,000	2,000	4	**16,020**
16,000	16,000	15,000	92,000	32,000	42,000	2,500	4	**16,025**
16,000	16,000	15,000	92,000	32,000	42,000	3,000	4	**16,030**
16,000	16,000	15,000	92,000	32,000	42,000	4,000	4	**16,040**
20,000	20,000	19,000	104,000	38,000	52,000	1,000	4	**20,010**
20,000	20,000	19,000	104,000	38,000	52,000	2,000	4	**20,020**
20,000	20,000	19,000	104,000	38,000	52,000	4,000	4	**20,040**

Frese SuperF-UT

Frese SuperF-UT Ti

Catalogo n° 54561

HPC | Ti | DIN 6527 L | VHM | Al-TiN+ | h10 | R | HB | 35° 38°

P	M	K	N	S	H
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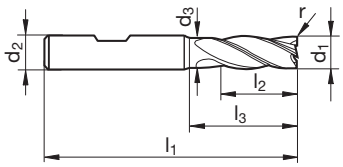
Parametri di lav. ind. a pag. 513-517

- esecuzione spigolo tagliente ottimizzata per leghe al titanio ad alta resistenza e materiali speciali
- può anche essere applicato come SuperF-UT Tipo N con raggio
- con raggi definiti
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	r	Z	Codice
6,000	6,000	5,500	57,000	13,000	20,000	0,500	4	**6,005**
6,000	6,000	5,500	57,000	13,000	20,000	0,800	4	**6,008**
6,000	6,000	5,500	57,000	13,000	20,000	1,000	4	**6,010**
6,000	6,000	5,500	57,000	13,000	20,000	1,500	4	**6,015**
6,000	6,000	5,500	57,000	13,000	20,000	2,000	4	**6,020**
8,000	8,000	7,500	63,000	19,000	26,000	0,500	4	**8,005**
8,000	8,000	7,500	63,000	19,000	26,000	0,800	4	**8,008**
8,000	8,000	7,500	63,000	19,000	26,000	1,000	4	**8,010**
8,000	8,000	7,500	63,000	19,000	26,000	1,500	4	**8,015**
8,000	8,000	7,500	63,000	19,000	26,000	2,000	4	**8,020**
10,000	10,000	9,200	72,000	22,000	30,000	0,500	4	**10,005**
10,000	10,000	9,200	72,000	22,000	30,000	0,800	4	**10,008**
10,000	10,000	9,200	72,000	22,000	30,000	1,000	4	**10,010**
10,000	10,000	9,200	72,000	22,000	30,000	1,500	4	**10,015**
10,000	10,000	9,200	72,000	22,000	30,000	2,000	4	**10,020**
12,000	12,000	11,200	83,000	26,000	36,000	0,500	4	**12,005**
12,000	12,000	11,200	83,000	26,000	36,000	0,800	4	**12,008**
12,000	12,000	11,200	83,000	26,000	36,000	1,000	4	**12,010**
12,000	12,000	11,200	83,000	26,000	36,000	1,500	4	**12,015**
12,000	12,000	11,200	83,000	26,000	36,000	2,000	4	**12,020**
12,000	12,000	11,200	83,000	26,000	36,000	2,500	4	**12,025**
12,000	12,000	11,200	83,000	26,000	36,000	3,000	4	**12,030**
12,000	12,000	11,200	83,000	26,000	36,000	4,000	4	**12,040**
16,000	16,000	15,000	92,000	32,000	42,000	0,500	4	**16,005**
16,000	16,000	15,000	92,000	32,000	42,000	0,800	4	**16,008**
16,000	16,000	15,000	92,000	32,000	42,000	1,000	4	**16,010**
16,000	16,000	15,000	92,000	32,000	42,000	1,500	4	**16,015**
16,000	16,000	15,000	92,000	32,000	42,000	2,000	4	**16,020**
16,000	16,000	15,000	92,000	32,000	42,000	2,500	4	**16,025**
16,000	16,000	15,000	92,000	32,000	42,000	3,000	4	**16,030**
16,000	16,000	15,000	92,000	32,000	42,000	4,000	4	**16,040**
20,000	20,000	19,000	104,000	38,000	52,000	1,000	4	**20,010**
20,000	20,000	19,000	104,000	38,000	52,000	2,000	4	**20,020**
20,000	20,000	19,000	104,000	38,000	52,000	4,000	4	**20,040**

Frese SuperF-UT

Frese VA-X Super-UT

Catalogo n° 54576

HPC | VA-X | DIN 6527 K | VHM | AlTiN nano | h10 | R | HB | 36° 38°

P	M	K	N	S	H
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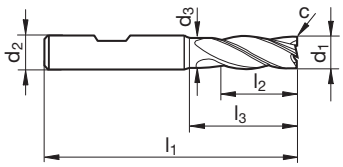
Parametri di lav. ind. a pag. 513-517

- geometria di taglio e rivestimento adattati
- per la lavorazione di acciai resistenti alla ruggine e all'acido così come di leghe a base di nickel
- esecuzione corta stabile
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
4,000	6,000	3,700	54,000	8,000	15,000	0,150	4	**4,000**
5,000	6,000	4,700	54,000	9,000	15,000	0,150	4	**5,000**
6,000	6,000	5,500	54,000	10,000	17,000	0,200	4	**6,000**
8,000	8,000	7,500	58,000	12,000	21,000	0,250	4	**8,000**
10,000	10,000	9,200	66,000	14,000	24,000	0,300	4	**10,000**
12,000	12,000	11,200	73,000	16,000	26,000	0,350	4	**12,000**
16,000	16,000	15,000	82,000	22,000	32,000	0,500	4	**16,000**
20,000	20,000	19,000	92,000	26,000	40,000	0,600	4	**20,000**

Frese SuperF-UT

Frese VA-X Super-UT

Catalogo n° 54558

HPC | VA-X | DIN 6527 L | VHM | AlTiN nano | h10 | R | HA | 36° 38°

P	M	K	N	S	H
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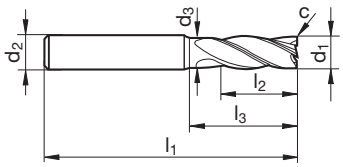
Parametri di lav. ind. a pag. 513-517

- geometria di taglio e rivestimento adattati
- per la lavorazione di acciai resistenti alla ruggine e all'acido così come di leghe a base di nickel
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
3,000	6,000	2,700	57,000	8,000	15,000	0,100	4	**3,000**
4,000	6,000	3,700	57,000	11,000	18,000	0,150	4	**4,000**
5,000	6,000	4,700	57,000	13,000	18,000	0,150	4	**5,000**
6,000	6,000	5,500	57,000	13,000	20,000	0,200	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,250	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,300	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,350	4	**12,000**
14,000	14,000	13,200	83,000	26,000	36,000	0,400	4	**14,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,500	4	**16,000**
18,000	18,000	17,000	92,000	32,000	42,000	0,600	4	**18,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,600	4	**20,000**
25,000	25,000	23,500	121,000	45,000	63,000	0,750	4	**25,000**

Frese SuperF-UT

Frese VA-X Super-UT

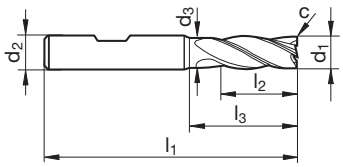
Catalogo n° 54559

HPC | VA-X | DIN 6527 L | VHM | AlTiN nano | h10 | R | HB | 36° 38°

P	M	K	N	S	H
	•			•	

Parametri di lav. ind. a pag. 513-517

- geometria di taglio e rivestimento adattati
- per la lavorazione di acciai resistenti alla ruggine e all'acido così come di leghe a base di nickel
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
3,000	6,000	2,700	57,000	8,000	15,000	0,100	4	**3,000**
4,000	6,000	3,700	57,000	11,000	18,000	0,150	4	**4,000**
5,000	6,000	4,700	57,000	13,000	18,000	0,150	4	**5,000**
6,000	6,000	5,500	57,000	13,000	20,000	0,200	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,250	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,300	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,350	4	**12,000**
14,000	14,000	13,200	83,000	26,000	36,000	0,400	4	**14,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,500	4	**16,000**
18,000	18,000	17,000	92,000	32,000	42,000	0,600	4	**18,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,600	4	**20,000**
25,000	25,000	23,500	121,000	45,000	63,000	0,750	4	**25,000**

Frese SuperF-UT

Frese SuperF-UT VA-X IK

Catalogo n° 54574

HPC | VA-X IK | DIN 6527 L | VHM | AlTiN nano | h10 | R | HA | 36° 38°

P	M	K	N	S	H
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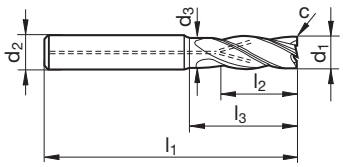
Parametri di lav. ind. a pag. 513-517

- geometria di taglio e rivestimento adattati
- per la lavorazione di acciai resistenti alla ruggine e all'acido così come di leghe a base di nickel
- con refrigerazione interna per vita utensile maggiore e asportazione truciolo ottimale
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
6,000	6,000	5,500	57,000	13,000	20,000	0,200	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,250	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,300	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,350	4	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,500	4	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,600	4	**20,000**
25,000	25,000	23,500	121,000	45,000	63,000	0,750	4	**25,000**

Frese SuperF-UT

Frese SuperF-UT VA-X IK

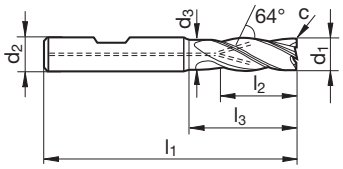
Catalogo n° 54575

HPC | VA-X IK | DIN 6527 L | VHM | AlTiN nano | h10 | R | HB | 36° 38°

P	M	K	N	S	H
	●			●	

Parametri di lav. ind. a pag. 513-517

- geometria di taglio e rivestimento adattati
- per la lavorazione di acciai resistenti alla ruggine e all'acido così come di leghe a base di nickel
- con refrigerazione interna per vita utensile maggiore e asportazione truciolo ottimale
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
6,000	6,000	5,500	57,000	13,000	20,000	0,200	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,250	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,300	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,350	4	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,500	4	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,600	4	**20,000**
25,000	25,000	23,500	121,000	45,000	63,000	0,750	4	**25,000**

Frese SuperF-UT

Frese SuperF-UT VA-XF

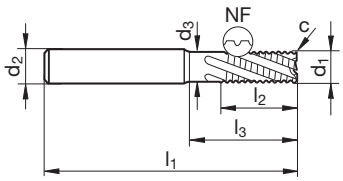
Catalogo n° 54568

VA-XF | DIN 6527 L | VHM | AlTiN nano | h10 | R | HA | 36° 38°

P	M	K	N	S	H
	●			●	

Parametri di lav. ind. a pag. 513-517

- geometria di taglio e rivestimento adattati
- per la lavorazione di acciai resistenti alla ruggine e all'acido così come di leghe a base di nickel
- molto adatto anche per condizioni di macchina instabili e difficili
- qualità di superficie raggiungibile rugosità = 2 fino a 3 µm
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	**Codice**
6,000	6,000	5,500	57,000	13,000	20,000	0,300	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,300	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,300	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,500	4	**12,000**
14,000	14,000	13,200	83,000	26,000	36,000	0,500	4	**14,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,500	4	**16,000**
18,000	18,000	17,000	92,000	32,000	42,000	0,500	4	**18,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,500	4	**20,000**
25,000	25,000	23,500	121,000	45,000	63,000	0,600	4	**25,000**

Frese SuperF-UT

Frese SuperF-UT VA-XF

Catalogo n° 54569

VA-XF | DIN 6527 L | VHM | AlTiN nano | h10 | R | HB | 36° 38°

P	M	K	N	S	H
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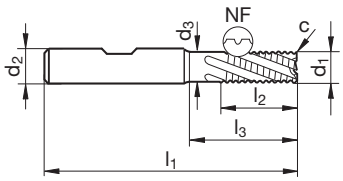
Parametri di lav. ind. a pag. 513-517

- geometria di taglio e rivestimento adattati
- per la lavorazione di acciai resistenti alla ruggine e all'acido così come di leghe a base di nickel
- molto adatto anche per condizioni di macchina instabili e difficili
- qualità di superficie raggiungibile rugosità = 2 fino a 3 µm
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	**Codice**
6,000	6,000	5,500	57,000	13,000	20,000	0,300	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,300	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,300	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,500	4	**12,000**
14,000	14,000	13,200	83,000	26,000	36,000	0,500	4	**14,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,500	4	**16,000**
18,000	20,000	17,000	92,000	32,000	42,000	0,500	4	**18,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,500	4	**20,000**
25,000	25,000	23,500	121,000	45,000	63,000	0,600	4	**25,000**

Frese SuperF-UT

Frese SuperF-UT VA

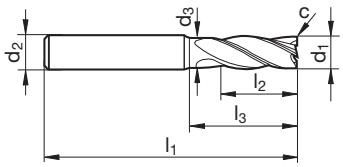
Catalogo n° 54556

HPC | DIN 6527L | VHM | AlTiN nano | h10 | R | HA | 40° 42°

P	M	K	N	S	H
●	○		○		

Parametri di lav. ind. a pag. 513-517

- geometria di taglio e rivestimento adattati
- materiali dolci, a truciolo lungo
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
4,000	6,000	3,700	57,000	11,000	18,000	0,100	4	**4,000**
5,000	6,000	4,700	57,000	13,000	18,000	0,100	4	**5,000**
6,000	6,000	5,500	57,000	13,000	20,000	0,150	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,150	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,200	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,200	4	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,350	4	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,450	4	**20,000**

Frese SuperF-UT

Frese SuperF-UT VA

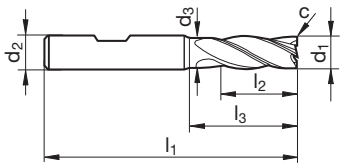
Catalogo n° 64557

HPC | VA | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 40° 42°

P	M	K	N	S	H
●	○		○		

Parametri di lav. ind. a pag. 513-517

- geometria di taglio e rivestimento adattati
- materiali dolci, a truciolo lungo
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
4,000	6,000	3,700	57,000	11,000	18,000	0,100	4	**4,000**
5,000	6,000	4,700	57,000	13,000	18,000	0,100	4	**5,000**
6,000	6,000	5,500	57,000	13,000	20,000	0,150	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,150	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,200	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,200	4	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,350	4	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,450	4	**20,000**

Frese SuperF-UT

Frese SuperF-UT VA-IK

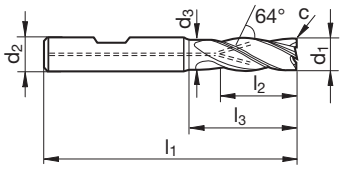
Catalogo n° 64567

HPC | VA-IK | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 40° 42°

P	M	K	N	S	H
●	○		○		

Parametri di lav. ind. a pag. 513-517

- geometria di taglio e rivestimento adattati
- materiali dolci, a truciolo lungo
- con refrigerazione interna per vita utensile maggiore e asportazione truciolo ottimale
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
6,000	6,000	5,500	57,000	13,000	20,000	0,150	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,150	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,200	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,200	4	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,350	4	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,450	4	**20,000**

Frese SuperF-UT

Frese SuperF-UT Alluminio

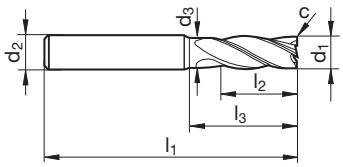
Catalogo n° 74554

Al	DIN 6527 L	VHM	lucido	h10	R	HA	40° 42°

P	M	K	N	S	H
			●		

Parametri di lav. ind. a pag. 513-517

- alluminio e leghe di alluminio così come metalli NE
- qualità di superficie notevole con operazioni di lappatura
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	**Codice**
4,000	6,000	3,700	57,000	11,000	18,000	0,100	4	**4,000**
5,000	6,000	4,700	57,000	13,000	18,000	0,100	4	**5,000**
6,000	6,000	5,500	57,000	13,000	20,000	0,150	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,150	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,200	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,200	4	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,350	4	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,450	4	**20,000**

Frese SuperF-UT

Frese SuperF-UT Alluminio

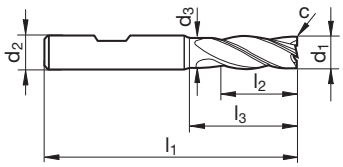
Catalogo n° 74555

Al	DIN 6527 L	VHM	lucido	h10	R	HB	40° 42°

P	M	K	N	S	H
			●		

Parametri di lav. ind. a pag. 513-517

- alluminio e leghe di alluminio così come metalli NE
- qualità di superficie notevole con operazioni di lappatura
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	**Codice**
4,000	6,000	3,700	57,000	11,000	18,000	0,100	4	**4,000**
5,000	6,000	4,700	57,000	13,000	18,000	0,100	4	**5,000**
6,000	6,000	5,500	57,000	13,000	20,000	0,150	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,150	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,200	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,200	4	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,350	4	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,450	4	**20,000**

Frese SuperF-UT

Frese SuperF-UT Al-F

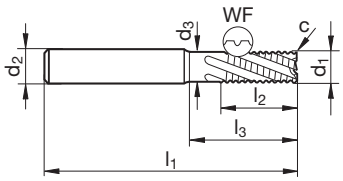
Catalogo n° 54570

AL-F | WN | VHM | luci-do | h10 | R | HA | 30° 29° 31°

P	M	K	N	S	H
			●		

Parametri di lav. ind. a pag. 513-517

- 3 taglienti con ingombro dei trucioli ingrandito
- molto adatto anche per condizioni di macchina instabili e difficili
- qualità di superficie raggiungibile rugosità = 2 fino a 3 µm
- alluminio e leghe in alluminio così come altri metalli NE a truciolo lungo
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	**Codice**
6,000	6,000	5,500	57,000	13,000	20,000	0,300	3	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,300	3	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,300	3	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,500	3	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,500	3	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,500	3	**20,000**
25,000	25,000	23,500	121,000	45,000	63,000	0,600	3	**25,000**

Frese SuperF-UT

Frese SuperF-UT Al-F

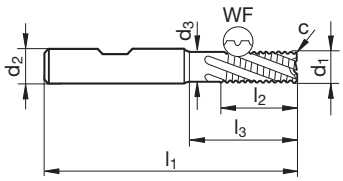
Catalogo n° 54571

AL-F | WN | VHM | lucido | h10 | R | HB | 30° 29° 31°

P	M	K	N	S	H
			●		

Parametri di lav. ind. a pag. 513-517

- 3 taglienti con ingombro dei trucioli ingrandito
- molto adatto anche per condizioni di macchina instabili e difficili
- qualità di superficie raggiungibile rugosità = 2 fino a 3 µm
- alluminio e leghe in alluminio così come altri metalli NE a truciolo lungo
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	**Codice**
6,000	6,000	5,500	57,000	13,000	20,000	0,300	3	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,300	3	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,300	3	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,500	3	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,500	3	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,500	3	**20,000**
25,000	25,000	23,500	121,000	45,000	63,000	0,600	3	**25,000**

Frese SuperF-UT

Frese SuperF-UT Al-3

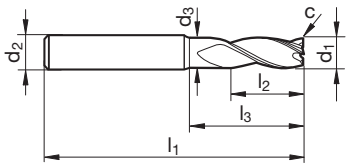
Catalogo n° 74552

AL-3 | WN | VHM | lucido | e8 | R | HA | 39° 40° 41°

P	M	K	N	S	H
			●		

Parametri di lav. ind. a pag. 513-517

- 3 taglienti con ingombro dei trucioli ingrandito
- finitura speculare per asportazione del truciolo ottimale
- alluminio e leghe in alluminio così come altri metalli NE a truciolo lungo
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	**Codice**
3,000	6,000	2,700	57,000	8,000	15,000	0,030	3	**3,000**
4,000	6,000	3,700	57,000	11,000	18,000	0,040	3	**4,000**
5,000	6,000	4,700	57,000	13,000	18,000	0,050	3	**5,000**
6,000	6,000	5,500	57,000	13,000	20,000	0,060	3	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,080	3	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,100	3	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,120	3	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,160	3	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,200	3	**20,000**

Frese SuperF-UT

Frese SuperF-UT Al-3

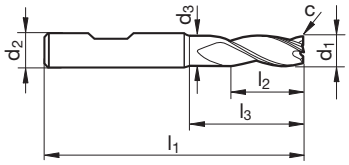
Catalogo n° 74553

AL-3 | WN | VHM | lucido | e8 | R | HB | 39° 40° 41°

P	M	K	N	S	H
			●		

Parametri di lav. ind. a pag. 513-517

- 3 taglienti con ingombro dei trucioli ingrandito
- finitura speculare per asportazione del truciolo ottimale
- alluminio e leghe in alluminio così come altri metalli NE a truciolo lungo
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	**Codice**
3,000	6,000	2,700	57,000	8,000	15,000	0,030	3	**3,000**
4,000	6,000	3,700	57,000	11,000	18,000	0,040	3	**4,000**
5,000	6,000	4,700	57,000	13,000	18,000	0,050	3	**5,000**
6,000	6,000	5,500	57,000	13,000	20,000	0,060	3	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,080	3	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,100	3	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,120	3	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,160	3	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,200	3	**20,000**

Frese SuperF-UT

Frese SuperF-UT H

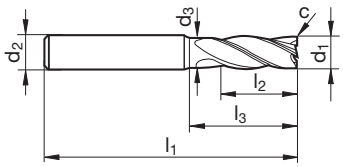
Catalogo n° 54572

H | DIN 6527 L | VHM | TiAl-SiN | h10 | R | HA | 40° 42°

P	M	K	N	S	H
●		●			●

Parametri di lav. ind. a pag. 513-517

- sgrossatura fino a 1xD di materiali fino a 54 HRC
- lappatura fino a 2,5xD di materiali fino a 63 HRC
- lunga vita utensile grazie al rivestimento molto forte
- particolarmente stabile grazie a punta rinforzata
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	**Codice**
6,000	6,000	5,500	57,000	13,000	20,000	0,150	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,150	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,200	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,200	4	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,350	4	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,450	4	**20,000**

Frese SuperF-UT

Frese SuperF-UT H

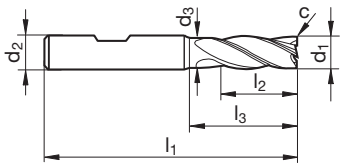
Catalogo n° 54573

H	DIN 6527 L	VHM	TiAl-SiN	h10	R	HB	40° 42°

P	M	K	N	S	H
●		●			●

Parametri di lav. ind. a pag. 513-517

- sgrossatura fino a 1xD di materiali fino a 54 HRC
- lappatura fino a 2,5xD di materiali fino a 63 HRC
- lunga vita utensile grazie al rivestimento molto forte
- particolarmente stabile grazie a punta rinforzata
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare

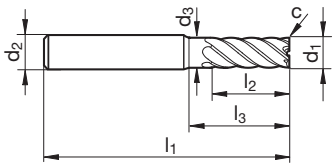


d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	**Codice**
6,000	6,000	5,500	57,000	13,000	20,000	0,150	4	**6,000**
8,000	8,000	7,500	63,000	19,000	26,000	0,150	4	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,200	4	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,200	4	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,350	4	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,450	4	**20,000**

Frese SuperF-UT

Frese SuperF-UT FS

Catalogo n° 64558



HPC | FS | WN | VHM | TiAlN | h10 | R | HA | 44° 45° 46°

P	M	K	N	S	H
●	●	●	●	●	●

Parametri di lav. ind. a pag. 513-517

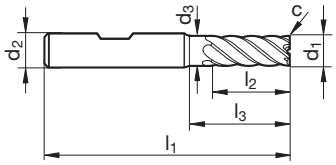
- vantaggi maggiormente possibili con operazioni di lappatura e semi-sgrossatura specialmente a condizioni HPC
- per superfinitura fino a 50 HRC con qualità di superficie notevole
- misura lunga, vedi F-UT N-5 con 5 denti
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare

d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
8,000	8,000	7,500	63,000	19,000	26,000	0,100	6	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,100	6	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,100	6	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,150	6	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,150	6	**20,000**
25,000	25,000	23,500	121,000	45,000	63,000	0,200	6	**25,000**

Frese SuperF-UT

Frese SuperF-UT FS

Catalogo n° 64559



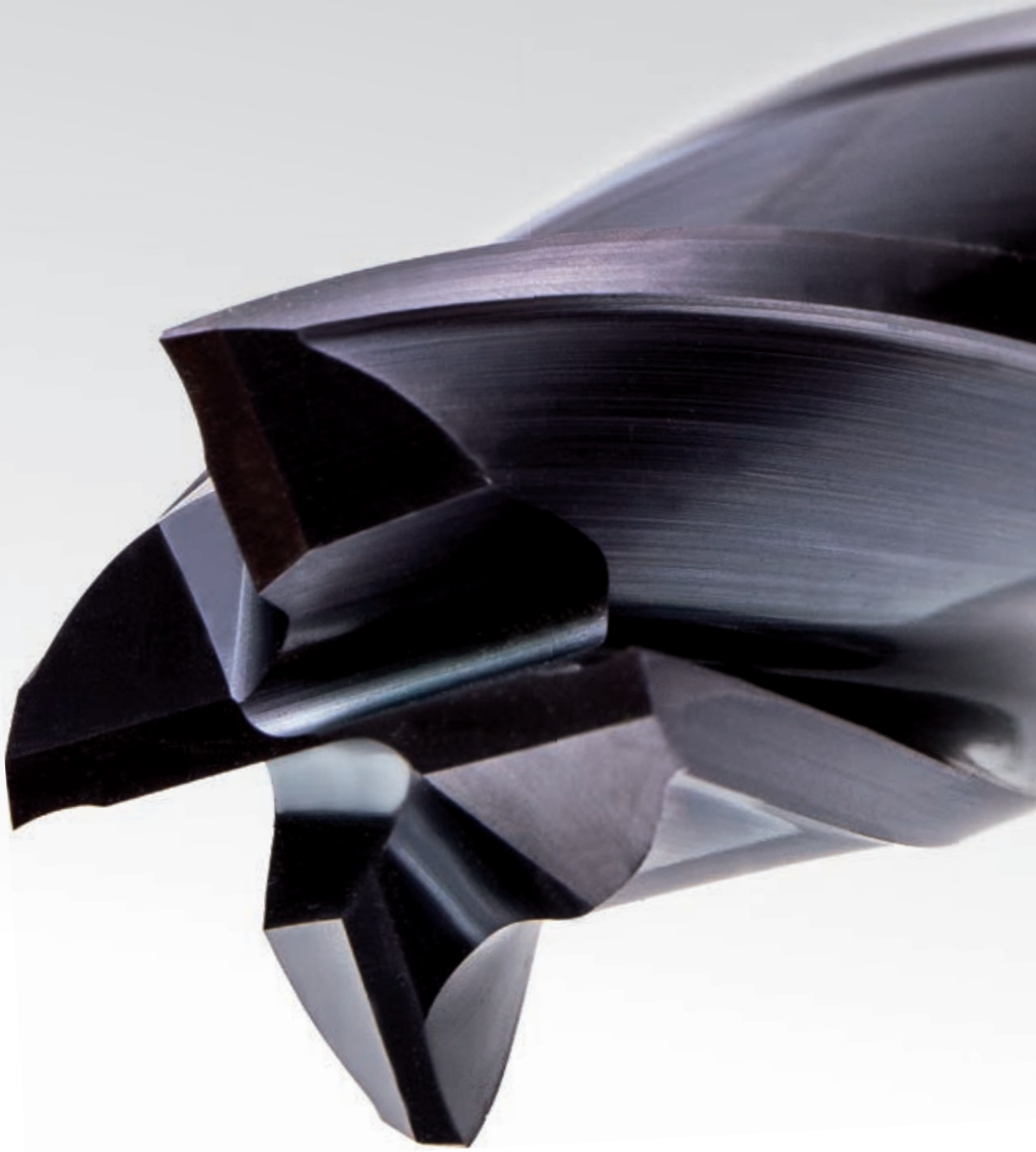
HPC | FS | WN | VHM | TiAlN | h10 | R | HB | 44° 45° 46°

P	M	K	N	S	H
●	●	●	●	●	●

Parametri di lav. ind. a pag. 513-517

- vantaggi maggiormente possibili con operazioni di lappatura e semi-sgrossatura specialmente a condizioni HPC
- per superfinitura fino a 50 HRC con qualità di superficie notevole
- misura lunga, vedi F-UT N-5 con 5 denti
- protezione micro angolo
- rettifica della spoglia
- tagliente al centro
- movimento tranquillo, senza vibrazioni attraverso passo dell'elica irregolare

d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	**Codice**
8,000	8,000	7,500	63,000	19,000	26,000	0,300	6	**8,000**
10,000	10,000	9,200	72,000	22,000	30,000	0,300	6	**10,000**
12,000	12,000	11,200	83,000	26,000	36,000	0,500	6	**12,000**
16,000	16,000	15,000	92,000	32,000	42,000	0,500	6	**16,000**
20,000	20,000	19,000	104,000	38,000	52,000	0,500	6	**20,000**
25,000	25,000	23,500	121,000	45,000	63,000	0,600	6	**25,000**



UTENSILI A FRESARE

CODICI ISO

P	acciaio, acciaio legato in alta percentuale
M	acciaio inossidabile
K	ghisa grigia, ghisa sferoidale e ghisa malleabile
N	alluminio ed altri metalli non ferrosi
S	leghe speciali, superleghe e leghe di titanio
H	acciaio temprato e ghisa temprata

Nelle pagine successive, contenenti programma, trovate per ciascun utensile consigli sull'idoneità in base ai seguenti gruppi di impiego:

● Idoneità ottima

○ Idoneità limitata

LEGENDA DEI PITTOGRAMMI

MATERIALE TAGLIENTE

VHM | M42 | HSS-E-PM

Int. in metallo duro

TRATT. DI SUPERFICIE

lucido | TiAlN | TiAlSiN | AlTiN | AlTiN nano | AlTiN+

TOLLERANZA SUL Ø

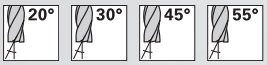
e8 | e8/h10 | h8 | h10 | m8 | js9 | k10 | js12 | k12

DIREZIONE DI TAGLIO

a destra

FORMA DEL CODOLO

ANGOLI DELL'ELICA



NORMA

DIN 6527K | DIN 6527L | DIN 6528 | DIN 327 | DIN 844K | DIN 844L | WN

Norma di fabricca

TIPO

W | N | NH | H | NF | WR | NRf | HR | NR

Super AF-60 | Super AF-90 | Super AF-120 | Super AD-90

P	M	K	N	S	H	Tipo	Forma dell'attac-co	Angolo elica °	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Frese frontali alluminio

						W	HB	45	Metallo duro	lucido	DIN 6527K	3,000 - 20,000	**74204**	584

						W	HB	45	Metallo duro	lucido	DIN 6527L	3,000 - 20,000	**74202**	585

						W	HA	45	Metallo duro	lucido	Norma di fab.	5,000 - 16,000	**74206**	586

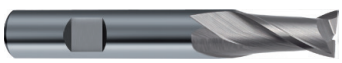
						W	HA	45	Metallo duro	lucido	Norma di fab.	6,000 - 20,000	**74479**	587

Frese frontali (a 2 taglienti)

●	●	●	●			N	HB	30	Metallo duro	lucido	DIN 6527K	2,000 - 20,000	**74520**	588

●	●	●	○	●		N	HB	30	Metallo duro	TiAlN	DIN 6527K	2,000 - 20,000	**54520**	589

●	●	●	○	●		N	HA	30	Metallo duro	TiAlN	DIN 6527L	2,000 - 20,000	**54519**	590



●	●	●	●			N	HB	30	Metallo duro	lucido	DIN 6527L	2,000 - 20,000	**74521**	591

●	●	●	○	●		N	HB	30	Metallo duro	TiAlN	DIN 6527L	2,000 - 20,000	**54521**	592

●		○	○			N	HA	30	Metallo duro	lucido	Norma di fab.	3,000 - 20,000	**74404**	593

●		●	○			N	HA	30	Metallo duro	TiAlN	Norma di fab.	5,000 - 20,000	**54404**	594

Mini frese frontali (a 3 taglienti)

●		●				N	HA/HB	30	Metallo duro	TiAlN	Norma di fab.	0,300 - 20,000	**64080**	595

	●			●		NH	HA/HB	45	Metallo duro	TiAlN	Norma di fab.	1,000 - 10,000	**64180**	596

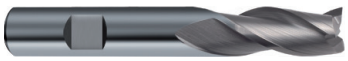
P	M	K	N	S	H	Tipo	Forma dell'attac-co	Angolo elica °	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Frese frontali (a 3 taglienti)

						N	HB	30	**Metallo duro**	lucido	DIN 6527K	2,000 - 20,000	**74522**	597

			○			N	HB	30	**Metallo duro**	TiAlN	DIN 6527K	2,000 - 20,000	**64522**	598

			○			N	HA	30	**Metallo duro**	TiAlN	DIN 6527L	2,000 - 20,000	**54523**	599



						N	HB	30	**Metallo duro**	lucido	DIN 6527L	2,000 - 20,000	**74523**	600

			○			N	HB	30	**Metallo duro**	TiAlN	DIN 6527L	2,000 - 20,000	**64523**	601

		○	○			N	HA	30	**Metallo duro**	lucido	Norma di fab.	3,000 - 20,000	**74424**	602

		●	○			N	HA	30	**Metallo duro**	TiAlN	Norma di fab.	3,000 - 20,000	**54424**	603

Frese frontali (a 3 taglienti) NH

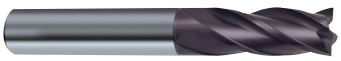
				○		NH	HB	45	**Metallo duro**	TiAlN	DIN 6527K	3,000 - 20,000	**64570**	604

						NH	HA	45	**Metallo duro**	lucido	DIN 6527L	3,000 - 20,000	**74478**	605

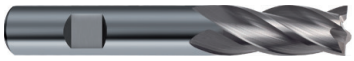
				○		NH	HA	45	**Metallo duro**	TiAlN	DIN 6527L	1,000 - 20,000	**64478**	606

				○		NH	HB	45	**Metallo duro**	TiAlN	DIN 6527L	3,000 - 20,000	**64571**	607

Frese frontali (a 4 taglienti)



		●	○			N	HA	30	**Metallo duro**	TiAlN	DIN 6527L	2,000 - 20,000	**54524**	608



						N	HB	30	**Metallo duro**	lucido	DIN 6527L	3,000 - 20,000	**74525**	609

P	M	K	N	S	H	Tipo	Forma dell'attac-co	Angolo elica °	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Frese frontali (a 4 taglienti)

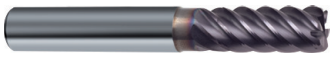
●	○	●				N	HB	30	**Metallo duro**	TiAlN	DIN 6527L	2,000 - 20,000	**64525**	610

●		●	○			N	HA	30	**Metallo duro**	TiAlN	Norma di fab.	3,000 - 20,000	**54444**	611

Frese frontali con spigolo raggiato

●	●	●	○	●		N	HA	30	**Metallo duro**	TiAlN	DIN 6527L	6,000 - 16,000	**54522**	612

●	●	●	○	●		N	HA	30	**Metallo duro**	TiAlN	DIN 6527L	6,000 - 20,000	**54526**	613



●	●	●	○	●	○	NH	HA	45	**Metallo duro**	TiAlN	DIN 6527L	6,000 - 20,000	**54206**	614

Frese frontali per finitura, taglienti multipli

●	●	●	○	●	○	NH	HA	45	**Metallo duro**	TiAlN	Norma di fab.	3,000 - 20,000	**54205**	615

●	●	●	○	●	○	NH	HB	45	**Metallo duro**	TiAlN	Norma di fab.	6,000 - 20,000	**54201**	616

●	●	●	○	●	○	NH	HA	45	**Metallo duro**	TiAlN	Norma di fab.	6,000 - 20,000	**54225**	617

●	●	●	○	●	○	NH	HB	45	**Metallo duro**	TiAlN	Norma di fab.	6,000 - 20,000	**54221**	618

Frese per materiali duri, taglienti multipli

		●			●	H	HA	55	**Metallo duro**	TiAlSiN	Norma di fab.	3,000 - 20,000	**54207**	619

		●			●	H	HA	55	**Metallo duro**	TiAlSiN	Norma di fab.	6,000 - 20,000	**54227**	620

P	M	K	N	S	H	Tipo	Forma dell'attac-co	Angolo elica °	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Frese a sgrossare

●	○	●	○			NF	HB	30	**Metallo duro**	TiAlN	DIN 6527L	6,000 - 25,000	**54496**	621

●	○	●	○			NF	HB	45	**Metallo duro**	TiAlN	DIN 6527L	6,000 - 25,000	**54497**	622

			●			WR	HB	30	**Metallo duro**	lucido	DIN 6527L	6,000 - 20,000	**74203**	623

			●			WR	HB	30	**Metallo duro**	lucido	DIN 6527L	6,000 - 20,000	**74303**	624

●	●	●				NRf	HB	30	**Metallo duro**	TiAlN	DIN 6527L	6,000 - 20,000	**64495**	625

●		●			●	HR	HB	20	**Metallo duro**	TiAlSiN	DIN 6527L	6,000 - 20,000	**64497**	626

Frese a raggio

●	●	●	○			N	HA	30	**Metallo duro**	lucido	DIN 6527L	3,000 - 20,000	**74543**	627

●	●	●	○	○		N	HA	30	**Metallo duro**	TiAlN	DIN 6527L	0,500 - 20,000	**54541**	628

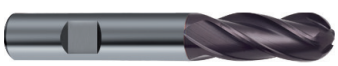
●	●	●	○	○		N	HB	30	**Metallo duro**	TiAlN	DIN 6527L	1,000 - 20,000	**64542**	629

●	○	●	○			N	HA	30	**Metallo duro**	lucido	Norma di fab.	3,000 - 12,000	**74545**	630

●	●	●	○	○		N	HA	30	**Metallo duro**	TiAlN	Norma di fab.	3,000 - 12,000	**64545**	631

●	●	●	○			N	HA	30	**Metallo duro**	lucido	DIN 6528	4,000 - 16,000	**74531**	632

●	●	●	○	○		N	HA	30	**Metallo duro**	TiAlN	DIN 6528	4,000 - 20,000	**54531**	633



●	●	●	○	○		N	HB	30	**Metallo duro**	TiAlN	DIN 6527L	3,000 - 20,000	**64532**	634

P	M	K	N	S	H	Tipo	Forma dell'attac-co	Angolo elica °	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Frese a raggio

●	●	●	○	○		N	HA	30	**Metallo duro**	TiAlN	Norma di fab.	3,000 - 12,000	**64535**	635

Frese per copiatori con affilatura torica

●	●	●		○	●	H	HA	30	**Metallo duro**	TiAlSiN	Norma di fab.	3,000 - 16,000	**54304**	636

●	●	●		●	●	H	HA	30	**Metallo duro**	TiAlSiN	Norma di fab.	6,000 - 16,000	**54305**	637

●	●	●	●	○		N	HA	30	**Metallo duro**	TiAlSiN	Norma di fab.	2,000 - 12,000	**54302**	638

●	●	●	●	○		N	HA	30	**Metallo duro**	TiAlSiN	Norma di fab.	2,000 - 12,000	**54303**	639

Frese a raggio per copiatori

●	●	●		●	●	H	HA	30	**Metallo duro**	TiAlSiN	Norma di fab.	0,500 - 16,000	**54306**	640

●	●	●		●	●	H	HA	30	**Metallo duro**	TiAlSiN	Norma di fab.	3,000 - 16,000	**54307**	641

●	●	●	●	○		N	HA	30	**Metallo duro**	TiAlSiN	Norma di fab.	2,000 - 12,000	**54300**	642

●	●	●	●	○		N	HA	30	**Metallo duro**	TiAlSiN	Norma di fab.	2,000 - 12,000	**54301**	643

Fresa pilota

●	●	●	●	●	●	N	HA	30	**Metallo duro**	AlTiN+	DIN 6527L	1,400 - 12,000	**54700**	644

Fresa frontali a 60° per sbavatura

●	●	●	●	●		SuperAF-60	HA	0	**Metallo duro**	AlTiN	Norma di fab.	4,000 - 12,000	**53393**	645

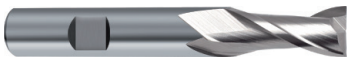
P	M	K	N	S	H	Tipo	Forma dell'attac-co	Angolo elica °	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina
Fresa frontali a 60° per sbavatura														
														
•	•	•	•	•		SuperAF-60	HB	0	**Metallo duro**	AlTiN	Norma di fab.	6,000 - 12,000	**53394**	646
Fresa frontali a 90°per sbavatura														
														
•	•	•	•	•		SuperAF-90	HA	0	**Metallo duro**	AlTiN	Norma di fab.	4,000 - 12,000	**53395**	647
														
•	•	•	•	•		SuperAF-90	HB	0	**Metallo duro**	AlTiN	Norma di fab.	4,000 - 12,000	**53396**	648
Fresa frontali a 120°per sbavatura														
														
•	•	•	•	•		Super-AF-120	HA	0	**Metallo duro**	AlTiN	Norma di fab.	4,000 - 12,000	**53397**	649
														
•	•	•	•	•		Super-AF-120	HB	0	**Metallo duro**	AlTiN	Norma di fab.	6,000 - 12,000	**53398**	650
Sbavatori a 90° ad avanzamento ed estrazione														
														
•	•					SuperAD-90	HA	0	**Metallo duro**	AlTiN nano	Norma di fab.	3,000 - 12,000	**52365**	651

P	M	K	N	S	H	Tipo	Forma dell'attac-co	Angolo elica °	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

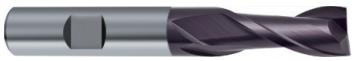
Frese frontali (a 2 taglienti)

•	•	•	•			N	B	30	**M42**	lucido	DIN 327	1,000 - 25,000	**74231**	652

•	•	•	○			N	B	30	**M42**	TiAlN	DIN 327	1,000 - 20,000	**64640**	653



•	•	•	•			N	B	30	**M42**	lucido	DIN 844K	3,000 - 20,000	**74243**	654



•	•	•	○			N	B	30	**M42**	TiAlN	DIN 844K	3,000 - 20,000	**64670**	655

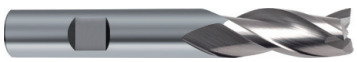
•		•	•			N	B	30	**M42**	lucido	DIN 844L	3,000 - 20,000	**74244**	656

•		•				N	B	30	**M42**	TiAlN	DIN 844L	4,000 - 20,000	**64671**	657

Frese frontali (a 3 taglienti)

•	•	•	•			N	B	30	**M42**	lucido	DIN 327	2,800 - 25,000	**74280**	658

•	•	•	○			N	B	30	**M42**	TiAlN	DIN 327	2,800 - 25,000	**64604**	659



•	•	•	•			N	B	30	**M42**	lucido	DIN 844K	3,000 - 20,000	**74282**	660

•	•	•	○			N	B	30	**M42**	TiAlN	DIN 844K	3,000 - 20,000	**64641**	661

•		•	•			N	B	30	**M42**	lucido	DIN 844L	3,000 - 20,000	**74294**	663

•	•	•	•			N	B	30	**M42**	TiAlN	DIN 844L	4,000 - 18,000	**54294**	662

Mini frese frontali (a 3 taglienti)

○	•	•	•	○		N		30	**M42**	TiAlN	Norma di fab.	3,000 - 10,000	**54080**	664

P	M	K	N	S	H	Tipo	Forma dell'attac-co	Angolo elica °	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina
Mini frese frontali (a 3 taglienti)														
														
○	●	●	●	○		N		30	**M42**	TiAlN	Norma di fab.	3,000 - 10,000	**54180**	665
Frese universali, taglienti multipli														
														
●	●	○	○			N	B	30	**M42**	lucido	DIN 844K	2,000 - 25,000	**74617**	666
														
●	●	●	○			N	B	30	**M42**	TiAlN	DIN 844K	3,000 - 25,000	**64667**	667
														
●	○	●	○			N	B	30	**M42**	lucido	DIN 844L	3,000 - 25,000	**74847**	668
														
●	●	●	○			N	B	30	**M42**	TiAlN	DIN 844L	3,000 - 32,000	**54847**	669
														
●	○					N	B	30	**M42**	lucido	Norma di fab.	6,000 - 20,000	**74800**	670
Frese di semifinitura														
														
●	●	●				NF	B	30	**M42**	TiAlN	DIN 844K	6,000 - 25,000	**54815**	671
Frese a sgrossare (3 taglienti)														
														
●	●	●				NRf	B	30	**HSS-E-PM**	lucido	DIN 844K	6,000 - 20,000	**74825**	672
														
●	●	●				NRf	B	30	**HSS-E-PM**	TiAlN	DIN 844K	6,000 - 20,000	**54825**	673
Frese a sgrossare (4 taglienti)														
														
●	●	●				NR	B	30	**M42**	lucido	DIN 844K	6,000 - 30,000	**74816**	674
														
●	●	●				NR	B	30	**M42**	TiAlN	DIN 844K	6,000 - 32,000	**54816**	675

P	M	K	N	S	H	Tipo	Forma dell'attac-co	Angolo elica °	Materiale ta-gliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Frese a sgrossare (4 taglienti)

•	•	•				NRf	B	30	**HSS-E-PM**	lucido	DIN 844K	6,000 - 25,000	**74845**	676

•	•	•				NRf	B	30	**HSS-E-PM**	TiAlN	DIN 844K	6,000 - 25,000	**54845**	677

•	•	•				NR	B	30	**M42**	lucido	DIN 844L	6,000 - 25,000	**74836**	678

•	•	•				NR	B	30	**M42**	TiAlN	DIN 844L	6,000 - 25,000	**54836**	679

Frese a raggio

•	•	•	•			N	B	30	**M42**	TiAlN	DIN 327	2,000 - 20,000	**54275**	680

•	•	•	•			N	B	30	**M42**	TiAlN	Norma di fab.	3,000 - 20,000	**54276**	681

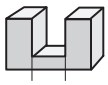
Parametri di lavoro indicativi per frese frontali in M.D.I.

Serie d'avanzamento

Ø utensile mm	Codice lettera	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
	2,00	0,001	0,001	0,001	0,002	0,002	0,004	0,005	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,018	0,020
	3,00	0,002	0,002	0,003	0,003	0,004	0,007	0,010	0,010	0,010	0,015	0,016	0,013	0,019	0,022	0,024	0,030
	5,00	0,005	0,006	0,007	0,009	0,010	0,014	0,020	0,020	0,022	0,025	0,026	0,026	0,028	0,030	0,032	0,038
	6,00	0,006	0,008	0,009	0,011	0,013	0,017	0,024	0,025	0,027	0,031	0,029	0,033	0,039	0,036	0,041	0,047
	8,00	0,010	0,012	0,014	0,016	0,019	0,024	0,032	0,032	0,035	0,042	0,042	0,047	0,053	0,052	0,058	0,064
	10,00	0,013	0,015	0,018	0,021	0,025	0,030	0,038	0,039	0,044	0,050	0,053	0,059	0,065	0,066	0,073	0,080
	12,00	0,010	0,018	0,022	0,026	0,030	0,036	0,046	0,048	0,052	0,059	0,063	0,072	0,079	0,085	0,090	0,100
	16,00	0,020	0,023	0,027	0,032	0,038	0,045	0,054	0,058	0,063	0,071	0,079	0,088	0,095	0,100	0,110	0,120
	20,00	0,023	0,028	0,033	0,038	0,045	0,057	0,066	0,073	0,080	0,090	0,097	0,100	0,110	0,120	0,130	0,140
	25,00	0,030	0,035	0,040	0,045	0,055	0,065	0,075	0,100	0,120	0,130	0,140	0,150	0,165	0,170	0,180	0,190

Avanzamento f (mm/dente)

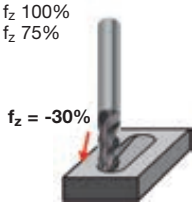
a_e = larghezza di taglio
a_p = profondità di taglio



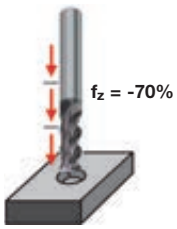
a_e = 1,0 x D

I valori in grassetto dell'avanzamento sono le scelte rispettive preferite per il gruppo di materiali.

Lavorazione inclinata a tuffo e scanalatura
Per lavorazione inclinata a tuffo, l'avanzamento dovrebbe essere ridotto come illustrato. In aggiunta, l'evacuazione del truciolo è richiesta se si fora ad una profondità superiore a 1 x D. Questo viene applicato anche per la transizione in lavorazione radiale.
Scanalatura
a_p = profondità di taglio 0,5 x D = f_z 100%
a_p = profondità di taglio 1,0 x D = f_z 75%



Foratura
Per la foratura, l'avanzamento dovrebbe essere ridotto come illustrato.
In aggiunta, l'evacuazione del truciolo è richiesta per grandi profondità di foratura, superiori a 0.5 x D.

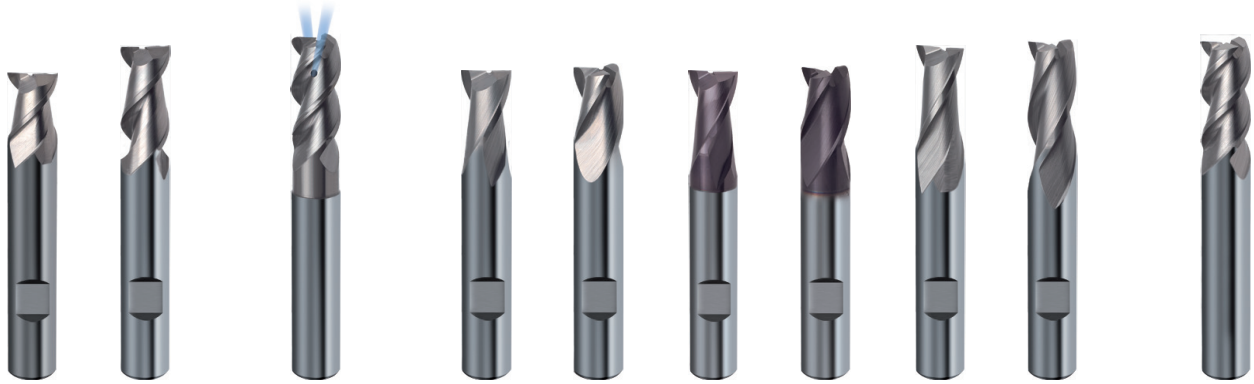


olio da taglio, attivo ■
emulsione ■
solo refrigerazione ad aria ⊡

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⊡
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

Frese per cave

Catalogo n°	74204	74202	74479	74520	74522	54520 54522	64522	74521	74523	74478
Mat. de tagl.	M.D.I.		M.D.I.	M.D.I.		M.D.I.		M.D.I.		M.D.I.
Norma	6527 K	6527 L	Stock std.	6527 K		6527 K		6527 L		6527 L
Tipo	W		W	N		N		N		NH
Pagina	584	585	587	588	597	589/612	598	591	600	605



v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.
				73	**O**	*120*	**O**	*63*	**N**	*63*	**N**
				69	**M**	*115*	**N**	*60*	**L**	*60*	**L**
				73	**M**	*120*	**N**	*63*	**L**	*63*	**L**
				53	**N**	*90*	**O**	*47*	**M**	*47*	**M**
				73	**M**	*120*	**N**	*63*	**L**	*63*	**L**
				65	**M**	*108*	**N**	*57*	**L**	*57*	**L**
				53	**N**	*90*	**O**	*47*	**M**	*47*	**M**
				65	**N**	*108*	**O**	*57*	**M**	*57*	**M**
				53	**N**	*90*	**O**	*47*	**M**	*47*	**M**
				76	**M**	*127*	**N**	*66*	**L**	*66*	**L**
				65	**M**	*108*	**N**	*57*	**L**	*57*	**L**
				46	**N**	*76*	**O**	*40*	**M**	*40*	**M**
				73	**M**	*120*	**N**	*63*	**L**	*63*	**L**
				65	**L**	*108*	**M**	*57*	**L**	*57*	**L**
				65	**M**	*108*	**N**	*57*	**L**	*57*	**L**
				53	**L**	*90*	**M**	*47*	**L**	*47*	**L**
				39	**N**	*64*	**O**	*33*	**M**	*33*	**M**
						64	**M**				
						64	**M**				
				39	**N**	*64*	**O**	*33*	**M**	*33*	**M**
				35	**L**	*58*	**M**	*30*	**L**	*30*	**L**
				31	**M**	*51*	**N**	*27*	**L**	*27*	**L**
				92	**M**	*152*	**N**	*80*	**L**	*80*	**L**
				84	**L**	*140*	**M**	*73*	**L**	*73*	**L**
				76	**M**	*127*	**N**	*66*	**L**	*66*	**L**
				69	**L**	*115*	**M**	*60*	**L**	*60*	**L**
				46	**L**	*76*	**M**	*40*	**L**	*40*	**L**
						39	**M**				
				39	**L**	*64*	**M**	*33*	**L**	*33*	**L**
				31	**L**	*51*	**M**	*27*	**L**	*27*	**L**
363	**R**	*436*	**T**	*343*	O	*570*	P	*297*	N	*297*	N
440	**R**	*528*	**T**	*418*	O	*697*	P	*363*	N	*363*	N
176	**Q**	*212*	**S**	*168*	N	*279*	O	*146*	M	*146*	M
143	**R**	*172*	**T**	*137*	O	*228*	P	*119*	N	*119*	N
209	**S**	*251*	**T**	*191*	P	*317*	Q	*165*	O	*165*	O
99	**R**	*119*	**T**	*92*	O	*152*	P	*80*	N	*80*	N
88	**R**	*106*	**T**	*76*	O	*127*	P	*66*	N	*66*	N
83	**Q**	*99*	**S**	*69*	N	*115*	O	*60*	M	*60*	M
88	**Q**	*106*	**S**	*76*	N	*127*	O	*66*	M	*66*	M
77	P	*93*	**S**	*61*	M	*102*	N	*53*	L	*53*	L
77	Q	*93*	**S**	*61*	N	*102*	O	*53*	M	*53*	
66	O	*80*	**R**	*53*	L	*90*	M	*47*	L	*47*	
99	O	*119*	**R**	*92*	L	*152*	M	*80*	L	*80*	
88	O	*106*	**R**	*84*	L	*140*	M	*73*	L	*73*	

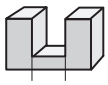
Parametri di lavoro indicativi per frese frontali in M.D.I.

Serie d'avanzamento

Avanzamento f (mm/dente) – Ø utensile mm

Codice lettera	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
2,00	0,001	0,001	0,001	0,002	0,002	0,004	0,005	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,018	0,020
3,00	0,002	0,002	0,003	0,003	0,004	0,007	0,010	0,010	0,010	0,015	0,016	0,013	0,019	0,022	0,024	0,030
5,00	0,005	0,006	0,007	0,009	0,010	0,014	0,020	0,020	0,022	0,025	0,026	0,026	0,028	0,030	0,032	0,038
6,00	0,006	0,008	0,009	0,011	0,013	0,017	0,024	0,025	0,027	0,031	0,029	0,033	0,039	0,036	0,041	0,047
8,00	0,010	0,012	0,014	0,016	0,019	0,024	0,032	0,032	0,035	0,042	0,042	0,047	0,053	0,052	0,058	0,064
10,00	0,013	0,015	0,018	0,021	0,025	0,030	0,038	0,039	0,044	0,050	0,053	0,059	0,065	0,066	0,073	0,080
12,00	0,010	0,018	0,022	0,026	0,030	0,036	0,046	0,048	0,052	0,059	0,063	0,072	0,079	0,085	0,090	0,100
16,00	0,020	0,023	0,027	0,032	0,038	0,045	0,054	0,058	0,063	0,071	0,079	0,088	0,095	0,100	0,110	0,120
20,00	0,023	0,028	0,033	0,038	0,045	0,057	0,066	0,073	0,080	0,090	0,097	0,100	0,110	0,120	0,130	0,140
25,00	0,030	0,035	0,040	0,045	0,055	0,065	0,075	0,100	0,120	0,130	0,140	0,150	0,165	0,170	0,180	0,190

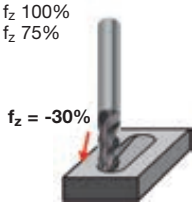
a_e = larghezza di taglio
a_p = profondità di taglio



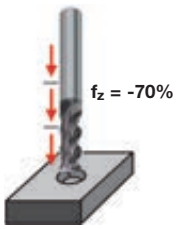
a_e = 1,0 x D

I valori in grassetto dell'avanzamento sono le scelte rispettive preferite per il gruppo di materiali.

Lavorazione inclinata a tuffo e scanalatura
Per lavorazione inclinata a tuffo, l'avanzamento dovrebbe essere ridotto come illustrato. In aggiunta, l'evacuazione del truciolo è richiesta se si fora ad una profondità superiore a 1 x D. Questo viene applicato anche per la transizione in lavorazione radiale.
Scanalatura
a_p = profondità di taglio 0,5 x D = f_z 100%
a_p = profondità di taglio 1,0 x D = f_z 75%



Foratura
Per la foratura, l'avanzamento dovrebbe essere ridotto come illustrato.
In aggiunta, l'evacuazione del truciolo è richiesta per grandi profondità di foratura, superiori a 0.5 x D.



olio da taglio, attivo ■
emulsione ■
solo refrigerazione ad aria ▯

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ ▯
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ ▯
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ ▯
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ ▯
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ ▯
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ ▯
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		▯
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	▯
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ ▯
Mat. plast. a fibre aramidiche	Kevlar		–	▯
a fibre di vetro/C rinforzate	GFK/CFK		–	▯

Frese per cave

Catalogo n°	54521 54519	54523 64523	64478	64570 64571	74404	74424	54404	54424	64080	64180
Mat. de tagl.	M.D.I.		M.D.I.		M.D.I.		M.D.I.		M.D.I.	M.D.I.
Norma	6527 L		6527 L	6527 K/L	Stock std.		Stock std.		Stock std.	Stock std.
Tipo	N		NH		N		N		N	NH
Pagina	592/590	599/601	606	604/607	593	602	594	603	595	596

v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.
105	N	105	N	50	J	80	J	95	M	105	N
99	M	99	M	45	H	75	I	90	L	100	M
105	M	105	M	50	H	80	I	95	L	105	M
77	N	77	N	35	I	60	J	70	M	75	N
105	M	105	M	50	H	80	I	95	L	105	M
94	M	94	M	40	H	70	I	85	L	95	M
77	N	77	N	35	I	60	J	70	M	75	N
94	N	94	N	40	I	70	J	85	M	95	N
77	N	77	N	35	I	60	J				
110	M	110	M	45	H	75	I	100	L	110	M
94	M	94	M	40	H	70	I	85	L	95	M
66	N	66	N	30	I	50	J				
105	M	105	M	50	H	80	I	95	L	105	M
94	L	94	L	40	H	70	H				
94	M	94	M	40	H	70	I	85	L	95	M
77	L	77	L	35	H	60	H	70	K	75	L
55	N	55	N	38	I	45	J	50	M	55	N
55	L	55	L								
55	L	55	L								
55	N	55	N					50	M	55	N
50	L	50	L					45	K	50	L
44	M	44	M					40	L	45	M
132	M	132	M	60	H	105	I	120	L	130	M
121	L	121	L	55	H	95	H	110	K	120	L
110	M	110	M	55	H	90	I	100	L	110	M
99	L	99	L	45	H	75	H	90	K	100	L
66	L	66	L					60	K	65	L
33	L	33	L							35	L
55	L	55	L	40	H	65	H	50	K	55	L
44	L	44	L	20	H	35	H	40	K	45	L
495	O	495	O					330	Q	330	Q
605	O	605	O					400	Q	400	Q
242	N	242	N					160	P	245	N
198	O	198	O					130	Q	200	O
275	P	275	P					185	R	185	R
132	O	132	O					90	Q	130	O
110	O	110	O					80	Q	110	O
99	N	99	N					70	P	75	P
110	N	110	N					80	P	110	N
88	M	88	M					70	O	90	M
88	N	88	N					70	P	70	P
77	L	77	L					60	N	60	N
132	L	132	L					90	N	90	N
121	L	121	L					80	N	80	N

Parametri di lavoro indicativi per frese frontali in M.D.I.

Serie d'avanzamento

Avanzamento f (mm/dente) – Ø utensile mm

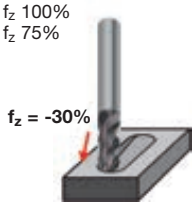
Codice lettera	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
2,00	0,001	0,001	0,001	0,002	0,002	0,004	0,005	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,018	0,020
3,00	0,002	0,002	0,003	0,003	0,004	0,007	0,010	0,010	0,010	0,015	0,016	0,013	0,019	0,022	0,024	0,030
5,00	0,005	0,006	0,007	0,009	0,010	0,014	0,020	0,020	0,022	0,025	0,026	0,026	0,028	0,030	0,032	0,038
6,00	0,006	0,008	0,009	0,011	0,013	0,017	0,024	0,025	0,027	0,031	0,029	0,033	0,039	0,036	0,041	0,047
8,00	0,010	0,012	0,014	0,016	0,019	0,024	0,032	0,032	0,035	0,042	0,042	0,047	0,053	0,052	0,058	0,064
10,00	0,013	0,015	0,018	0,021	0,025	0,030	0,038	0,039	0,044	0,050	0,053	0,059	0,065	0,066	0,073	0,080
12,00	0,010	0,018	0,022	0,026	0,030	0,036	0,046	0,048	0,052	0,059	0,063	0,072	0,079	0,085	0,090	0,100
16,00	0,020	0,023	0,027	0,032	0,038	0,045	0,054	0,058	0,063	0,071	0,079	0,088	0,095	0,100	0,110	0,120
20,00	0,023	0,028	0,033	0,038	0,045	0,057	0,066	0,073	0,080	0,090	0,097	0,100	0,110	0,120	0,130	0,140
25,00	0,030	0,035	0,040	0,045	0,055	0,065	0,075	0,100	0,120	0,130	0,140	0,150	0,165	0,170	0,180	0,190

a_e = larghezza di taglio
a_p = profondità di taglio

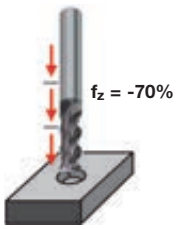
a_e = 0,0 x D

I valori in grassetto dell'avanzamento sono le scelte rispettive preferite per il gruppo di materiali.

Lavorazione inclinata a tuffo e scanalatura
Per lavorazione inclinata a tuffo, l'avanzamento dovrebbe essere ridotto come illustrato. In aggiunta, l'evacuazione del truciolo è richiesta se si fora ad una profondità superiore a 1 x D. Questo viene applicato anche per la transizione in lavorazione radiale.
Scanalatura
a_p = profondità di taglio 0,5 x D = f_z 100%
a_p = profondità di taglio 1,0 x D = f_z 75%



Foratura
Per la foratura, l'avanzamento dovrebbe essere ridotto come illustrato.
In aggiunta, l'evacuazione del truciolo è richiesta per grandi profondità di foratura, superiori a 0.5 x D.



olio da taglio, attivo ■
emulsione ■
solo refrigerazione ad aria ▯

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		▯
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

Frese di finitura

Catalogo n°	74525	54526	64525 54524	74424	54444	74204	74202	74206	74479
Mat. de tagl.	M.D.I.	M.D.I.		M.D.I.	M.D.I.	M.D.I.		M.D.I.	M.D.I.
Norma	6527 L	6527 L		Stock std.	Stock std.	6527 K	6527 L	Stock std.	Stock std.
Tipo	N	N		N	N	W		W	W
Pagina	609	613	610/608	602	611	584	585	586	587

v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.
116	S	193	S	76	N	127	O						
106	R	176	S	70	M	116	N						
116	R	193	S	76	M	127	N						
86	Q	143	R	60	L	99	M						
116	R	193	S	76	M	127	N						
106	R	176	S	66	M	110	N						
86	Q	143	R	57	L	94	M						
103	Q	171	R	66	L	110	M						
86	P	143	Q	57	L	94	L						
129	R	215	S	73	M	121	N						
103	R	171	S	66	M	110	N						
76	Q	127	R	50	L	83	M						
116	R	193	S	76	M	127	N						
106	P	176	Q	66	L	110	L						
103	R	171	S	66	M	110	N						
86	P	143	Q	57	L	94	L						
66	Q	110	R	43	L	72	M						
66	P	110	Q										
39	N	55	O										
66	Q	110	R										
57	P	94	Q										
53	Q	88	R										
139	R	231	S	99	M	165	N						
139	Q	231	R	90	L	149	M						
126	R	209	S	83	M	138	N						
106	Q	176	R	70	L	116	M						
73	O	121	P										
40	P	66	Q										
66	P	110	Q	43	L	72	L						
53	O	88	P	33	K	55	L						
561	T	935	T	330	P	550	Q	418	U	330	P	523	U
528	S	880	T	396	O	660	P	506	T	396	O	633	T
274	S	457	S	165	N	275	O	203	T	165	N	253	T
225	S	374	T	132	O	220	P	165	T	132	P	207	T
317	T	528	T	198	P	330	Q	241	U	198	U	302	U
146	S	242	T	99	O	165	P	115	T	99	P	143	T
132	S	220	S	80	N	132	O	102	T	80	N	127	T
106	S	176	S	66	N	110	O	95	T	66	N	119	T
132	S	220	S	80	N	132	O	102	T	80	N	127	T
99	R	165	S					90	S			112	S
99	R	165	S					90	S			112	S
86	Q	143	R					76	S			95	S
146	Q	242	R					115	S			143	S
132	Q	220	R					102	S			127	S

Parametri di lavoro indicativi per frese frontali per Metallo Duro

Serie d'avanzamento

Ø utensile mm	Codice lettera	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
	2,00	0,001	0,001	0,001	0,002	0,002	0,004	0,005	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,018	0,020
	3,00	0,002	0,002	0,003	0,003	0,004	0,007	0,010	0,010	0,010	0,015	0,016	0,013	0,019	0,022	0,024	0,030
	5,00	0,005	0,006	0,007	0,009	0,010	0,014	0,020	0,020	0,022	0,025	0,026	0,026	0,028	0,030	0,032	0,038
	6,00	0,006	0,008	0,009	0,011	0,013	0,017	0,024	0,025	0,027	0,031	0,029	0,033	0,039	0,036	0,041	0,047
	8,00	0,010	0,012	0,014	0,016	0,019	0,024	0,032	0,032	0,035	0,042	0,042	0,047	0,053	0,052	0,058	0,064
	10,00	0,013	0,015	0,018	0,021	0,025	0,030	0,038	0,039	0,044	0,050	0,053	0,059	0,065	0,066	0,073	0,080
	12,00	0,010	0,018	0,022	0,026	0,030	0,036	0,046	0,048	0,052	0,059	0,063	0,072	0,079	0,085	0,090	0,100
	16,00	0,020	0,023	0,027	0,032	0,038	0,045	0,054	0,058	0,063	0,071	0,079	0,088	0,095	0,100	0,110	0,120
	20,00	0,023	0,028	0,033	0,038	0,045	0,057	0,066	0,073	0,080	0,090	0,097	0,100	0,110	0,120	0,130	0,140
	25,00	0,030	0,035	0,040	0,045	0,055	0,065	0,075	0,100	0,120	0,130	0,140	0,150	0,165	0,170	0,180	0,190

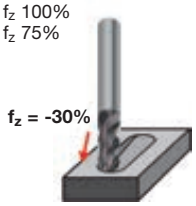
Avanzamento f (mm/dente)

a_e = larghezza di taglio
a_p = profondità di taglio

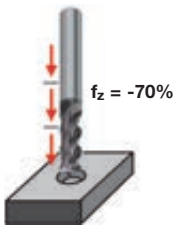
a_e = 0,8 x D

I valori in grassetto dell'avanzamento sono le scelte rispettive preferite per il gruppo di materiali.

Lavorazione inclinata a tuffo e scanalatura
Per lavorazione inclinata a tuffo, l'avanzamento dovrebbe essere ridotto come illustrato. In aggiunta, l'evacuazione del truciolo è richiesta se si fora ad una profondità superiore a 1 x D. Questo viene applicato anche per la transizione in lavorazione radiale.
Scanalatura
a_p = profondità di taglio 0,5 x D = f_z 100%
a_p = profondità di taglio 1,0 x D = f_z 75%



Foratura
Per la foratura, l'avanzamento dovrebbe essere ridotto come illustrato.
In aggiunta, l'evacuazione del truciolo è richiesta per grandi profondità di foratura, superiori a 0.5 x D.



olio da taglio, attivo ■
emulsione ■
solo refrigerazione ad aria □!

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		□!
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

Frese di sgrossatura

Catalogo n°	74478	64478	64570 64571	74204	74202	74479	74203	74303	54496	54497	64495	64497
Mat. de tagl.	M.D.I.	M.D.I.		M.D.I.		M.D.I.	M.D.I.		M.D.I.		M.D.I.	M.D.I.
Norma	6527 L	6527 L	6527 K/L	6527 K	6527 L	Stock std.	6527 L		6527 L		6527 L	6527 L
Tipo	NH	NH		W		W	WR		NF		NRf	HR
Pagina	605	606	604/607	584	585	587	623	624	621	622	625	626

v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	Codice d'avanz.	Codice d'avanz.
90	**S**	*149*	**T**							*110*	**N**	**T**	
83	**S**	*138*	**S**							*100*	**M**	**S**	
90	**S**	*149*	**S**							*110*	**M**	**S**	
66	**R**	*110*	**S**							*80*	**L**	**S**	
90	**S**	*149*	**S**							*110*	**M**	**S**	
80	**S**	*132*	**S**							*95*	**M**	**S**	
66	**R**	*110*	**S**							*80*	**L**	**S**	
80	**R**	*132*	**S**							*95*	**L**	**S**	
66	**Q**	*110*	**R**							*80*	K	**R**	R
99	**S**	*165*	**S**							*120*	**M**	**S**	
80	**S**	*132*	**S**							*95*	**M**	**S**	S
60	**R**	*99*	**S**							*70*	L	**S**	S
90	**S**	*149*	**S**							*110*	**M**	**S**	S
80	**Q**	*132*	**R**							*95*	K	**R**	R
80	**S**	*132*	**S**							*95*	**M**	**S**	S
66	Q	*110*	R							*80*	**K**	**R**	R
50	**R**	*83*	**S**							*65*			S
		83	**R**							*65*			R
24	**O**	*39*	**Q**							*30*	I	**P**	**P**
										20		M	**M**
50	**R**	*83*	**S**							*60*	**L**	**S**	S
43	**Q**	*72*	**R**							*50*	**K**	**R**	R
40	**R**	*66*	**S**							*50*	L	**S**	S
116	**S**	*193*	**S**							*140*	**O**	**S**	S
106	**R**	*176*	**S**							*130*	N	S	**S**
96	**S**	*160*	**S**							*115*	**O**	**S**	S
83	**R**	*138*	**S**							*100*	N	S	**S**
57	P	*94*	Q							*75*			**Q**
		50	R							*35*	M	R	**R**
50	Q	*83*	R							*60*	**L**	**R**	
40	P	*66*	Q							*50*	**K**	**Q**	
				363	**R**	*455*	**T**	*550*	**S**				
				440	**R**	*550*	**T**	*638*	**S**				
				176	**P**	*220*	**S**	*264*	**R**				
				143	**Q**	*180*	**S**	*209*	**S**				
				209	**R**	*262*	**T**	*297*	**S**				
				99	**Q**	*125*	**S**	*143*	**S**				
				88	**P**	*110*	**S**	*132*	**R**	*130*	**O**		
				83	**P**	*104*	**S**	*121*	**R**	*105*	**O**		
				88	**P**	*110*	**S**	*127*	**R**	*130*	**O**		
				77	**O**	*97*	**R**	*110*	**Q**	*95*	**N**		
				77	**O**	*97*	**R**	*110*	**Q**	*95*	**N**		
				66	**N**	*83*	**Q**	*99*	**P**	*80*	**M**		
				99	**N**	*125*	**Q**	*138*	**P**				
				88	**N**	*110*	**Q**	*127*	**P**				

Parametri di lavoro indicativi per frese frontali/a raggio per Metallo Duro

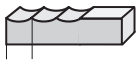
Serie d'avanzamento

Ø utensile mm	Codice lettera	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
	2,00	0,001	0,001	0,001	0,002	0,002	0,004	0,005	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,018	0,020
	3,00	0,002	0,002	0,003	0,003	0,004	0,007	0,010	0,010	0,010	0,015	0,016	0,013	0,019	0,022	0,024	0,030
	5,00	0,005	0,006	0,007	0,009	0,010	0,014	0,020	0,020	0,022	0,025	0,026	0,026	0,028	0,030	0,032	0,038
	6,00	0,006	0,008	0,009	0,011	0,013	0,017	0,024	0,025	0,027	0,031	0,029	0,033	0,039	0,036	0,041	0,047
	8,00	0,010	0,012	0,014	0,016	0,019	0,024	0,032	0,032	0,035	0,042	0,042	0,047	0,053	0,052	0,058	0,064
	10,00	0,013	0,015	0,018	0,021	0,025	0,030	0,038	0,039	0,044	0,050	0,053	0,059	0,065	0,066	0,073	0,080
	12,00	0,010	0,018	0,022	0,026	0,030	0,036	0,046	0,048	0,052	0,059	0,063	0,072	0,079	0,085	0,090	0,100
	16,00	0,020	0,023	0,027	0,032	0,038	0,045	0,054	0,058	0,063	0,071	0,079	0,088	0,095	0,100	0,110	0,120
	20,00	0,023	0,028	0,033	0,038	0,045	0,057	0,066	0,073	0,080	0,090	0,097	0,100	0,110	0,120	0,130	0,140
	25,00	0,030	0,035	0,040	0,045	0,055	0,065	0,075	0,100	0,120	0,130	0,140	0,150	0,165	0,170	0,180	0,190

Avanzamento f (mm/dente)

a_e = larghezza di taglio
a_p = profondità di taglio

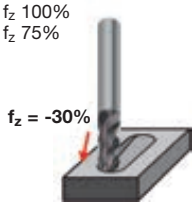
a_e = 0,02 - 0,05 x D



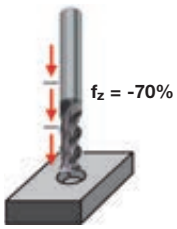
a_e = 0,02 - 0,05 x D

I valori in grassetto dell'avanzamento sono le scelte rispettive preferite per il gruppo di materiali.

Lavorazione inclinata a tuffo e scanalatura
Per lavorazione inclinata a tuffo, l'avanzamento dovrebbe essere ridotto come illustrato. In aggiunta, l'evacuazione del truciolo è richiesta se si fora ad una profondità superiore a 1 x D. Questo viene applicato anche per la transizione in lavorazione radiale.
Scanalatura
a_p = profondità di taglio 0,5 x D = f_z 100%
a_p = profondità di taglio 1,0 x D = f_z 75%



Foratura
Per la foratura, l'avanzamento dovrebbe essere ridotto come illustrato.
In aggiunta, l'evacuazione del truciolo è richiesta per grandi profondità di foratura, superiori a 0.5 x D.



olio da taglio, attivo ■
emulsione ■
solo refrigerazione ad aria ☐

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrige-rante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ ☐
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ ☐
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ ☐
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ ☐
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ ☐
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ ☐
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		☐
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	☐
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ ☐
Mat. plast. a fibre aramidiche	Kevlar		–	☐
a fibre di vetro/C rinforzate	GFK/CFK		–	☐

Frese di superfinitura

Frese per copiatori

Catalogo n°	54205	54201 54206	54225	54221	54207	54227	74543	74531	64542 54541	64532 54531	74545	64545	64535
Mat. de tagl.	M.D.I.		M.D.I.		M.D.I.	M.D.I.	M.D.I.		M.D.I.		M.D.I.	M.D.I.	
Norma	Stock std.		Stock std.		Stock std.	Stock std.	6527 L	6528	6527 L	6528	Stock std.	Stock std.	
Tipo	NH		NH		H	H	N		N		N	N	
Pagina	615	616/614	617	618	619	620	627	632	629/628	634/633	630	631	635











v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.
209	S	209	S					113	S	187	S	79	O	131	P
193	S	193	S					106	R	176	S	74	N	124	O
209	S	209	S					113	R	187	S	79	N	131	O
154	R	154	R					113	Q	187	R	79	M	131	N
209	S	209	S					99	R	165	S	70	N	116	O
187	S	187	S					99	R	165	S	70	N	116	O
154	R	154	R					86	Q	143	R	61	M	101	N
187	R	187	R					93	Q	154	R	65	M	108	N
154	Q	154	Q					113	P	187	Q	79	L	131	M
231	S	231	S					146	R	242	S	102	N	170	O
187	S	187	S					126	R	209	S	88	N	147	O
143	R	143	R					80	Q	132	R	55	M	93	N
209	S	209	S					106	R	176	S	74	N	124	O
187	Q	187	Q					99	P	165	Q	70	L	116	M
187	S	187	S					99	R	165	S	70	N	116	O
154	Q	154	Q	154	R	154	Q	86	P	143	Q	61	L	101	M
116	R	116	R	116	S	116	R	63	Q	105	R	44	N	74	N
116	Q	116	Q	116	R	116	Q			105	Q	44	L	74	M
61	O	61	O	61	P	61	O			61	P	26	L	43	L
				50	M	50	L								
116	R	116	R					63	Q	105	R	44	M	74	N
99	Q	99	Q					57	P	94	Q	40	L	66	M
94	R	94	R					50	Q	83	R	36	M	59	N
66	Q	66	Q					37	P	61	Q	26	L	43	M
270	S	270	S	270	S	270	S	146	R	242	S	102	N	170	O
248	R	248	R	248	S	248	R			231	R	97	M	162	N
220	S	220	S	220	S	220	S	126	R	209	S	88	N	147	O
193	R	193	R	193	S	193	R	106	Q	176	R	74	M	124	N
				121	Q	121	P			121	P	51	L	85	L
116	Q	116	Q												
94	P	94	P												
990	T	990	T					528	T	880	T	370	Q	616	R
880	T	880	T					627	T	1045	T	439	Q	732	R
495	S	495	S					251	S	418	S	176	O	293	P
396	T	396	T					212	S	352	T	148	P	247	Q
550	T	550	T					297	T	495	T	208	Q	347	R
264	T	264	T					132	S	220	T	93	P	154	Q
242	S	242	S					126	S	209	S	88	O	147	P
198	S	198	S					119	S	198	S	84	O	139	P
242	S	242	S					132	S	220	S	93	O	154	P
187	S	187	S					126	R	209	S	88	N	147	O
187	S	187	S					146	R	242	S	102	N	170	O
154	R	154	R					139	Q	231	R	97	M	162	N
264	R	264	R												
242	R	242	R												

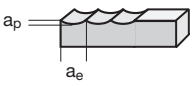
Parametri di lavoro indicativi per frese a raggio per Metallo Duro

Serie d'avanzamento

Ø utensile mm	Codice lettera	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
	2,00	0,001	0,001	0,001	0,002	0,002	0,004	0,005	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,018	0,020
	3,00	0,002	0,002	0,003	0,003	0,004	0,007	0,010	0,010	0,010	0,015	0,016	0,013	0,019	0,022	0,024	0,030
	5,00	0,005	0,006	0,007	0,009	0,010	0,014	0,020	0,020	0,022	0,025	0,026	0,026	0,028	0,030	0,032	0,038
	6,00	0,006	0,008	0,009	0,011	0,013	0,017	0,024	0,025	0,027	0,031	0,029	0,033	0,039	0,036	0,041	0,047
	8,00	0,010	0,012	0,014	0,016	0,019	0,024	0,032	0,032	0,035	0,042	0,042	0,047	0,053	0,052	0,058	0,064
	10,00	0,013	0,015	0,018	0,021	0,025	0,030	0,038	0,039	0,044	0,050	0,053	0,059	0,065	0,066	0,073	0,080
	12,00	0,010	0,018	0,022	0,026	0,030	0,036	0,046	0,048	0,052	0,059	0,063	0,072	0,079	0,085	0,090	0,100
	16,00	0,020	0,023	0,027	0,032	0,038	0,045	0,054	0,058	0,063	0,071	0,079	0,088	0,095	0,100	0,110	0,120
	20,00	0,023	0,028	0,033	0,038	0,045	0,057	0,066	0,073	0,080	0,090	0,097	0,100	0,110	0,120	0,130	0,140
	25,00	0,030	0,035	0,040	0,045	0,055	0,065	0,075	0,100	0,120	0,130	0,140	0,150	0,165	0,170	0,180	0,190

Avanzamento f (mm/dente)

a_e = larghezza di taglio
a_p = profondità di taglio



a_e = 1,0 x D

Le nuove condizioni europee in accordo con le norme DIN EN per acciaio e ghisa sono applicate per tutti i nostri esempi di materiale.

olio da taglio, attivo ■
emulsione ■
solo refrigerazione ad aria ⚠

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⚠
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

Lavorazione HSC

Catalogo n°	54300 54301
Mat. de tagl.	**M.D.I.**
Norma	**Stock std.**
Tipo	**N**
Pagina	642/643

Catalogo n°	54302 54303
Mat. de tagl.	**M.D.I.**
Norma	**Stock std.**
Tipo	**N**
Pagina	638/639

Ø	2/3	4	6	8	10	12
sgrossatura						
eff. Ø *	-	1,74	2,99	4,21	5,27	6,63
a_p mm	0,10	0,20	0,40	0,60	0,75	1,00
a_e mm	0,15	0,30	0,50	0,75	1,00	1,50
finitura						
eff. Ø *	-	1,25	1,81	2,24	2,66	3,07
a_p mm	0,07	0,10	0,14	0,16	0,18	0,20
a_e mm	0,05	0,07	0,10	0,15	0,20	0,25

Ø	4	6	8	10	12
sgrossatura					
eff. Ø *	-	-	-	-	-
a_p mm	0,20	0,40	0,60	0,75	1,00
a_e mm	0,30	0,50	0,75	1,00	1,50
finitura					
eff. Ø *	-	-	-	-	-
a_p mm	0,10	0,14	0,16	0,18	0,20
a_e mm	0,07	0,10	0,15	0,20	0,25

v_c m/min	v_c m/min	fz (mm) 2/3	fz (mm) 4	fz (mm) 6	fz (mm) 8	fz (mm) 10	fz (mm) 12	v_c m/min	v_c m/min	fz (mm) 4	fz (mm) 6	fz (mm) 8	fz (mm) 10	fz (mm) 12
225	*310*	0,03	0,03	0,05	0,06	0,08	0,1	*225*	*310*	0,03	0,05	0,06	0,08	0,1
170	*240*	0,02	0,02	0,04	0,05	0,08	0,1	*170*	*240*	0,02	0,04	0,05	0,08	0,1
170	*240*	0,02	0,02	0,04	0,05	0,08	0,1	*170*	*240*	0,02	0,04	0,05	0,08	0,1
150	*190*	0,02	0,02	0,04	0,05	0,08	0,1	*150*	*190*	0,02	0,04	0,05	0,08	0,1
190	*240*	0,02	0,02	0,04	0,05	0,08	0,1	*190*	*240*	0,02	0,04	0,05	0,08	0,1
190	*240*	0,02	0,02	0,04	0,05	0,08	0,1	*190*	*240*	0,02	0,04	0,05	0,08	0,1
150	*190*	0,02	0,02	0,04	0,05	0,08	0,1	*150*	*190*	0,02	0,04	0,05	0,08	0,1
150	*190*	0,02	0,02	0,04	0,05	0,08	0,1	*150*	*190*	0,02	0,04	0,05	0,08	0,1
105	*140*	0,02	0,02	0,04	0,05	0,08	0,1	*105*	*140*	0,02	0,04	0,05	0,08	0,1
225	*310*	0,03	0,03	0,05	0,06	0,08	0,1	*225*	*310*	0,03	0,05	0,06	0,08	0,1
150	*190*	0,02	0,02	0,04	0,05	0,08	0,1	*150*	*190*	0,02	0,04	0,05	0,08	0,1
105	*140*	0,02	0,02	0,04	0,05	0,08	0,1	*105*	*140*	0,02	0,04	0,05	0,08	0,1
150	*190*	0,02	0,02	0,04	0,05	0,08	0,1	*150*	*190*	0,02	0,04	0,05	0,08	0,1
105	*140*	0,02	0,02	0,04	0,05	0,08	0,1	*105*	*140*	0,02	0,04	0,05	0,08	0,1
150	*190*	0,02	0,02	0,04	0,05	0,08	0,1	*150*	*190*	0,02	0,04	0,05	0,08	0,1
105	*140*	0,02	0,02	0,04	0,05	0,08	0,1	*105*	*140*	0,02	0,04	0,05	0,08	0,1
80	*125*	0,02	0,02	0,04	0,05	0,06	0,08	*80*	*125*					
80	*125*	0,02	0,02	0,04	0,05	0,06	0,08	*80*	*125*					
300	*450*	0,04	0,04	0,06	0,08	0,1	0,13	*300*	*450*	0,04	0,06	0,08	0,1	0,13
225	*310*	0,03	0,03	0,05	0,06	0,08	0,1	*225*	*310*	0,03	0,05	0,06	0,08	0,1
105	*140*	0,02	0,02	0,04	0,05	0,08	0,1	*105*	*140*	0,02	0,04	0,05	0,08	0,1
80	*125*	0,02	0,02	0,04	0,05	0,06	0,08	*80*	*125*	0,02	0,04	0,05	0,06	0,08
300	*400*	0,06	0,06	0,1	0,15	0,2	0,25	*300*	*400*	0,06	0,1	0,15	0,2	0,25
300	*400*	0,05	0,05	0,08	0,1	0,15	0,2	*300*	*400*	0,05	0,08	0,1	0,15	0,2
225	*325*	0,05	0,05	0,08	0,1	0,12	0,15	*225*	*325*	0,05	0,08	0,1	0,12	0,15
225	*275*	0,04	0,04	0,06	0,08	0,1	0,12	*225*	*275*	0,04	0,06	0,08	0,1	0,12
65	*80*	0,02	0,02	0,04	0,05	0,06	0,08	*65*	*80*	0,02	0,04	0,05	0,06	0,08
80	*125*	0,02	0,02	0,04	0,05	0,08	0,1	*80*	*125*	0,02	0,04	0,05	0,08	0,1
75	*100*	0,02	0,02	0,04	0,05	0,06	0,08	*75*	*100*	0,02	0,04	0,05	0,06	0,08
375	*500*	0,04	0,04	0,06	0,08	0,1	0,15	*375*	*500*	0,04	0,06	0,08	0,1	0,15
500	*900*	0,04	0,04	0,06	0,08	0,1	0,15	*500*	*900*	0,04	0,06	0,08	0,1	0,15
300	*450*	0,04	0,04	0,06	0,08	0,1	0,13	*300*	*450*	0,04	0,06	0,08	0,1	0,13
225	*310*	0,03	0,03	0,05	0,06	0,08	0,1	*225*	*310*	0,03	0,05	0,06	0,08	0,1
225	*310*	0,03	0,03	0,05	0,06	0,08	0,1	*225*	*310*	0,03	0,05	0,06	0,08	0,1
300	*350*	0,05	0,05	0,08	0,12	0,15	0,2	*300*	*350*	0,05	0,08	0,12	0,15	0,2
225	*300*	0,04	0,04	0,06	0,1	0,12	0,15	*225*	*300*	0,04	0,06	0,1	0,12	0,15
225	*325*	0,05	0,05	0,08	0,1	0,12	0,15	*225*	*325*	0,05	0,08	0,1	0,12	0,15
225	*275*	0,04	0,04	0,06	0,08	0,1	0,12	*225*	*275*	0,04	0,06	0,08	0,1	0,12
225	*275*	0,04	0,04	0,06	0,08	0,1	0,12	*225*	*275*	0,04	0,06	0,08	0,1	0,12
150	*225*	0,03	0,03	0,05	0,08	0,1	0,12	*150*	*225*	0,03	0,05	0,08	0,1	0,12

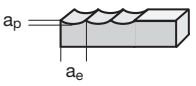
Parametri di lavoro indicativi per frese a raggio per Metallo Duro

Serie d'avanzamento

Ø utensile mm	Codice lettera	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
	2,00	0,001	0,001	0,001	0,002	0,002	0,004	0,005	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,018	0,020
	3,00	0,002	0,002	0,003	0,003	0,004	0,007	0,010	0,010	0,010	0,015	0,016	0,013	0,019	0,022	0,024	0,030
	5,00	0,005	0,006	0,007	0,009	0,010	0,014	0,020	0,020	0,022	0,025	0,026	0,026	0,028	0,030	0,032	0,038
	6,00	0,006	0,008	0,009	0,011	0,013	0,017	0,024	0,025	0,027	0,031	0,029	0,033	0,039	0,036	0,041	0,047
	8,00	0,010	0,012	0,014	0,016	0,019	0,024	0,032	0,032	0,035	0,042	0,042	0,047	0,053	0,052	0,058	0,064
	10,00	0,013	0,015	0,018	0,021	0,025	0,030	0,038	0,039	0,044	0,050	0,053	0,059	0,065	0,066	0,073	0,080
	12,00	0,010	0,018	0,022	0,026	0,030	0,036	0,046	0,048	0,052	0,059	0,063	0,072	0,079	0,085	0,090	0,100
	16,00	0,020	0,023	0,027	0,032	0,038	0,045	0,054	0,058	0,063	0,071	0,079	0,088	0,095	0,100	0,110	0,120
	20,00	0,023	0,028	0,033	0,038	0,045	0,057	0,066	0,073	0,080	0,090	0,097	0,100	0,110	0,120	0,130	0,140
	25,00	0,030	0,035	0,040	0,045	0,055	0,065	0,075	0,100	0,120	0,130	0,140	0,150	0,165	0,170	0,180	0,190

Avanzamento f (mm/dente)

a_e = larghezza di taglio
a_p = profondità di taglio



a_e = 1,0 x D

Le nuove condizioni europee in accordo con le norme DIN EN per acciaio e ghisa sono applicate per tutti i nostri esempi di materiale.

olio da taglio, attivo ■
emulsione ■
solo refrigerazione ad aria ⊡

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⊡
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

Lavorazione HSC

Catalogo n°	54306 54307
Mat. de tagl.	M.D.I.
Norma	Stock std.
Tipo	N
Pagina	640/641

Ø	4	6	8	10	12	16
sgrossatura						
eff. Ø *	1,74	2,99	4,21	5,27	6,63	9,33
a_p mm	0,20	0,40	0,60	0,75	1,00	1,50
a_e mm	0,30	0,50	0,75	1,00	1,50	2,50
finitura						
eff. Ø *	1,25	1,81	2,24	2,66	3,07	3,97
a_p mm	0,10	0,14	0,16	0,18	0,20	0,25
a_e mm	0,07	0,10	0,15	0,20	0,25	0,30

v_c m/min	v_c m/min	fz (mm)	fz (mm)	fz (mm)	fz (mm)	fz (mm)	fz (mm)
300	*350*	0,04	0,06	0.08	0.1	0.15	0,2
200	*300*	0,04	0,06	0,08	0,1	0,13	0,15
150	*250*	0,03	0,05	0,06	0,08	0,1	0,12
200	*300*	0,04	0,06	0,08	0,1	0,13	0,15
150	*180*	0.02	0,04	0,05	0.08	0,1	0,12
300	*400*	0,06	0,1	0,15	0,2	0,25	0,3
300	*400*	0,05	0,08	0,1	0,15	0,2	0,25
250	*325*	0,05	0,08	0,1	0,12	0,15	0,2
250	*275*	0,04	0,06	0,08	0,1	0,12	0,15
150	*225*	0,03	0,05	0,08	0,1	0,12	0,15
400	*475*	0,06	0,1	0,15	0,2	0,25	0,3
300	*350*	0,05	0,08	0,12	0,15	0,2	0,3
275	*300*	0,04	0,06	0,1	0,12	0,15	0,2

Catalogo n°	54304 54305
Mat. de tagl.	M.D.I.
Norma	Stock std.
Tipo	N
Pagina	636/637

Ø	6	8	10	12	16
sgrossatura					
eff. Ø *	-	-	-	-	-
a_p mm	0,40	0,60	0,75	1,00	1,50
a_e mm	3,50	5,50	6,50	8,50	11,50
finitura					
eff. Ø *	-	-	-	-	-
a_p mm	0,15	0,20	0,30	0,40	0,50
a_e mm	0,20	0,30	0,40	0,60	1,00

v_c m/min	v_c m/min	fz (mm)	fz (mm)	fz (mm)	fz (mm)	fz (mm)
200	*230*	0,05	0,06	0,07	0,08	0,1
200	*230*	0,05	0,06	0,07	0,08	0,1
200	*230*	0,05	0,06	0,07	0,08	0,1
200	*230*	0,05	0,06	0,07	0,08	0,1
160	*190*	0,04	0,05	0,06	0,07	0,08
105	*125*	0,02	0,03	0,04	0,05	0,06
150	*175*	0,05	0,06	0,07	0,08	0,1
75	*95*	0,02	0,03	0,04	0,05	0,06
300	*400*	0,06	0,08	0,1	0,12	0,15
300	*400*	0,06	0,08	0,1	0,12	0,15
250	*325*	0,05	0,06	0,07	0,08	0,1
225	*275*	0,04	0,05	0,06	0,07	0,08
150	*225*	0,02	0,03	0,04	0,05	0,06
400	*475*	0,06	0,08	0,1	0,12	0,15
300	*350*	0,06	0,08	0,1	0,12	0,15
275	*300*	0,05	0,06	0,07	0,08	0,1

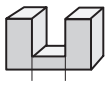
Parametri di lavoro indicativi per frese per acciaio ad alto velocità

Serie d'avanzamento

Ø utensile mm	Codice lettera	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
	2,00	0,001	0,001	0,001	0,002	0,002	0,004	0,005	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,018	0,020
	3,00	0,002	0,002	0,003	0,003	0,004	0,007	0,010	0,010	0,010	0,015	0,016	0,013	0,019	0,022	0,024	0,030
	5,00	0,005	0,006	0,007	0,009	0,010	0,014	0,020	0,020	0,022	0,025	0,026	0,026	0,028	0,030	0,032	0,038
	6,00	0,006	0,008	0,009	0,011	0,013	0,017	0,024	0,025	0,027	0,031	0,029	0,033	0,039	0,036	0,041	0,047
	8,00	0,010	0,012	0,014	0,016	0,019	0,024	0,032	0,032	0,035	0,042	0,042	0,047	0,053	0,052	0,058	0,064
	10,00	0,013	0,015	0,018	0,021	0,025	0,030	0,038	0,039	0,044	0,050	0,053	0,059	0,065	0,066	0,073	0,080
	12,00	0,010	0,018	0,022	0,026	0,030	0,036	0,046	0,048	0,052	0,059	0,063	0,072	0,079	0,085	0,090	0,100
	16,00	0,020	0,023	0,027	0,032	0,038	0,045	0,054	0,058	0,063	0,071	0,079	0,088	0,095	0,100	0,110	0,120
	20,00	0,023	0,028	0,033	0,038	0,045	0,057	0,066	0,073	0,080	0,090	0,097	0,100	0,110	0,120	0,130	0,140
	25,00	0,030	0,035	0,040	0,045	0,055	0,065	0,075	0,100	0,120	0,130	0,140	0,150	0,165	0,170	0,180	0,190

Avanzamento f (mm/dente)

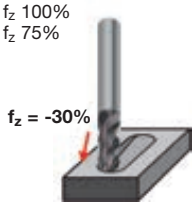
a_e = larghezza di taglio
a_p = profondità di taglio



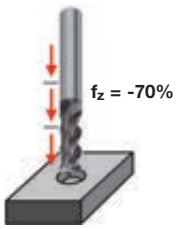
a_e = 1,0 x D

I valori in grassetto dell'avanzamento sono le scelte rispettive preferite per il gruppo di materiali.

Lavorazione inclinata a tuffo e scanalatura
Per lavorazione inclinata a tuffo, l'avanzamento dovrebbe essere ridotto come illustrato. In aggiunta, l'evacuazione del truciolo è richiesta se si fora ad una profondità superiore a 1 x D. Questo viene applicato anche per la transizione in lavorazione radiale.
Scanalatura
a_p = profondità di taglio 0,5 x D = f_z 100%
a_p = profondità di taglio 1,0 x D = f_z 75%



Foratura
Per la foratura, l'avanzamento dovrebbe essere ridotto come illustrato.
In aggiunta, l'evacuazione del truciolo è richiesta per grandi profondità di foratura, superiori a 0.5 x D.



olio da taglio, attivo ■
emulsione ■
solo refrigerazione ad aria ☐!

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ ☐
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ ☐
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ ☐
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ ☐
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ ☐
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ ☐
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		☐!
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	☐
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ ☐
Mat. plast. a fibre aramidiche	Kevlar		–	☐
a fibre di vetro/C rinforzate	GFK/CFK		–	☐

Frese per cave

Catalogo n°	74231 74280	74243 74282	54275 64640 64604	64670 64641	54080 54180	74244	74294	64671	54294	54276	54825	54845	74816	54816
Mat. de tagl.	M42		M42			M42		M42			HSS-E-PM		M42	M42
Norma	327 D	844 K	327 D	844 K	Stock	844 L		844 L		Stock	844 K		844 K	844 K
Tipo	N		N			N		N			NRf		NR	NR
Pagina	652/658	654/660	680/653/659	655/661	664/665	656	663	657	662	681	673	677	674	675

v_c m/min	Codice d'avanz.	Codice d'avanz.	v_c m/min	Codice d'avanz.	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	Codice d'avanz.	v_c m/min	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.
28	M	61		M	22	K	49		K	90	O	34	M	61	N
25	L	55		L	20	K	44		K	80	N	30	K	55	L
25	L	55		L	20	K	44		K	80	N	30	K	55	L
22	M	50		M	18	K	40		K	75	M	28	J	50	K
28	L	61		L	22	K	49		K	90	N	34	K	61	L
26	L	55		L	21	K	44		K	80	N	30	K	55	L
22	M	50		M	18	K	40		K	75	M	28	J	50	K
22	M	50		M	18	K	40		K	75	M	28	J	50	K
17	M	39		M	14	K	31		K	60	L	22	I	39	J
28	L	61		L	22	K	49		K	90	N	34	K	61	L
22	L	50		L	18	K	40		K	75	N	28	K	50	L
17	M	39		M	14	K	31		K	60	M	22	J	39	K
22	L	50		L	18	K	40		K	75	N	28	K	50	L
17	L	39		L	14	K	31		K	60	L	22	I	39	J
28	L	61		L	22	K	49		K	90	N	34	K	61	L
11	L	28		L	9	K	22		K	40	L	15	I	28	J
11	M	28		M	9	K	22		K	40	M	15	J	28	K
11	L	22		L						33	L			22	J
18	M	42		M						65	M	23	J	42	K
14	L	39		L						60	L	21	I	39	J
14	L	39		L						60	M	21	J	39	K
20	L	50		L	16	K	40	K		75	N	28	K	50	L
14	L	42		L	11	K	34	K		65	M			42	K
20	L	50		L	16	K	40	K		75	N	28	K	50	L
14	L	42		L	11	K	34	K		65	M			42	K
11	L	31		L						45	K			31	I
5	L	9		L						14	L			9	J
11	L	25		L						36	L	13	I	25	J
7	L	11		L						17	K			11	I
154	N	220		N											
110	N	198		N											
88	M	132		M											
44	N	121		N											
66	O	143		O											
61	N	99		N											
61	N	99		N											
39	M	94		M											
39	M	94		M											
33	L	72		L											
33	M	72		M											
17	L	44		L											

Parametri di lavoro indicativi per frese per acciaio ad alto velocità

Serie d'avanzamento

Ø utensile mm	Codice lettera	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
	2,00	0,001	0,001	0,001	0,002	0,002	0,004	0,005	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,018	0,020
	3,00	0,002	0,002	0,003	0,003	0,004	0,007	0,010	0,010	0,010	0,015	0,016	0,013	0,019	0,022	0,024	0,030
	5,00	0,005	0,006	0,007	0,009	0,010	0,014	0,020	0,020	0,022	0,025	0,026	0,026	0,028	0,030	0,032	0,038
	6,00	0,006	0,008	0,009	0,011	0,013	0,017	0,024	0,025	0,027	0,031	0,029	0,033	0,039	0,036	0,041	0,047
	8,00	0,010	0,012	0,014	0,016	0,019	0,024	0,032	0,032	0,035	0,042	0,042	0,047	0,053	0,052	0,058	0,064
	10,00	0,013	0,015	0,018	0,021	0,025	0,030	0,038	0,039	0,044	0,050	0,053	0,059	0,065	0,066	0,073	0,080
	12,00	0,010	0,018	0,022	0,026	0,030	0,036	0,046	0,048	0,052	0,059	0,063	0,072	0,079	0,085	0,090	0,100
	16,00	0,020	0,023	0,027	0,032	0,038	0,045	0,054	0,058	0,063	0,071	0,079	0,088	0,095	0,100	0,110	0,120
	20,00	0,023	0,028	0,033	0,038	0,045	0,057	0,066	0,073	0,080	0,090	0,097	0,100	0,110	0,120	0,130	0,140
	25,00	0,030	0,035	0,040	0,045	0,055	0,065	0,075	0,100	0,120	0,130	0,140	0,150	0,165	0,170	0,180	0,190

Avanzamento f (mm/dente)

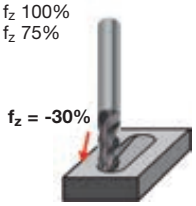
a_e = larghezza di taglio
a_p = profondità di taglio

a_e = 0,6 x D

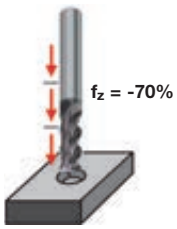
a_e = 1,0 x D

I valori in grassetto dell'avanzamento sono le scelte rispettive preferite per il gruppo di materiali.

Lavorazione inclinata a tuffo e scanalatura
Per lavorazione inclinata a tuffo, l'avanzamento dovrebbe essere ridotto come illustrato. In aggiunta, l'evacuazione del truciolo è richiesta se si fora ad una profondità superiore a 1 x D. Questo viene applicato anche per la transizione in lavorazione radiale.
Scanalatura
a_p = profondità di taglio 0,5 x D = f_z 100%
a_p = profondità di taglio 1,0 x D = f_z 75%



Foratura
Per la foratura, l'avanzamento dovrebbe essere ridotto come illustrato.
In aggiunta, l'evacuazione del truciolo è richiesta per grandi profondità di foratura, superiori a 0.5 x D.



olio da taglio, attivo ■
emulsione ■
solo refrigerazione ad aria ▯

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrige-rante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ ▯
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ ▯
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ ▯
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ ▯
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ ▯
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ ▯
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		▯
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	▯
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ ▯
Mat. plast. a fibre aramidiche	Kevlar		–	▯
a fibre di vetro/C rinforzate	GFK/CFK		–	▯

Frese di finitura

Frese di sgrossatura

Catalogo n°	74617	74847	64667	54847	74800	74825	74845	54825	54845	74816 74836	54816 54836	54815
Mat. de tagl.	M42	M42	M42		M42	HSS-E-PM		HSS-E-PM		M42	M42	
Norma	844K	844 L	844 K	844 L	Stock std.	844 K		844 K		844 K/L	844 K/L	
Tipo	N	N	N		N	NRf		NRf		NR	NF	
Pagina	666	668	667	669	670	672	676	673	677	674/678	675/679	671

v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.	v_c m/min	Codice d'avanz.
28	M	31	N	68	O	19	L	57	O	102	P	38	N	68	O
24	L	27	M	61	N	16	K	51	N	92	O	33	L	61	M
24	L	27	M	61	N	16	K	51	N	92	O	33	L	61	M
22	K	25	L	55	M	15	K	46	M	83	N	31	L	55	L
28	L	31	M	68	N	19	K	57	N	102	O	38	L	68	M
25	L	28	M	61	N	17	K	51	N	92	O	33	L	61	M
22	K	25	L	55	M	15	K	46	M	83	N	31	L	55	L
22	K	25	L	55	M	15	K	46	M	83	N	31	L	55	L
17	J	19	L	43	L	11	K	36	L	65	M	24	K	43	L
28	L	31	M	68	N	19	K	57	N	102	O	38	L	68	M
22	L	25	M	55	N	15	K	46	N	83	O	31	L	55	M
17	K	19	L	43	M	11	K	36	M	65	N	24	L	43	L
22	L	25	M	55	N	15	K	46	N	83	O	31	L	55	M
17	J	19	L	43	L	11	K	36	L	65	M	24	K	43	L
28	L	31	M	68	N	19	K	57	N	102	O	38	L	68	M
11	J	13	L	31	L	8	K	26	L	47	M	17	K	31	L
11	K	13	L	31	M	8	K	26	M	47	N	17	L	31	L
		13	L	25	L			20	L	37	M	14	K	25	L
18	K	20	L	47	M	13	K	39	M	70	N	26	L	47	L
13	J	15	L	43	L	9	K	36	L	65	M	24	K	43	L
13	K	15	L	43	M	9	K	36	M	65	N	24	L	43	L
20	L	22	M	55	N			46	N	83	O	31	L	55	M
		15	L	47	M			39	M	70	N	26	L	47	L
20	L	22	M	55	N			46	N	83	O	31	L	55	M
		15	L	47	M			39	M	70	N	26	L	47	L
11	I	13	K	35	L			29	L	52	L	19	K	35	K
		5	L	10	L			9	L	16	M	6	K	10	L
11	J	13	L	27	L			22	L	40	M	15	K	27	L
		8	K	13	L			10	L	19	L	7	K	13	K
155	O	170	P	242	Q										
110	N	121	O	218	P										
90	M	97	N	146	O										
40	N	49	O	134	P										
65	O	73	P	158	Q										
62	N	68	O	109	P										
62	M	68	N	109	O										
40	M	43	N	104	O										
40	M	43	N	104	O										
33	L	37	M	80	N										
33	L	37	M	80	N										
17	K	19	L	49	M										

Frese in MD

Frese frontali alluminio

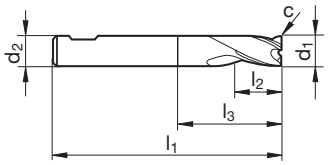
Catalogo n° 74204

W | DIN 6527 K | VHM | lucido | e8 | R | HB | 45°

P	M	K	N	S	H
			•		

Parametri di lav. ind. a pag. 570

- extra corto
- tagliente al centro



d1 e8 **mm**	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
3,000	6,000	50,000	4,000	8,400	0,030	2	3,000
4,000	6,000	54,000	5,000	10,400	0,030	2	4,000
5,000	6,000	54,000	6,000	12,400	0,030	2	5,000
6,000	6,000	54,000	7,000	18,000	0,030	2	6,000
8,000	8,000	58,000	9,000	22,000	0,050	2	8,000
10,000	10,000	66,000	11,000	26,000	0,050	2	10,000
12,000	12,000	73,000	12,000	28,000	0,100	2	12,000
14,000	14,000	75,000	14,000	30,000	0,100	2	14,000
16,000	16,000	82,000	16,000	34,000	0,100	2	16,000
18,000	18,000	84,000	18,000	36,000	0,100	2	18,000
20,000	20,000	92,000	20,000	42,000	0,100	2	20,000

Frese in MD

Frese frontali alluminio

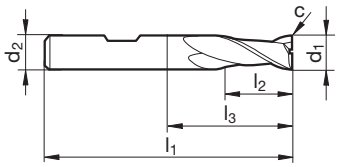
Catalogo n° 74202

W | DIN 6527 L | VHM | lucido | e8 | R | HB | 45°

P	M	K	N	S	H
			•		

Parametri di lav. ind. a pag. 570

• tagliente al centro



d1 e8 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
3,000	6,000	57,000	7,000	11,400	0,030	2	3,000
4,000	6,000	57,000	8,000	13,900	0,030	2	4,000
5,000	6,000	57,000	10,000	16,900	0,030	2	5,000
6,000	6,000	57,000	10,000	21,000	0,030	2	6,000
8,000	8,000	63,000	16,000	27,000	0,050	2	8,000
10,000	10,000	72,000	19,000	32,000	0,050	2	10,000
12,000	12,000	83,000	22,000	38,000	0,100	2	12,000
14,000	14,000	83,000	22,000	38,000	0,100	2	14,000
16,000	16,000	92,000	26,000	44,000	0,100	2	16,000
18,000	18,000	92,000	26,000	44,000	0,100	2	18,000
20,000	20,000	104,000	32,000	54,000	0,100	2	20,000

Frese in MD

Frese frontali alluminio

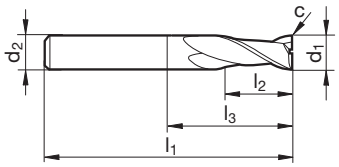
Catalogo n° 74206

W | WN | VHM | luci-do | h10 | R | HA | 45°

P	M	K	N	S	H
			•		

Parametri di lav. ind. a pag. 570

- extra lungo
- tagliente al centro



d1 h10 **mm**	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
5,000	5,000	75,000	30,000	47,000	0,030	2	5,000
6,000	6,000	75,000	30,000	39,000	0,030	2	6,000
8,000	8,000	100,000	40,000	64,000	0,050	2	8,000
10,000	10,000	100,000	40,000	60,000	0,050	2	10,000
12,000	12,000	150,000	45,000	105,000	0,100	2	12,000
16,000	16,000	150,000	65,000	102,000	0,100	2	16,000

Frese in MD

Frese frontali alluminio

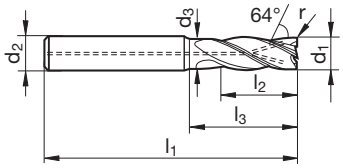
Catalogo n° 74479

W | WN | VHM | lucido | h10 | R | HA | 45°

P	M	K	N	S	H
			•		

Parametri di lav. ind. a pag. 570

- con refrigerazione interna per vita utensile maggiore e asportazione truciolo ottimale
- tagliente al centro



d1 h10 **mm**	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm x 45°	Z	Codice
6,000	6,000	57,000	10,000	21,000	1,000	3	6,000
8,000	8,000	63,000	16,000	27,000	1,000	3	8,000
10,000	10,000	72,000	19,000	32,000	1,500	3	10,000
12,000	12,000	83,000	22,000	38,000	1,500	3	12,000
16,000	16,000	92,000	26,000	44,000	2,000	3	16,000
20,000	20,000	104,000	32,000	54,000	2,500	3	20,000

Frese in MD

Frese frontali (a 2 taglienti)

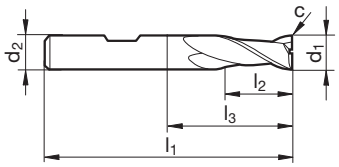
Catalogo n° 74520

N	DIN 6527 K	VHM	lucido	h10	R	HB	30°

P	M	K	N	S	H
•	•	•	•		

Parametri di lav. ind. a pag. 566

- extra corto
- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
2,000	6,000	50,000	3,000	6,400	0,025	2	2,000
2,500	6,000	50,000	3,000	6,400	0,050	2	2,500
3,000	6,000	50,000	4,000	8,900	0,050	2	3,000
3,500	6,000	50,000	4,000	9,000	0,050	2	3,500
4,000	6,000	54,000	5,000	10,400	0,050	2	4,000
4,500	6,000	54,000	5,000	11,500	0,050	2	4,500
5,000	6,000	54,000	6,000	12,900	0,050	2	5,000
5,500	6,000	54,000	7,000	14,400	0,050	2	5,500
6,000	6,000	54,000	7,000	18,000	0,050	2	6,000
6,500	8,000	58,000	8,000	17,400	0,100	2	6,500
7,000	8,000	58,000	8,000	17,400	0,100	2	7,000
7,500	8,000	58,000	9,000	18,400	0,100	2	7,500
8,000	8,000	58,000	9,000	22,000	0,100	2	8,000
8,500	10,000	66,000	10,000	21,400	0,100	2	8,500
9,000	10,000	66,000	10,000	21,400	0,100	2	9,000
9,500	10,000	66,000	11,000	22,400	0,100	2	9,500
10,000	10,000	66,000	11,000	26,000	0,100	2	10,000
11,000	12,000	73,000	12,000	25,400	0,100	2	11,000
12,000	12,000	73,000	12,000	28,000	0,100	2	12,000
13,000	14,000	75,000	14,000	29,400	0,150	2	13,000
14,000	14,000	75,000	14,000	30,000	0,150	2	14,000
15,000	16,000	82,000	16,000	33,400	0,150	2	15,000
16,000	16,000	82,000	16,000	34,000	0,150	2	16,000
18,000	18,000	84,000	18,000	36,000	0,150	2	18,000
20,000	20,000	92,000	20,000	42,000	0,150	2	20,000

Frese in MD

Frese frontali (a 2 taglienti)

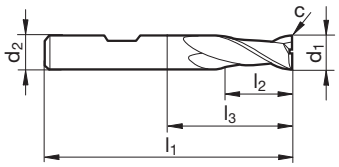
Catalogo n° 54520

N	DIN 6527 K	VHM	TiAlN	h10	R	HB	30° A

P	M	K	N	S	H
●	●	●	○	●	

Parametri di lav. ind. a pag. 566

- extra corto
- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
2,000	6,000	50,000	3,000	7,400	0,025	2	2,000
3,000	6,000	50,000	4,000	8,400	0,050	2	3,000
4,000	6,000	54,000	5,000	10,400	0,050	2	4,000
5,000	6,000	54,000	6,000	12,400	0,050	2	5,000
6,000	6,000	54,000	7,000	18,000	0,050	2	6,000
8,000	8,000	58,000	9,000	22,000	0,100	2	8,000
10,000	10,000	66,000	11,000	26,000	0,100	2	10,000
12,000	12,000	73,000	12,000	28,000	0,100	2	12,000
14,000	14,000	75,000	14,000	30,000	0,150	2	14,000
16,000	16,000	82,000	16,000	34,000	0,150	2	16,000
18,000	18,000	84,000	18,000	36,000	0,150	2	18,000
20,000	20,000	92,000	20,000	42,000	0,150	2	20,000

Frese in MD

Frese frontali (a 2 taglienti)

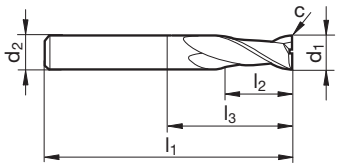
Catalogo n° 54519

N | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○	●	

Parametri di lav. ind. a pag. 568

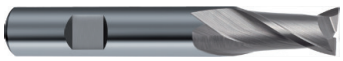
- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
2,000	6,000	57,000	6,000	9,400	0,025	2	2,000
2,800	6,000	57,000	7,000	11,900	0,050	2	2,800
3,000	6,000	57,000	7,000	11,900	0,050	2	3,000
3,800	6,000	57,000	8,000	13,400	0,050	2	3,800
4,000	6,000	57,000	8,000	13,400	0,050	2	4,000
4,800	6,000	57,000	10,000	16,900	0,050	2	4,800
5,000	6,000	57,000	10,000	16,900	0,050	2	5,000
5,750	6,000	57,000	10,000	18,400	0,050	2	5,750
6,000	6,000	57,000	10,000	21,000	0,050	2	6,000
6,750	8,000	63,000	13,000	22,400	0,100	2	6,750
7,000	8,000	63,000	13,000	22,400	0,100	2	7,000
7,750	8,000	63,000	16,000	25,400	0,100	2	7,750
8,000	8,000	63,000	16,000	27,000	0,100	2	8,000
8,700	10,000	72,000	16,000	27,400	0,100	2	8,700
9,000	10,000	72,000	16,000	27,400	0,100	2	9,000
9,700	10,000	72,000	19,000	30,400	0,100	2	9,700
10,000	10,000	72,000	19,000	32,000	0,100	2	10,000
11,700	12,000	83,000	22,000	35,400	0,100	2	11,700
12,000	12,000	83,000	22,000	38,000	0,100	2	12,000
14,000	14,000	83,000	22,000	38,000	0,150	2	14,000
15,700	16,000	92,000	26,000	44,000	0,150	2	15,700
18,000	18,000	92,000	26,000	44,000	0,150	2	18,000
20,000	20,000	104,000	32,000	54,000	0,150	2	20,000

Frese in MD

Frese frontali (a 2 taglienti)



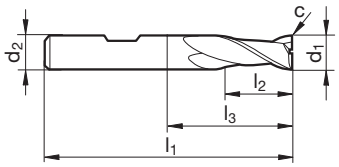
Catalogo n° 74521

N | DIN 6527 L | VHM | lucido | h10 | R | HB | 30°

P	M	K	N	S	H
•	•	•	•		

Parametri di lav. ind. a pag. 566

- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
2,000	6,000	57,000	6,000	9,400	0,025	2	2,000
2,500	6,000	57,000	7,000	10,400	0,050	2	2,500
3,000	6,000	57,000	7,000	11,900	0,050	2	3,000
3,500	6,000	57,000	7,000	12,400	0,050	2	3,500
3,800	6,000	57,000	8,000	13,400	0,050	2	3,800
4,000	6,000	57,000	8,000	13,400	0,050	2	4,000
4,500	6,000	57,000	8,000	14,900	0,050	2	4,500
4,800	6,000	57,000	10,000	16,900	0,050	2	4,800
5,000	6,000	57,000	10,000	16,900	0,050	2	5,000
5,750	6,000	57,000	10,000	18,400	0,050	2	5,750
6,000	6,000	57,000	10,000	21,000	0,050	2	6,000
6,750	8,000	63,000	13,000	22,400	0,100	2	6,750
7,000	8,000	63,000	13,000	22,400	0,100	2	7,000
7,750	8,000	63,000	16,000	25,400	0,100	2	7,750
8,000	8,000	63,000	16,000	27,000	0,100	2	8,000
8,700	10,000	72,000	16,000	27,400	0,100	2	8,700
9,000	10,000	72,000	16,000	27,400	0,100	2	9,000
9,700	10,000	72,000	19,000	30,400	0,100	2	9,700
10,000	10,000	72,000	19,000	32,000	0,100	2	10,000
11,700	12,000	83,000	22,000	35,400	0,100	2	11,700
12,000	12,000	83,000	22,000	38,000	0,100	2	12,000
14,000	14,000	83,000	22,000	38,000	0,150	2	14,000
15,700	16,000	92,000	26,000	44,000	0,150	2	15,700
16,000	16,000	92,000	26,000	44,000	0,150	2	16,000
18,000	18,000	92,000	26,000	44,000	0,150	2	18,000
20,000	20,000	104,000	32,000	54,000	0,150	2	20,000

Frese in MD

Frese frontali (a 2 taglienti)

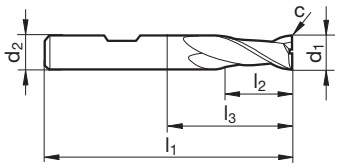
Catalogo n° 54521

N	DIN 6527 L	VHM	TiAlN	h10	R	HB	30°

P	M	K	N	S	H
●	●	●	○	●	

Parametri di lav. ind. a pag. 568

- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
2,000	6,000	57,000	6,000	10,400	0,025	2	2,000
2,800	6,000	57,000	7,000	11,400	0,050	2	2,800
3,000	6,000	57,000	7,000	11,400	0,050	2	3,000
3,800	6,000	57,000	8,000	13,900	0,050	2	3,800
4,000	6,000	57,000	8,000	13,900	0,050	2	4,000
4,800	6,000	57,000	10,000	16,900	0,050	2	4,800
5,000	6,000	57,000	10,000	16,900	0,050	2	5,000
5,750	6,000	57,000	10,000	17,900	0,050	2	5,750
6,000	6,000	57,000	10,000	21,000	0,050	2	6,000
6,750	8,000	63,000	13,000	21,900	0,100	2	6,750
7,000	8,000	63,000	13,000	21,900	0,100	2	7,000
7,750	8,000	63,000	16,000	25,900	0,100	2	7,750
8,000	8,000	63,000	16,000	27,000	0,100	2	8,000
8,700	10,000	72,000	16,000	27,400	0,100	2	8,700
9,000	10,000	72,000	16,000	27,400	0,100	2	9,000
9,700	10,000	72,000	19,000	31,400	0,100	2	9,700
10,000	10,000	72,000	19,000	32,000	0,100	2	10,000
11,700	12,000	83,000	22,000	36,400	0,100	2	11,700
12,000	12,000	83,000	22,000	38,000	0,100	2	12,000
14,000	14,000	83,000	22,000	38,000	0,150	2	14,000
15,700	16,000	92,000	26,000	44,000	0,150	2	15,700
16,000	16,000	92,000	26,000	44,000	0,150	2	16,000
18,000	18,000	92,000	26,000	44,000	0,150	2	18,000
20,000	20,000	104,000	32,000	54,000	0,150	2	20,000

Frese in MD

Frese frontali (a 2 taglienti)

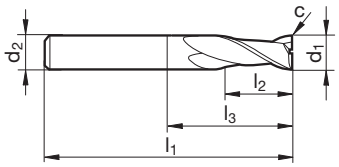
Catalogo n° 74404

N	WN	VHM	luci-do	h10	R	HA	30°

P	M	K	N	S	H
●		○	○		

Parametri di lav. ind. a pag. 568

- extra lungo
- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
3,000	3,000	75,000	20,000	28,000	0,050	2	3,000
4,000	4,000	75,000	25,000	33,000	0,050	2	4,000
5,000	5,000	75,000	30,000	37,000	0,050	2	5,000
6,000	6,000	75,000	30,000	41,000	0,050	2	6,000
8,000	8,000	100,000	40,000	53,000	0,100	2	8,000
10,000	10,000	100,000	40,000	50,000	0,100	2	10,000
12,000	12,000	150,000	45,000	58,000	0,100	2	12,000
14,000	14,000	150,000	45,000	63,000	0,150	2	14,000
16,000	16,000	150,000	65,000	85,000	0,150	2	16,000
18,000	18,000	150,000	65,000	85,000	0,150	2	18,000
20,000	20,000	150,000	65,000	100,000	0,150	2	20,000

Frese in MD

Frese frontali (a 2 taglienti)

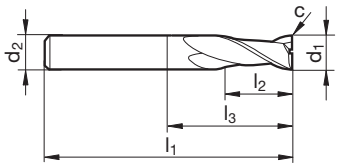
Catalogo n° 54404

N	WN	VHM	TiAlN	h10	R	HA	30°

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 568

- extra lungo
- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
5,000	5,000	75,000	30,000	41,000	0,050	2	5,000
6,000	6,000	75,000	30,000	42,000	0,050	2	6,000
8,000	8,000	100,000	40,000	53,000	0,100	2	8,000
10,000	10,000	100,000	40,000	50,000	0,100	2	10,000
12,000	12,000	150,000	45,000	58,000	0,100	2	12,000
14,000	14,000	150,000	45,000	64,000	0,150	2	14,000
16,000	16,000	150,000	65,000	86,000	0,150	2	16,000
20,000	20,000	150,000	65,000	89,000	0,150	2	20,000

Frese in MD

Mini frese frontali (a 3 taglienti)

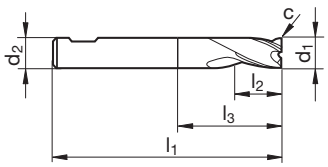
Catalogo n° 64080

N | WN | VHM | TiAlN | e8 | R | HA/HB | 30°

P	M	K	N	S	H
●		●			

Parametri di lav. ind. a pag. 568

- extra corto
- tagliente al centro
- Fresa One-Way ottimale



d1 e8 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
0,300	3,000	38,000	1,000	3,400		3	0,300
0,400	3,000	38,000	1,000	3,400		3	0,400
0,500	3,000	38,000	1,500	3,400	0,025	3	0,500
0,600	3,000	38,000	1,500	3,400	0,025	3	0,600
0,800	3,000	38,000	2,000	3,900	0,025	3	0,800
1,000	3,000	38,000	2,000	3,900	0,025	3	1,000
1,200	3,000	38,000	2,000	3,900	0,025	3	1,200
1,500	3,000	38,000	2,000	3,900	0,025	3	1,500
1,800	3,000	38,000	2,000	3,900	0,025	3	1,800
2,000	6,000	38,000	4,000	7,400	0,025	3	2,000
2,500	6,000	38,000	5,000	8,400	0,050	3	2,500
3,000	6,000	38,000	5,000	8,400	0,050	3	3,000
3,500	6,000	38,000	6,000	9,400	0,050	3	3,500
4,000	6,000	38,000	7,000	10,400	0,050	3	4,000
4,500	6,000	38,000	8,000	12,400	0,050	3	4,500
5,000	6,000	38,000	8,000	12,400	0,050	3	5,000
5,500	6,000	38,000	8,000	12,400	0,050	3	5,500
5,750	6,000	38,000	8,000	12,400	0,050	3	5,750
6,000	6,000	38,000	8,000	14,000	0,050	3	6,000
6,750	8,000	42,000	10,000	15,400	0,100	3	6,750
7,000	8,000	42,000	10,000	16,400	0,100	3	7,000
7,750	8,000	42,000	10,000	16,400	0,100	3	7,750
8,000	8,000	43,000	11,000	19,000	0,100	3	8,000
8,700	10,000	48,000	11,000	17,400	0,100	3	8,700
9,000	10,000	48,000	11,000	17,400	0,100	3	9,000
9,700	10,000	48,000	11,000	17,400	0,100	3	9,700
10,000	10,000	50,000	13,000	23,000	0,100	3	10,000
12,000	12,000	55,000	15,000	24,500	0,100	3	12,000
14,000	14,000	58,000	15,000	28,000	0,150	3	14,000
16,000	16,000	62,000	18,000	29,000	0,150	3	16,000
18,000	18,000	70,000	20,000	37,000	0,150	3	18,000
20,000	20,000	75,000	22,000	41,000	0,150	3	20,000

Frese in MD

Mini frese frontali (a 3 taglienti)

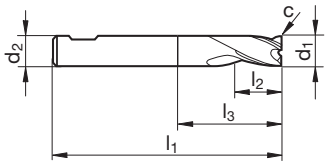
Catalogo n° 64180

NH | WN | VHM | TiAlN | e8 | R | HA/HB | 45°

P	M	K	N	S	H
	•			•	

Parametri di lav. ind. a pag. 568

- esecuzione stabile
- tagliente al centro
- Fresa One-Way ottimale



d1 e8 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
1,000	3,000	38,000	2,000	3,900	0,025	3	1,000
1,200	3,000	38,000	2,000	3,900	0,025	3	1,200
1,500	3,000	38,000	3,000	4,900	0,025	3	1,500
1,800	3,000	38,000	3,000	4,900	0,025	3	1,800
2,000	6,000	45,000	4,000	7,400	0,025	3	2,000
2,500	6,000	45,000	5,000	8,400	0,050	3	2,500
3,000	6,000	45,000	6,000	9,400	0,050	3	3,000
3,500	6,000	45,000	6,000	9,400	0,050	3	3,500
4,000	6,000	45,000	7,000	10,400	0,050	3	4,000
4,500	6,000	45,000	8,000	12,400	0,050	3	4,500
5,000	6,000	45,000	8,000	12,400	0,050	3	5,000
5,500	6,000	45,000	8,000	12,400	0,050	3	5,500
5,750	6,000	45,000	10,000	15,000	0,050	3	5,750
6,000	6,000	45,000	10,000	15,000	0,050	3	6,000
6,750	8,000	55,000	10,000	15,400	0,100	3	6,750
7,000	8,000	55,000	12,000	18,400	0,100	3	7,000
7,750	8,000	55,000	12,000	18,400	0,100	3	7,750
8,000	8,000	55,000	13,000	19,000	0,100	3	8,000
8,700	10,000	55,000	14,000	20,400	0,100	3	8,700
9,000	10,000	55,000	14,000	20,400	0,100	3	9,000
9,700	10,000	55,000	16,000	23,400	0,100	3	9,700
10,000	10,000	55,000	16,000	25,000	0,100	3	10,000

Frese in MD

Frese frontali (a 3 taglienti)

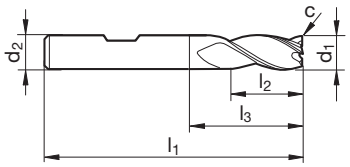
Catalogo n° 74522

N	DIN 6527 K	VHM	luci-do	h10	R	HB	30°

P	M	K	N	S	H
•	•	•	•		

Parametri di lav. ind. a pag. 566

- extra corto
- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
2,000	6,000	50,000	3,000	7,400	0,025	3	2,000
3,000	6,000	50,000	4,000	8,400	0,050	3	3,000
4,000	6,000	54,000	5,000	10,400	0,050	3	4,000
5,000	6,000	54,000	6,000	12,400	0,050	3	5,000
5,500	6,000	54,000	7,000	14,900	0,050	3	5,500
6,000	6,000	54,000	7,000	18,000	0,050	3	6,000
7,000	8,000	58,000	8,000	16,900	0,100	3	7,000
8,000	8,000	58,000	9,000	22,000	0,100	3	8,000
10,000	10,000	66,000	11,000	26,000	0,100	3	10,000
12,000	12,000	73,000	12,000	28,000	0,100	3	12,000
14,000	14,000	75,000	14,000	30,000	0,150	3	14,000
16,000	16,000	82,000	16,000	34,000	0,150	3	16,000
18,000	18,000	84,000	18,000	36,000	0,150	3	18,000
20,000	20,000	92,000	20,000	42,000	0,150	3	20,000

Frese in MD

Frese frontali (a 3 taglienti)

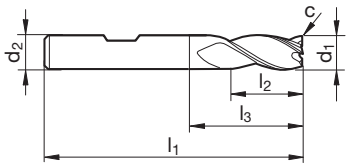
Catalogo n° 64522

N	DIN 6527K	VHM	TiAlN	h10	R	HB	30° A

P	M	K	N	S	H
●	●	●	○	●	

Parametri di lav. ind. a pag. 566

- extra corto
- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
2,000	6,000	50,000	3,000	7,400	0,025	3	2,000
3,000	6,000	50,000	4,000	8,400	0,050	3	3,000
4,000	6,000	54,000	5,000	10,400	0,050	3	4,000
5,000	6,000	54,000	6,000	12,400	0,050	3	5,000
6,000	6,000	54,000	7,000	18,000	0,050	3	6,000
7,000	8,000	58,000	8,000	16,900	0,100	3	7,000
8,000	8,000	58,000	9,000	22,000	0,100	3	8,000
10,000	10,000	66,000	11,000	26,000	0,100	3	10,000
12,000	12,000	73,000	12,000	28,000	0,100	3	12,000
14,000	14,000	75,000	14,000	30,000	0,150	3	14,000
16,000	16,000	82,000	16,000	34,000	0,150	3	16,000
20,000	20,000	92,000	20,000	42,000	0,150	3	20,000

Frese in MD

Frese frontali (a 3 taglienti)

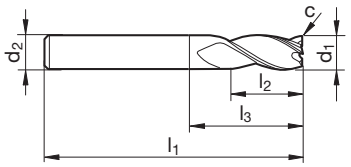
Catalogo n° 54523

N | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 30° A

P	M	K	N	S	H
●	●	●	○	●	

Parametri di lav. ind. a pag. 568

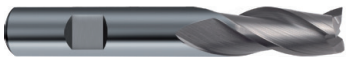
- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
2,000	6,000	57,000	6,000	10,400	0,025	3	2,000
2,500	6,000	57,000	7,000	11,400	0,050	3	2,500
3,000	6,000	57,000	7,000	11,400	0,050	3	3,000
3,500	6,000	57,000	7,000	11,400	0,050	3	3,500
4,000	6,000	57,000	8,000	13,900	0,050	3	4,000
4,500	6,000	57,000	8,000	13,900	0,050	3	4,500
5,000	6,000	57,000	10,000	16,900	0,050	3	5,000
6,000	6,000	57,000	10,000	21,000	0,050	3	6,000
8,000	8,000	63,000	16,000	27,000	0,100	3	8,000
10,000	10,000	72,000	19,000	32,000	0,100	3	10,000
12,000	12,000	83,000	22,000	38,000	0,100	3	12,000
14,000	14,000	83,000	22,000	38,000	0,150	3	14,000
16,000	16,000	92,000	26,000	44,000	0,150	3	16,000
18,000	18,000	92,000	26,000	44,000	0,150	3	18,000
20,000	20,000	104,000	32,000	54,000	0,150	3	20,000

Frese in MD

Frese frontali (a 3 taglienti)



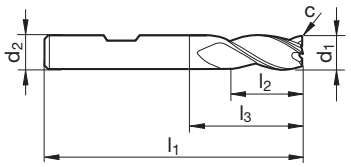
Catalogo n° 74523

N | DIN 6527 L | VHM | lucido | h10 | R | HB | 30°

P	M	K	N	S	H
•	•	•	•		

Parametri di lav. ind. a pag. 566

- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
2,000	6,000	57,000	6,000	10,400	0,025	3	2,000
2,500	6,000	57,000	7,000	11,400	0,050	3	2,500
3,000	6,000	57,000	7,000	11,400	0,050	3	3,000
3,500	6,000	57,000	7,000	11,400	0,050	3	3,500
4,000	6,000	57,000	8,000	13,900	0,050	3	4,000
4,500	6,000	57,000	8,000	13,900	0,050	3	4,500
5,000	6,000	57,000	10,000	16,900	0,050	3	5,000
6,000	6,000	57,000	10,000	21,000	0,050	3	6,000
8,000	8,000	63,000	16,000	27,000	0,100	3	8,000
10,000	10,000	72,000	19,000	32,000	0,100	3	10,000
12,000	12,000	83,000	22,000	38,000	0,100	3	12,000
14,000	14,000	83,000	22,000	38,000	0,150	3	14,000
16,000	16,000	92,000	26,000	44,000	0,150	3	16,000
18,000	18,000	92,000	26,000	44,000	0,150	3	18,000
20,000	20,000	104,000	32,000	54,000	0,150	3	20,000

Frese in MD

Frese frontali (a 3 taglienti)

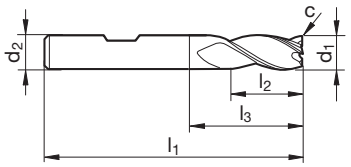
Catalogo n° 64523

N	DIN 6527 L	VHM	TiAlN	h10	R	HB	30°

P	M	K	N	S	H
●	●	●	○	●	

Parametri di lav. ind. a pag. 568

- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
2,000	6,000	57,000	6,000	9,400	0,025	3	2,000
2,500	6,000	57,000	7,000	10,400	0,050	3	2,500
3,000	6,000	57,000	7,000	11,900	0,050	3	3,000
3,500	6,000	57,000	7,000	12,400	0,050	3	3,500
4,000	6,000	57,000	8,000	13,400	0,050	3	4,000
4,500	6,000	57,000	8,000	14,900	0,050	3	4,500
5,000	6,000	57,000	10,000	16,900	0,050	3	5,000
6,000	6,000	57,000	10,000	21,000	0,050	3	6,000
8,000	8,000	63,000	16,000	27,000	0,100	3	8,000
10,000	10,000	72,000	19,000	32,000	0,100	3	10,000
12,000	12,000	83,000	22,000	38,000	0,100	3	12,000
14,000	14,000	83,000	22,000	38,000	0,150	3	14,000
16,000	16,000	92,000	26,000	44,000	0,150	3	16,000
18,000	18,000	92,000	26,000	44,000	0,150	3	18,000
20,000	20,000	104,000	32,000	54,000	0,150	3	20,000

Frese in MD

Frese frontali (a 3 taglienti)

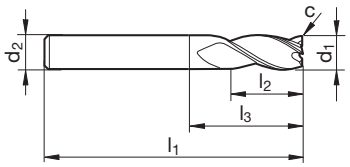
Catalogo n° 74424

N | WN | VHM | lucido | h10 | R | HA | 30°

P	M	K	N	S	H
●		○	○		

Parametri di lav. ind. a pag. 568

- extra lungo
- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
3,000	3,000	75,000	20,000	47,000	0,050	3	3,000
4,000	4,000	75,000	25,000	47,000	0,050	3	4,000
5,000	5,000	75,000	30,000	47,000	0,050	3	5,000
6,000	6,000	75,000	30,000	39,000	0,050	3	6,000
8,000	8,000	100,000	40,000	64,000	0,100	3	8,000
10,000	10,000	100,000	40,000	60,000	0,100	3	10,000
12,000	12,000	150,000	45,000	105,000	0,100	3	12,000
16,000	16,000	150,000	65,000	102,000	0,150	3	16,000
20,000	20,000	150,000	65,000	100,000	0,150	3	20,000

Frese in MD

Frese frontali (a 3 taglienti)

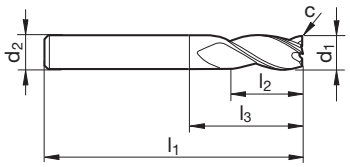
Catalogo n° 54424

N	WN	VHM	TiAlN	h10	R	HA	30°

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 568

- extra lungo
- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
3,000	3,000	75,000	20,000	47,000	0,050	3	3,000
4,000	4,000	75,000	25,000	47,000	0,050	3	4,000
5,000	5,000	75,000	30,000	47,000	0,050	3	5,000
6,000	6,000	75,000	30,000	39,000	0,050	3	6,000
8,000	8,000	100,000	40,000	64,000	0,100	3	8,000
10,000	10,000	100,000	40,000	60,000	0,100	3	10,000
12,000	12,000	150,000	45,000	105,000	0,100	3	12,000
16,000	16,000	150,000	65,000	102,000	0,150	3	16,000
20,000	20,000	150,000	65,000	100,000	0,150	3	20,000

Frese in MD

Frese frontali (a 3 taglienti) NH

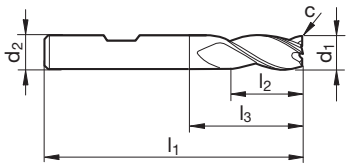
Catalogo n° 64570

NH | DIN 6527K | VHM | TiAlN | h10 | R | HB | 45°

P	M	K	N	S	H
●	●	●		○	

Parametri di lav. ind. a pag. 568

- Fresa ad alto rendimento universale
- extra corto
- tagliente al centro



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
3,000	6,000	50,000	4,000	7,900	0,050	3	3,000
4,000	6,000	54,000	5,000	8,900	0,050	3	4,000
5,000	6,000	54,000	6,000	11,400	0,050	3	5,000
6,000	6,000	54,000	7,000	18,000	0,050	3	6,000
8,000	8,000	58,000	9,000	22,000	0,100	3	8,000
10,000	10,000	66,000	11,000	26,000	0,100	3	10,000
12,000	12,000	73,000	12,000	28,000	0,100	3	12,000
16,000	16,000	82,000	16,000	34,000	0,150	3	16,000
18,000	18,000	84,000	18,000	36,000	0,150	3	18,000
20,000	20,000	92,000	20,000	42,000	0,150	3	20,000

Frese in MD

Frese frontali (a 3 taglienti) NH

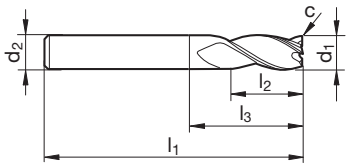
Catalogo n° 74478

NH | DIN 6527 L | VHM | lucido | h10 | R | HA | 45°

P	M	K	N	S	H
●	●	●			

Parametri di lav. ind. a pag. 566

- high cutting performance, very smooth operation
- Fresa ad alto rendimento universale
- tagliente al centro



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
3,000	6,000	57,000	7,000	11,400	0,050	3	3,000
3,500	6,000	57,000	7,000	11,400	0,050	3	3,500
4,000	6,000	57,000	8,000	13,900	0,050	3	4,000
4,500	6,000	57,000	8,000	13,900	0,050	3	4,500
5,000	6,000	57,000	10,000	16,900	0,050	3	5,000
6,000	6,000	57,000	10,000	21,000	0,050	3	6,000
8,000	8,000	63,000	16,000	27,000	0,100	3	8,000
10,000	10,000	72,000	19,000	32,000	0,100	3	10,000
12,000	12,000	83,000	22,000	38,000	0,100	3	12,000
14,000	14,000	83,000	22,000	38,000	0,150	3	14,000
16,000	16,000	92,000	26,000	44,000	0,150	3	16,000
18,000	18,000	92,000	26,000	44,000	0,150	3	18,000
20,000	20,000	104,000	32,000	54,000	0,150	3	20,000

Frese in MD

Frese frontali (a 3 taglienti) NH

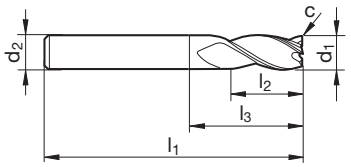
Catalogo n° 64478

NH | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 45°

P	M	K	N	S	H
●	●	●		○	

Parametri di lav. ind. a pag. 568

- high cutting performance, very smooth operation
- Fresa ad alto rendimento universale
- tagliente al centro



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
1,000	3,000	38,000	2,000	3,400	0,020	3	1,000
1,500	3,000	38,000	3,000	5,900	0,020	3	1,500
2,000	6,000	57,000	6,000	8,900	0,030	3	2,000
2,500	6,000	57,000	7,000	9,900	0,040	3	2,500
3,000	6,000	57,000	7,000	10,900	0,050	3	3,000
3,500	6,000	57,000	7,000	10,900	0,050	3	3,500
4,000	6,000	57,000	8,000	11,900	0,060	3	4,000
4,500	6,000	57,000	8,000	13,400	0,070	3	4,500
5,000	6,000	57,000	10,000	15,400	0,080	3	5,000
6,000	6,000	57,000	10,000	21,000	0,090	3	6,000
8,000	8,000	63,000	16,000	27,000	0,120	3	8,000
10,000	10,000	72,000	19,000	32,000	0,150	3	10,000
12,000	12,000	83,000	22,000	38,000	0,180	3	12,000
14,000	14,000	83,000	22,000	38,000	0,210	3	14,000
16,000	16,000	92,000	26,000	44,000	0,190	3	16,000
18,000	18,000	92,000	26,000	44,000	0,220	3	18,000
20,000	20,000	104,000	32,000	54,000	0,240	3	20,000

Frese in MD

Frese frontali (a 3 taglienti) NH

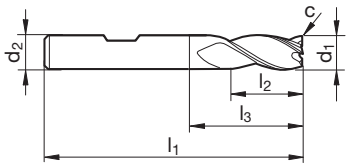
Catalogo n° 64571

NH | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 45° A

P	M	K	N	S	H
●	●	●		○	

Parametri di lav. ind. a pag. 568

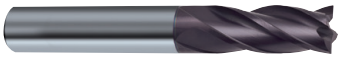
- high cutting performance, very smooth operation
- Fresa ad alto rendimento universale
- tagliente al centro



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
3,000	6,000	57,000	7,000	10,900	0,050	3	3,000
3,500	6,000	57,000	7,000	10,900	0,050	3	3,500
4,000	6,000	57,000	8,000	11,900	0,050	3	4,000
4,500	6,000	57,000	8,000	13,400	0,050	3	4,500
5,000	6,000	57,000	10,000	15,400	0,050	3	5,000
6,000	6,000	57,000	10,000	21,000	0,050	3	6,000
8,000	8,000	63,000	16,000	27,000	0,100	3	8,000
9,000	10,000	72,000	16,000	25,400	0,100	3	9,000
10,000	10,000	72,000	19,000	32,000	0,100	3	10,000
12,000	12,000	83,000	22,000	38,000	0,100	3	12,000
14,000	14,000	83,000	22,000	38,000	0,150	3	14,000
16,000	16,000	92,000	26,000	44,000	0,150	3	16,000
18,000	18,000	92,000	26,000	44,000	0,150	3	18,000
20,000	20,000	104,000	32,000	54,000	0,150	3	20,000

Frese in MD

Frese frontali (a 4 taglienti)



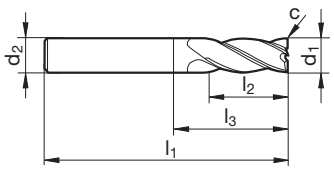
Catalogo n° 54524

N	DIN 6527 L	VHM	TiAlN	h10	R	HA	30°

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 570

- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
2,000	6,000	57,000	7,000	11,400	0,025	4	2,000
3,000	6,000	57,000	8,000	12,900	0,050	4	3,000
4,000	6,000	57,000	11,000	16,900	0,050	4	4,000
5,000	6,000	57,000	13,000	19,900	0,050	4	5,000
6,000	6,000	57,000	13,000	21,000	0,050	4	6,000
8,000	8,000	63,000	19,000	27,000	0,100	4	8,000
10,000	10,000	72,000	22,000	32,000	0,100	4	10,000
12,000	12,000	83,000	26,000	38,000	0,100	4	12,000
14,000	14,000	83,000	26,000	38,000	0,150	4	14,000
16,000	16,000	92,000	32,000	44,000	0,150	4	16,000
18,000	18,000	92,000	32,000	44,000	0,150	4	18,000
20,000	20,000	104,000	38,000	54,000	0,150	4	20,000

Frese in MD

Frese frontali (a 4 taglienti)

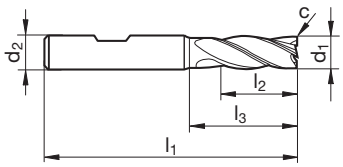
Catalogo n° 74525

N	DIN 6527 L	VHM	lucido	h10	R	HB	30°

P	M	K	N	S	H
•	•	•	•		

Parametri di lav. ind. a pag. 570

- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
3,000	6,000	57,000	8,000	12,900	0,050	4	3,000
4,000	6,000	57,000	11,000	16,900	0,050	4	4,000
5,000	6,000	57,000	13,000	19,900	0,050	4	5,000
6,000	6,000	57,000	13,000	21,000	0,050	4	6,000
8,000	8,000	63,000	19,000	27,000	0,100	4	8,000
10,000	10,000	72,000	22,000	32,000	0,100	4	10,000
12,000	12,000	83,000	26,000	38,000	0,100	4	12,000
14,000	14,000	83,000	26,000	38,000	0,150	4	14,000
16,000	16,000	92,000	32,000	44,000	0,150	4	16,000
18,000	18,000	92,000	32,000	44,000	0,150	4	18,000
20,000	20,000	104,000	38,000	54,000	0,150	4	20,000

Frese in MD

Frese frontali (a 4 taglienti)

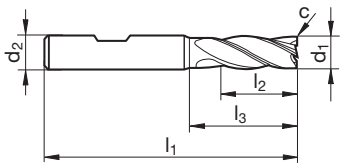
Catalogo n° 64525

N	DIN 6527 L	VHM	TiAlN	h10	R	HB	30°

P	M	K	N	S	H
●	○	●			

Parametri di lav. ind. a pag. 570

- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
2,000	6,000	57,000	7,000	9,900	0,025	4	2,000
3,000	6,000	57,000	8,000	12,400	0,050	4	3,000
4,000	6,000	57,000	11,000	15,900	0,050	4	4,000
5,000	6,000	57,000	13,000	19,400	0,050	4	5,000
6,000	6,000	57,000	13,000	21,000	0,050	4	6,000
7,000	8,000	63,000	16,000	23,900	0,100	4	7,000
8,000	8,000	63,000	19,000	27,000	0,100	4	8,000
10,000	10,000	72,000	22,000	32,000	0,100	4	10,000
12,000	12,000	83,000	26,000	38,000	0,100	4	12,000
14,000	14,000	83,000	26,000	38,000	0,150	4	14,000
16,000	16,000	92,000	32,000	44,000	0,150	4	16,000
18,000	18,000	92,000	32,000	44,000	0,150	4	18,000
20,000	20,000	104,000	38,000	54,000	0,150	4	20,000

Frese in MD

Frese frontali (a 4 taglienti)

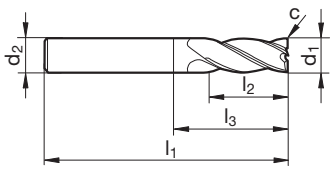
Catalogo n° 54444

N	WN	VHM	TiAlN	h10	R	HA	30°

P	M	K	N	S	H
●		●	○		

Parametri di lav. ind. a pag. 570

- extra lungo
- tagliente al centro
- uso universale



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
3,000	3,000	75,000	20,000	47,000	0,050	4	3,000
4,000	4,000	75,000	25,000	47,000	0,050	4	4,000
5,000	5,000	75,000	30,000	47,000	0,050	4	5,000
6,000	6,000	75,000	30,000	39,000	0,050	4	6,000
8,000	8,000	100,000	40,000	64,000	0,100	4	8,000
10,000	10,000	100,000	40,000	60,000	0,100	4	10,000
12,000	12,000	150,000	45,000	105,000	0,100	4	12,000
14,000	14,000	150,000	45,000	105,000	0,150	4	14,000
16,000	16,000	150,000	65,000	102,000	0,150	4	16,000
18,000	18,000	150,000	65,000	102,000	0,150	4	18,000
20,000	20,000	150,000	65,000	100,000	0,150	4	20,000

Frese in MD

Frese frontali con spigolo raggiato

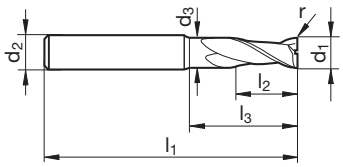
Catalogo n° 54522

N | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○	●	

Parametri di lav. ind. a pag. 566

- rettifica della spoglia
- tagliente al centro



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	r	Z	Codice
6,000	6,000	5,700	57,000	10,000	21,000	0,500	2	**6,005**
6,000	6,000	5,700	57,000	10,000	21,000	1,000	2	**6,010**
8,000	8,000	7,700	63,000	16,000	27,000	0,500	2	**8,005**
8,000	8,000	7,700	63,000	16,000	27,000	1,000	2	**8,010**
8,000	8,000	7,700	63,000	16,000	27,000	1,500	2	**8,015**
10,000	10,000	9,500	72,000	19,000	32,000	0,500	2	**10,005**
10,000	10,000	9,500	72,000	19,000	32,000	1,000	2	**10,010**
10,000	10,000	9,500	72,000	19,000	32,000	1,500	2	**10,015**
10,000	10,000	9,500	72,000	19,000	32,000	2,000	2	**10,020**
12,000	12,000	11,500	83,000	22,000	38,000	0,500	2	**12,005**
12,000	12,000	11,500	83,000	22,000	38,000	1,000	2	**12,010**
12,000	12,000	11,500	83,000	22,000	38,000	2,000	2	**12,020**
16,000	16,000	15,500	92,000	26,000	44,000	1,000	2	**16,010**
16,000	16,000	15,500	92,000	26,000	44,000	2,000	2	**16,020**

Frese in MD

Frese frontali con spigolo raggiato

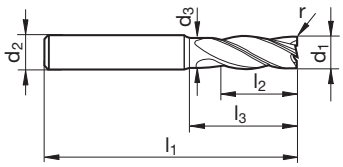
Catalogo n° 54526

N | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 30° A

P	M	K	N	S	H
●	●	●	○	●	

Parametri di lav. ind. a pag. 570

- rettifica della spoglia
- tagliente al centro



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	r	Z	Codice
6,000	6,000	5,700	57,000	13,000	21,000	0,500	4	**6,005**
6,000	6,000	5,700	57,000	13,000	21,000	1,000	4	**6,010**
8,000	8,000	7,700	63,000	19,000	27,000	0,500	4	**8,005**
8,000	8,000	7,700	63,000	19,000	27,000	1,000	4	**8,010**
8,000	8,000	7,700	63,000	19,000	27,000	1,500	4	**8,015**
8,000	8,000	7,700	63,000	19,000	27,000	2,000	4	**8,020**
10,000	10,000	9,500	72,000	22,000	32,000	0,500	4	**10,005**
10,000	10,000	9,500	72,000	22,000	32,000	0,800	4	**10,008**
10,000	10,000	9,500	72,000	22,000	32,000	1,000	4	**10,010**
10,000	10,000	9,500	72,000	22,000	32,000	1,500	4	**10,015**
10,000	10,000	9,500	72,000	22,000	32,000	2,000	4	**10,020**
12,000	12,000	11,500	83,000	26,000	38,000	0,500	4	**12,005**
12,000	12,000	11,500	83,000	26,000	38,000	0,800	4	**12,008**
12,000	12,000	11,500	83,000	26,000	38,000	1,000	4	**12,010**
12,000	12,000	11,500	83,000	26,000	38,000	1,500	4	**12,015**
12,000	12,000	11,500	83,000	26,000	38,000	2,000	4	**12,020**
16,000	16,000	15,500	92,000	32,000	44,000	1,000	4	**16,010**
16,000	16,000	15,500	92,000	32,000	44,000	2,000	4	**16,020**
20,000	20,000	19,500	104,000	38,000	54,000	1,000	4	**20,010**
20,000	20,000	19,500	104,000	38,000	54,000	2,000	4	**20,020**

Frese in MD

Frese frontali con spigolo raggiato

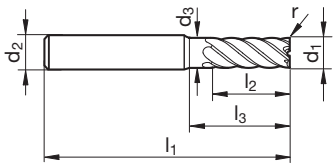
Catalogo n° 54206

NH | DIN 6527L | VHM | TiAlN | h10 | R | HA | 45°

P	M	K	N	S	H
●	●	●	○	●	○

Parametri di lav. ind. a pag. 574

- qualità di superficie notevole con operazioni di lappatura
- rettifica della spoglia
- tagliente al centro



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	r	Z	Codice
6,000	6,000	5,700	57,000	13,000	20,000	0,500	6	**6,005**
6,000	6,000	5,700	57,000	13,000	20,000	1,000	6	**6,010**
8,000	8,000	7,700	63,000	19,000	26,000	0,500	6	**8,005**
8,000	8,000	7,700	63,000	19,000	26,000	1,000	6	**8,010**
8,000	8,000	7,700	63,000	19,000	26,000	1,500	6	**8,015**
8,000	8,000	7,700	63,000	19,000	26,000	2,000	6	**8,020**
10,000	10,000	9,500	72,000	22,000	30,000	0,500	6	**10,005**
10,000	10,000	9,500	72,000	22,000	30,000	0,800	6	**10,008**
10,000	10,000	9,500	72,000	22,000	30,000	1,000	6	**10,010**
10,000	10,000	9,500	72,000	22,000	30,000	1,500	6	**10,015**
10,000	10,000	9,500	72,000	22,000	30,000	2,000	6	**10,020**
12,000	12,000	11,500	83,000	26,000	36,000	0,500	6	**12,005**
12,000	12,000	11,500	83,000	26,000	36,000	0,800	6	**12,008**
12,000	12,000	11,500	83,000	26,000	36,000	1,000	6	**12,010**
12,000	12,000	11,500	83,000	26,000	36,000	1,500	6	**12,015**
12,000	12,000	11,500	83,000	26,000	36,000	2,000	6	**12,020**
16,000	16,000	15,500	92,000	32,000	42,000	1,000	6	**16,010**
16,000	16,000	15,500	92,000	32,000	42,000	2,000	6	**16,020**
20,000	20,000	19,500	104,000	38,000	52,000	1,000	8	**20,010**
20,000	20,000	19,500	104,000	38,000	52,000	2,000	8	**20,020**

Frese in MD

Frese frontali per finitura, taglienti multipli

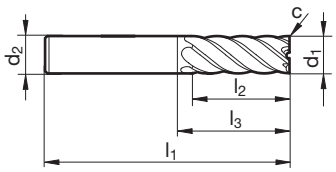
Catalogo n° 54205

NH	WN	VHM	TiAlN	h10	R	HA	45°

P	M	K	N	S	H
●	●	●	○	●	○

Parametri di lav. ind. a pag. 574

- eccezionale qualita' della finitura superficiale
- tagliente al centro
- adatto a superfinitura su materiale fino a 50 HRC



d1 h10 **mm**	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
3,000	6,000	57,000	8,000	11,400	0,050	6	3,000
4,000	6,000	57,000	11,000	15,900	0,050	6	4,000
5,000	6,000	57,000	13,000	17,900	0,050	6	5,000
6,000	6,000	57,000	13,000	21,000	0,050	6	6,000
8,000	8,000	63,000	19,000	27,000	0,100	6	8,000
10,000	10,000	72,000	22,000	32,000	0,100	6	10,000
12,000	12,000	83,000	26,000	38,000	0,100	6	12,000
14,000	14,000	83,000	26,000	38,000	0,150	6	14,000
16,000	16,000	92,000	32,000	44,000	0,150	6	16,000
18,000	18,000	92,000	32,000	44,000	0,150	8	18,000
20,000	20,000	104,000	38,000	54,000	0,150	8	20,000

Frese in MD

Frese frontali per finitura, taglienti multipli

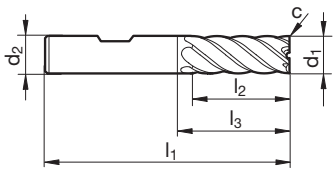
Catalogo n° 54201

NH | WN | VHM | TiAlN | h10 | R | HB | 45° A

P	M	K	N	S	H
●	●	●	○	●	○

Parametri di lav. ind. a pag. 574

- eccezionale qualita' della finitura superficiale
- tagliente al centro
- adatto a superfinitura su materiale fino a 50 HRC



d1 h10 **mm**	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
6,000	6,000	57,000	13,000	21,000	0,050	6	6,000
8,000	8,000	63,000	19,000	27,000	0,100	6	8,000
10,000	10,000	72,000	22,000	32,000	0,100	6	10,000
12,000	12,000	83,000	26,000	38,000	0,100	6	12,000
14,000	14,000	83,000	26,000	38,000	0,150	6	14,000
16,000	16,000	92,000	32,000	44,000	0,150	6	16,000
18,000	18,000	92,000	32,000	44,000	0,150	8	18,000
20,000	20,000	104,000	38,000	54,000	0,150	8	20,000

Frese in MD

Frese frontali per finitura, taglienti multipli

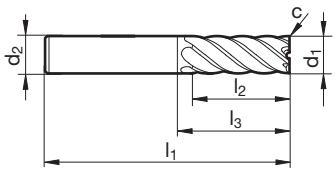
Catalogo n° 54225

NH	WN	VHM	TiAlN	h10	R	HA	45°

P	M	K	N	S	H
●	●	●	○	●	○

Parametri di lav. ind. a pag. 574

- eccezionale qualita' della finitura superficiale
- extra lungo
- tagliente al centro
- adatto a superfinitura su materiale fino a 50 HRC



d1 h10 **mm**	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
6,000	6,000	75,000	30,000	39,000	0,050	6	6,000
8,000	8,000	100,000	40,000	64,000	0,100	6	8,000
10,000	10,000	100,000	40,000	60,000	0,100	6	10,000
12,000	12,000	150,000	45,000	105,000	0,100	6	12,000
16,000	16,000	150,000	65,000	102,000	0,150	6	16,000
20,000	20,000	150,000	65,000	100,000	0,150	8	20,000

Frese in MD

Frese frontali per finitura, taglienti multipli

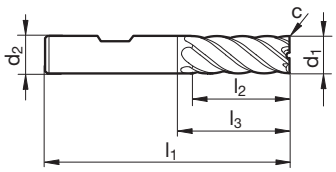
Catalogo n° 54221

NH | WN | VHM | TiAlN | h10 | R | HB | 45° A

P	M	K	N	S	H
●	●	●	○	●	○

Parametri di lav. ind. a pag. 574

- eccezionale qualita' della finitura superficiale
- extra lungo
- tagliente al centro
- adatto a superfinitura su materiale fino a 50 HRC



d1 h10 **mm**	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
6,000	6,000	75,000	30,000	39,000	0,050	6	6,000
8,000	8,000	100,000	40,000	64,000	0,100	6	8,000
10,000	10,000	100,000	40,000	60,000	0,100	6	10,000
12,000	12,000	150,000	45,000	105,000	0,100	6	12,000
16,000	16,000	150,000	65,000	102,000	0,150	6	16,000
20,000	20,000	150,000	65,000	100,000	0,150	8	20,000

Frese in MD

Frese per materiali duri, taglienti multipli

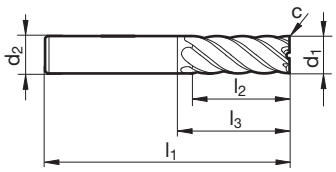
Catalogo n° 54207

H	WN	VHM	TiAl-SiN	h10	R	HA	55°

P	M	K	N	S	H
		●			●

Parametri di lav. ind. a pag. 574

- eccezionale qualita' della finitura superficiale
- tagliente al centro
- adatto per superfinitura su materiali fino a 62 HRC e superiore



d1 h10 **mm**	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
3,000	6,000	57,000	8,000	11,400	0,050	6	3,000
4,000	6,000	57,000	11,000	15,900	0,050	6	4,000
5,000	6,000	57,000	13,000	17,900	0,050	6	5,000
6,000	6,000	57,000	13,000	21,000	0,050	6	6,000
8,000	8,000	63,000	19,000	27,000	0,100	6	8,000
10,000	10,000	72,000	22,000	32,000	0,100	6	10,000
12,000	12,000	83,000	26,000	38,000	0,100	6	12,000
14,000	14,000	83,000	26,000	38,000	0,150	6	14,000
16,000	16,000	92,000	32,000	44,000	0,150	6	16,000
18,000	18,000	92,000	32,000	44,000	0,150	8	18,000
20,000	20,000	104,000	38,000	54,000	0,150	8	20,000

Frese in MD

Frese per materiali duri, taglienti multipli

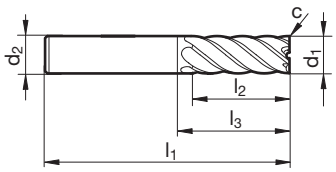
Catalogo n° 54227

H	WN	VHM	TiAl-SiN	h10	R	HA	55°

P	M	K	N	S	H
		●			●

Parametri di lav. ind. a pag. 574

- eccezionale qualita' della finitura superficiale
- extra lungo
- tagliente al centro
- adatto per superfinitura su materiali fino a 62 HRC e superiore



d1 h10 **mm**	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
6,000	6,000	75,000	30,000	39,000	0,050	6	6,000
8,000	8,000	100,000	40,000	64,000	0,100	6	8,000
10,000	10,000	100,000	40,000	60,000	0,100	6	10,000
12,000	12,000	150,000	45,000	105,000	0,100	6	12,000
16,000	16,000	150,000	65,000	102,000	0,150	6	16,000
20,000	20,000	150,000	65,000	100,000	0,150	8	20,000

Frese in MD

Frese a sgrossare

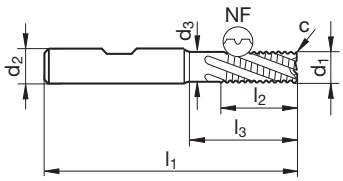
Catalogo n° 54496

NF | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 30°

P	M	K	N	S	H
●	○	●	○		

Parametri di lav. ind. a pag. 572

- per scanalatura e sgrossatura
- tagliente al centro



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
6,000	6,000	57,000	13,000	20,000	0,300	4	6,000
8,000	8,000	63,000	19,000	26,000	0,300	4	8,000
10,000	10,000	72,000	22,000	30,000	0,300	4	10,000
12,000	12,000	83,000	26,000	36,000	0,500	4	12,000
14,000	14,000	83,000	26,000	36,000	0,500	4	14,000
16,000	16,000	92,000	32,000	42,000	0,500	4	16,000
18,000	18,000	92,000	32,000	42,000	0,500	4	18,000
20,000	20,000	104,000	38,000	52,000	0,500	4	20,000
25,000	25,000	121,000	45,000	63,000	0,600	5	25,000

Frese in MD

Frese a sgrossare

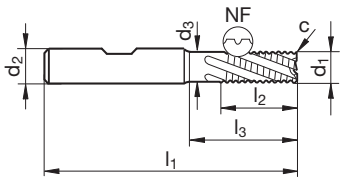
Catalogo n° 54497

NF | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 45°

P	M	K	N	S	H
●	○	●	○		

Parametri di lav. ind. a pag. 572

- per frasatura a sgrossare e a finire
- tagliente al centro



d1 h10 **mm**	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
6,000	6,000	57,000	13,000	20,000	0,300	5	6,000
8,000	8,000	63,000	19,000	26,000	0,300	5	8,000
10,000	10,000	72,000	22,000	30,000	0,300	5	10,000
12,000	12,000	83,000	26,000	36,000	0,500	5	12,000
14,000	14,000	83,000	26,000	36,000	0,500	5	14,000
16,000	16,000	92,000	32,000	42,000	0,500	6	16,000
18,000	18,000	92,000	32,000	42,000	0,500	6	18,000
20,000	20,000	104,000	38,000	52,000	0,500	6	20,000
25,000	25,000	121,000	45,000	63,000	0,600	6	25,000

Frese in MD

Frese a sgrossare

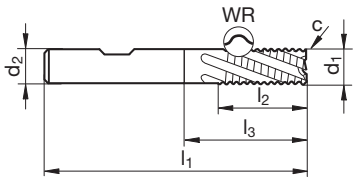
Catalogo n° 74203

WR | DIN 6527 L | VHM | lucido | h10 | R | HB | 30°

P	M	K	N	S	H
			●		

Parametri di lav. ind. a pag. 572

- alta capacità di truciolatura con alluminio e metalle NE attraverso dentatura zigrinata di sgrossatura grossolana
- tagliente al centro



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
6,000	6,000	57,000	10,000	21,000	0,300	3	6,000
8,000	8,000	63,000	16,000	27,000	0,300	3	8,000
10,000	10,000	72,000	19,000	32,000	0,300	3	10,000
12,000	12,000	83,000	22,000	38,000	0,500	3	12,000
14,000	14,000	83,000	22,000	38,000	0,500	3	14,000
16,000	16,000	92,000	26,000	44,000	0,500	3	16,000
18,000	18,000	92,000	26,000	44,000	0,500	3	18,000
20,000	20,000	104,000	32,000	54,000	0,500	3	20,000

Frese in MD

Frese a sgrossare

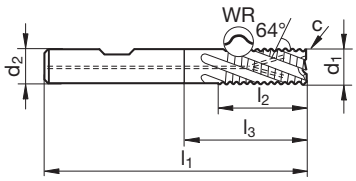
Catalogo n° 74303

WR | DIN 6527 L | VHM | lucido | h10 | R | HB | 30°

P	M	K	N	S	H
			●		

Parametri di lav. ind. a pag. 572

- con refrigerazione interna per vita utensile maggiore e asportazione truciolo ottimale
- alta capacità di truciolatura con alluminio e metalle NE attraverso dentatura zigrinata di sgrossatura grossolana
- tagliente al centro



d1 h10 **mm**	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
6,000	6,000	57,000	10,000	21,000	0,300	3	6,000
8,000	8,000	63,000	16,000	27,000	0,300	3	8,000
10,000	10,000	72,000	19,000	32,000	0,300	3	10,000
12,000	12,000	83,000	22,000	38,000	0,500	3	12,000
16,000	16,000	92,000	26,000	44,000	0,500	3	16,000
20,000	20,000	104,000	32,000	54,000	0,500	3	20,000

Frese in MD

Frese a sgrossare

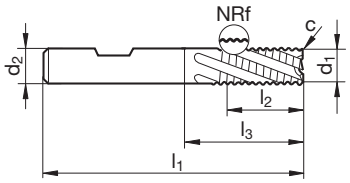
Catalogo n° 64495

NRf | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 30° A

P	M	K	N	S	H
•	•	•			

Parametri di lav. ind. a pag. 572

- dentatura zigrinata di sgrossatura fine
- tagliente al centro



d1 h10 **mm**	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
6,000	6,000	57,000	13,000	20,000	0,300	4	6,000
8,000	8,000	63,000	19,000	26,000	0,300	4	8,000
10,000	10,000	72,000	22,000	30,000	0,300	4	10,000
12,000	12,000	83,000	26,000	36,000	0,500	4	12,000
14,000	14,000	83,000	26,000	36,000	0,500	4	14,000
16,000	16,000	92,000	32,000	42,000	0,500	4	16,000
18,000	18,000	92,000	32,000	42,000	0,500	4	18,000
20,000	20,000	104,000	38,000	52,000	0,500	4	20,000

Frese in MD

Frese a sgrossare

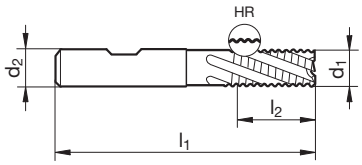
Catalogo n° 64497

HR | DIN 6527 L | VHM | TiAl-SiN | h10 | R | HB | 20°

P	M	K	N	S	H
●		●			●

Parametri di lav. ind. a pag. 572

- dentatura zigrinata di sgrossatura fine
- profilo divisione truciolo
- tagliente al centro
- per materiali difficili da lavorare con 3 ° di angolo di spoglia
- specifica per fresatura su acciaio con resistenza alla trazione, ghisa, ghisa grigia, temprati fino a 56 HRC



d1 h10 **mm**	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
6,000	6,000	57,000	13,000	21,000	0,300	4	6,000
8,000	8,000	63,000	19,000	27,000	0,300	4	8,000
10,000	10,000	72,000	22,000	32,000	0,300	4	10,000
12,000	12,000	83,000	26,000	38,000	0,500	4	12,000
16,000	16,000	92,000	32,000	44,000	0,500	4	16,000
20,000	20,000	104,000	38,000	54,000	0,500	4	20,000

Frese in MD

Frese a raggio

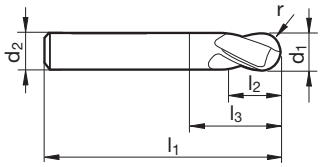
Catalogo n° 74543

N | DIN 6527 L | VHM | lucido | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○		

Parametri di lav. ind. a pag. 574

- tagliente al centro
- raggio



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Codice
3,000	6,000	57,000	7,000	11,400	1,500	2	3,000
4,000	6,000	57,000	8,000	13,900	2,000	2	4,000
5,000	6,000	57,000	10,000	16,900	2,500	2	5,000
6,000	6,000	57,000	10,000	21,000	3,000	2	6,000
8,000	8,000	63,000	16,000	27,000	4,000	2	8,000
10,000	10,000	72,000	19,000	32,000	5,000	2	10,000
12,000	12,000	83,000	22,000	38,000	6,000	2	12,000
14,000	14,000	83,000	22,000	38,000	7,000	2	14,000
16,000	16,000	92,000	26,000	44,000	8,000	2	16,000
18,000	18,000	92,000	26,000	44,000	9,000	2	18,000
20,000	20,000	104,000	32,000	54,000	10,000	2	20,000

Frese in MD

Frese a raggio

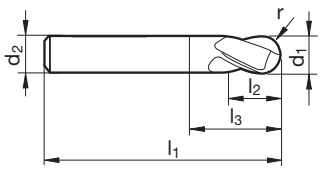
Catalogo n° 54541

N | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 574

- tagliente al centro
- raggio



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Codice
0,500	3,000	38,000	1,000	2,100	0,250	2	0,500
0,800	3,000	38,000	1,000	2,100	0,400	2	0,800
1,000	3,000	38,000	2,000	3,900	0,500	2	1,000
1,500	3,000	38,000	3,000	6,400	0,750	2	1,500
2,000	6,000	57,000	6,000	9,400	1,000	2	2,000
3,000	6,000	57,000	7,000	11,900	1,500	2	3,000
4,000	6,000	57,000	8,000	13,400	2,000	2	4,000
5,000	6,000	57,000	10,000	16,900	2,500	2	5,000
6,000	6,000	57,000	10,000	21,000	3,000	2	6,000
8,000	8,000	63,000	16,000	27,000	4,000	2	8,000
10,000	10,000	72,000	19,000	32,000	5,000	2	10,000
12,000	12,000	83,000	22,000	38,000	6,000	2	12,000
14,000	14,000	83,000	22,000	38,000	7,000	2	14,000
16,000	16,000	92,000	26,000	44,000	8,000	2	16,000
18,000	18,000	92,000	26,000	44,000	9,000	2	18,000
20,000	20,000	104,000	32,000	54,000	10,000	2	20,000

Frese in MD

Frese a raggio

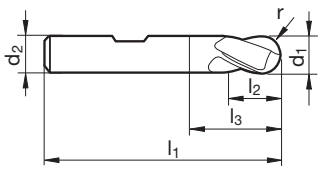
Catalogo n° 64542

N | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 30° A

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 574

- tagliente al centro
- raggio



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Codice
1,000	3,000	38,000	2,000	3,900	0,500	2	1,000
1,500	3,000	38,000	3,000	6,400	0,750	2	1,500
2,000	6,000	57,000	6,000	9,400	1,000	2	2,000
3,000	6,000	57,000	7,000	11,900	1,500	2	3,000
4,000	6,000	57,000	8,000	13,400	2,000	2	4,000
5,000	6,000	57,000	10,000	16,900	2,500	2	5,000
6,000	6,000	57,000	10,000	21,000	3,000	2	6,000
8,000	8,000	63,000	16,000	27,000	4,000	2	8,000
10,000	10,000	72,000	19,000	32,000	5,000	2	10,000
12,000	12,000	83,000	22,000	38,000	6,000	2	12,000
14,000	14,000	83,000	22,000	38,000	7,000	2	14,000
16,000	16,000	92,000	26,000	44,000	8,000	2	16,000
18,000	18,000	92,000	26,000	44,000	9,000	2	18,000
20,000	20,000	104,000	32,000	54,000	10,000	2	20,000

Frese in MD

Frese a raggio

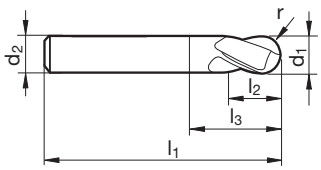
Catalogo n° 74545

N	WN	VHM	luci-do	h10	R	HA	30°

P	M	K	N	S	H
●	○	●	○		

Parametri di lav. ind. a pag. 574

- extra lungo
- tagliente al centro
- raggio



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Codice
3,000	3,000	75,000	20,000	47,000	1,500	2	3,000
4,000	4,000	75,000	25,000	47,000	2,000	2	4,000
5,000	5,000	75,000	30,000	47,000	2,500	2	5,000
6,000	6,000	75,000	30,000	39,000	3,000	2	6,000
8,000	8,000	100,000	40,000	64,000	4,000	2	8,000
10,000	10,000	100,000	40,000	60,000	5,000	2	10,000
12,000	12,000	150,000	45,000	105,000	6,000	2	12,000

Frese in MD

Frese a raggio

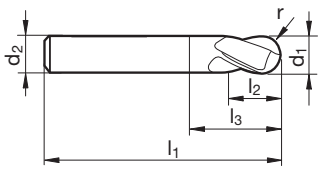
Catalogo n° 64545

N | WN | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 574

- extra lungo
- tagliente al centro
- raggio



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Codice
3,000	3,000	75,000	20,000	47,000	1,500	2	3,000
4,000	4,000	75,000	25,000	47,000	2,000	2	4,000
5,000	5,000	75,000	30,000	47,000	2,500	2	5,000
6,000	6,000	75,000	30,000	39,000	3,000	2	6,000
8,000	8,000	100,000	40,000	64,000	4,000	2	8,000
10,000	10,000	100,000	40,000	60,000	5,000	2	10,000
12,000	12,000	150,000	45,000	105,000	6,000	2	12,000

Frese in MD

Frese a raggio

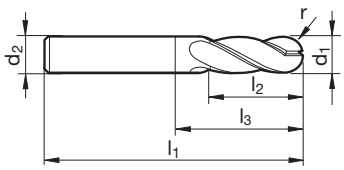
Catalogo n° 74531

N | DIN 6528 | VHM | lucido | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○		

Parametri di lav. ind. a pag. 574

- tagliente al centro
- raggio



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Codice
4,000	4,000	50,000	11,000	22,000	2,000	4	4,000
5,000	5,000	50,000	13,000	22,000	2,500	4	5,000
6,000	6,000	57,000	13,000	21,000	3,000	4	6,000
8,000	8,000	63,000	19,000	27,000	4,000	4	8,000
10,000	10,000	72,000	22,000	32,000	5,000	4	10,000
12,000	12,000	83,000	26,000	38,000	6,000	4	12,000
16,000	16,000	92,000	32,000	44,000	8,000	4	16,000

Frese in MD

Frese a raggio

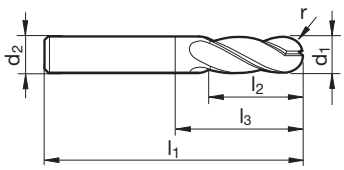
Catalogo n° 54531

N | DIN 6528 | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 574

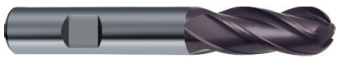
- tagliente al centro
- raggio



d1 h10 **mm**	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Codice
4,000	4,000	50,000	11,000	22,000	2,000	4	4,000
5,000	5,000	50,000	13,000	22,000	2,500	4	5,000
6,000	6,000	57,000	13,000	21,000	3,000	4	6,000
8,000	8,000	63,000	19,000	27,000	4,000	4	8,000
10,000	10,000	72,000	22,000	32,000	5,000	4	10,000
12,000	12,000	83,000	26,000	38,000	6,000	4	12,000
14,000	14,000	83,000	26,000	38,000	7,000	4	14,000
16,000	16,000	92,000	32,000	44,000	8,000	4	16,000
18,000	18,000	92,000	32,000	44,000	9,000	4	18,000
20,000	20,000	104,000	38,000	54,000	10,000	4	20,000

Frese in MD

Frese a raggio



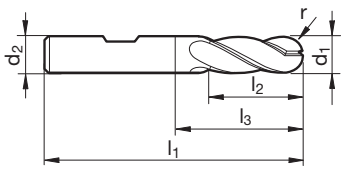
Catalogo n° 64532

N | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 30° A

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 574

- tagliente al centro
- raggio



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Codice
3,000	6,000	57,000	8,000	11,400	1,500	4	3,000
4,000	6,000	57,000	11,000	14,400	2,000	4	4,000
5,000	6,000	57,000	13,000	17,400	2,500	4	5,000
6,000	6,000	57,000	13,000	21,000	3,000	4	6,000
8,000	8,000	63,000	19,000	27,000	4,000	4	8,000
10,000	10,000	72,000	22,000	32,000	5,000	4	10,000
12,000	12,000	83,000	26,000	38,000	6,000	4	12,000
14,000	14,000	83,000	26,000	38,000	7,000	4	14,000
16,000	16,000	92,000	32,000	44,000	8,000	4	16,000
18,000	18,000	92,000	32,000	44,000	9,000	4	18,000
20,000	20,000	104,000	38,000	54,000	10,000	4	20,000

Frese in MD

Frese a raggio

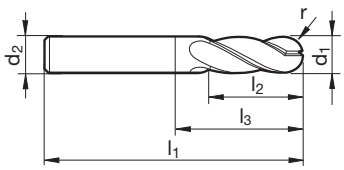
Catalogo n° 64535

N | WN | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○	○	

Parametri di lav. ind. a pag. 574

- extra lungo
- tagliente al centro
- raggio



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Codice
3,000	3,000	75,000	20,000	47,000	1,500	4	3,000
4,000	4,000	75,000	25,000	47,000	2,000	4	4,000
5,000	5,000	75,000	30,000	47,000	2,500	4	5,000
6,000	6,000	75,000	30,000	39,000	3,000	4	6,000
8,000	8,000	100,000	40,000	64,000	4,000	4	8,000
10,000	10,000	100,000	40,000	60,000	5,000	4	10,000
12,000	12,000	150,000	45,000	105,000	6,000	4	12,000

Frese in MD

Frese per copiatori con affilatura torica

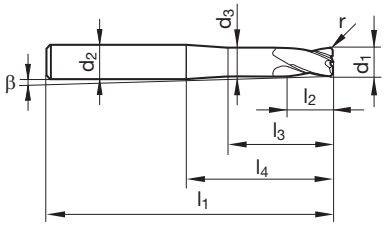
Catalogo n° 54304

H	WN	VHM	TiAl-SiN	h8	R	HA	30°

P	M	K	N	S	H
●	●	●		○	●

Parametri di lav. ind. a pag. 578

- corto
- tagliente al centro
- per l'industria della formatura
- lunga vita utensile grazie al rivestimento molto forte



d1 h8 **mm**	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	r mm	β °	Z	Codice
3,000	6,000	2,800	57,000	5,000	9,400	21,000	0,500	4,200	4	3,000
4,000	6,000	3,800	57,000	6,000	13,400	21,000	0,500	2,800	4	4,000
5,000	6,000	4,800	57,000	8,000	15,900	21,000	0,500	1,400	4	5,000
6,000	6,000	5,700	57,000	9,000	21,000	21,000	1,000		4	6,000
8,000	8,000	7,700	63,000	12,000	27,000	27,000	1,000		4	8,000
10,000	10,000	9,500	72,000	15,000	32,000	32,000	1,500		4	10,000
12,000	12,000	11,500	83,000	18,000	38,000	38,000	1,500		4	12,000
16,000	16,000	15,500	92,000	24,000	44,000	44,000	2,000		4	16,000

Frese in MD

Frese per copiatori con affilatura torica

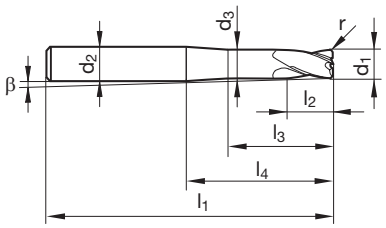
Catalogo n° 54305

H	WN	VHM	TiAl-SiN	h8	R	HA	30°

P	M	K	N	S	H
●	●	●		●	●

Parametri di lav. ind. a pag. 578

- lungo
- tagliente al centro
- con raggio di azione extra lungo per l'industria della formatura
- lunga vita utensile grazie al rivestimento molto forte

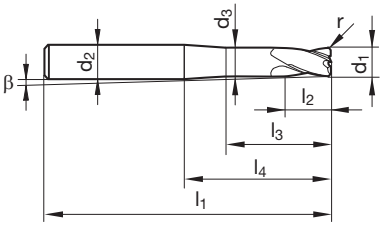


d1 h8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	r mm	β °	Z	Codice
6,000	6,000	5,700	75,000	9,000	38,000	39,000	1,000		4	6,000
8,000	8,000	7,700	100,000	12,000	63,000	64,000	1,000		4	8,000
10,000	10,000	9,500	100,000	15,000	58,000	60,000	1,500		4	10,000
12,000	12,000	11,500	150,000	18,000	103,000	105,000	1,500		4	12,000
16,000	16,000	15,500	150,000	24,000	100,000	102,000	2,000		4	16,000

Frese in MD

Frese per copiatori con affilatura torica

Catalogo n° 54302



N	WN	VHM	TiAl-SiN	h8	R	HA	30°

P	M	K	N	S	H
●	●	●	●	○	

Parametri di lav. ind. a pag. 576

- per sgrossatura, finitura e superfinitura in condizioni HSC in pressofusione e stampi
- tagliente al centro
- adatto per materiale da 40 a 54 HRC
- lunga vita utensile grazie al rivestimento molto forte

d1 h8 **mm**	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	r mm	β °	Z	Codice
2,000	6,000	1,800	57,000	3,000	6,200	20,000	0,500	5,900	2	2,000
3,000	6,000	2,800	57,000	3,500	8,400	20,000	0,500	4,400	2	3,000
4,000	6,000	3,800	57,000	4,000	9,400	20,000	1,000	3,100	2	4,000
6,000	6,000	5,600	57,000	6,000	19,000	21,000	2,000		2	6,000
8,000	8,000	7,600	63,000	7,000	25,000	27,000	2,000		2	8,000
10,000	10,000	9,600	72,000	8,000	28,000	32,000	3,000		2	10,000
12,000	12,000	11,500	83,000	10,000	33,000	38,000	4,000		2	12,000

Frese in MD

Frese per copiatori con affilatura torica

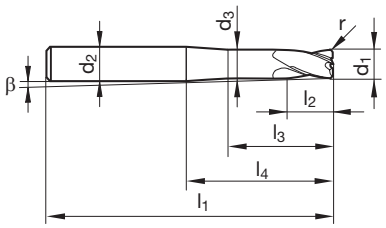
Catalogo n° 54303

N | WN | VHM | TiAl-SiN | h8 | R | HA | 30°

P	M	K	N	S	H
●	●	●	●	○	

Parametri di lav. ind. a pag. 576

- con raggio di azione extra lungo per sgrossatura, lappatura e superfinitura a condizioni HSC nell'industria dello stampo e formatura
- tagliente al centro
- adatto per materiale da 40 a 54 HRC
- lunga vita utensile grazie al rivestimento molto forte



d1 h8 **mm**	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	r mm	β °	Z	Codice
2,000	6,000	1,800	80,000	3,000	8,000	40,000	0,500	2,900	2	2,000
3,000	6,000	2,800	80,000	3,500	12,000	40,000	0,500	2,200	2	3,000
4,000	6,000	3,800	80,000	4,000	20,000	40,000	1,000	1,500	2	4,000
6,000	8,000	5,600	100,000	6,000	59,000	60,000	2,000	1,000	2	6,000
8,000	10,000	7,600	120,000	7,000	74,000	75,000	2,000	0,800	2	8,000
10,000	12,000	9,600	120,000	8,000	68,000	70,000	3,000	0,900	2	10,000
12,000	16,000	11,500	150,000	10,000	95,800	100,000	4,000	1,200	2	12,000

Frese in MD

Frese a raggio per copiatori

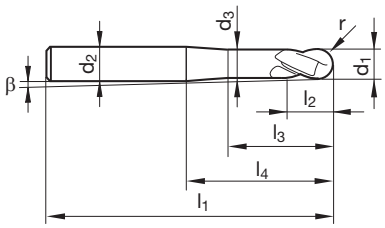
Catalogo n° 54306

H	WN	VHM	TiAl-SiN	h8	R	HA	30°

P	M	K	N	S	H
●	●	●		●	●

Parametri di lav. ind. a pag. 578

- corto
- tagliente al centro
- lunga vita utensile grazie al rivestimento molto forte



d1 h8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	r mm	β °	Z	Codice
0,500	3,000	0,400	38,000	0,750	2,600	10,000	0,250	7,400	2	0,500
0,800	3,000	0,700	38,000	1,200	3,500	10,000	0,400	6,600	2	0,800
1,000	3,000	0,900	38,000	1,500	4,000	10,000	0,500	6,100	2	1,000
1,500	3,000	1,400	38,000	2,250	5,500	10,000	0,750	4,700	2	1,500
2,000	6,000	1,900	57,000	3,000	9,400	21,000	1,000	5,800	2	2,000
3,000	6,000	2,700	57,000	5,000	11,600	21,000	1,500	4,400	2	3,000
4,000	6,000	3,700	57,000	6,000	14,500	21,000	2,000	3,100	2	4,000
5,000	6,000	4,700	57,000	8,000	17,300	21,000	2,500	1,600	2	5,000
6,000	6,000	5,700	57,000	9,000	20,000	21,000	3,000		2	6,000
8,000	8,000	7,700	63,000	12,000	26,000	27,000	4,000		2	8,000
10,000	10,000	9,500	72,000	15,000	30,000	32,000	5,000		2	10,000
12,000	12,000	11,500	83,000	18,000	36,000	38,000	6,000		2	12,000
16,000	16,000	15,500	92,000	24,000	42,000	44,000	8,000		2	16,000

Frese in MD

Frese a raggio per copiatori

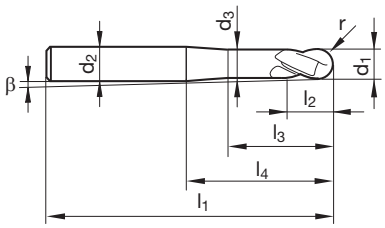
Catalogo n° 54307

H	WN	VHM	TiAl-SiN	h8	R	HA	30°

P	M	K	N	S	H
●	●	●		●	●

Parametri di lav. ind. a pag. 578

- lungo
- tagliente al centro
- con raggio di azione extra lungo per l'industria della formatura
- lunga vita utensile grazie al rivestimento molto forte



d1 h8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	r mm	β °	Z	Codice
3,000	6,000	2,700	75,000	5,000	20,000	39,000	1,500	2,300	2	3,000
4,000	6,000	3,700	75,000	6,000	20,000	39,000	2,000	1,600	2	4,000
5,000	6,000	4,700	75,000	8,000	20,000	39,000	2,500	0,800	2	5,000
6,000	6,000	5,700	75,000	9,000	38,000	39,000	3,000		2	6,000
8,000	8,000	7,700	100,000	12,000	63,000	64,000	4,000		2	8,000
10,000	10,000	9,500	100,000	15,000	58,000	60,000	5,000		2	10,000
12,000	12,000	11,500	150,000	18,000	103,000	105,000	6,000		2	12,000
16,000	16,000	15,500	150,000	24,000	100,000	102,000	8,000		2	16,000

Frese in MD

Frese a raggio per copiatori

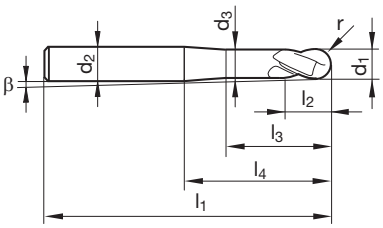
Catalogo n° 54300

N | WN | VHM | TiAl-SiN | h8 | R | HA | 30°

P	M	K	N	S	H
●	●	●	●	○	

Parametri di lav. ind. a pag. 576

- corto
- tagliente al centro
- per la lavorazione di acciai duri fino a 54 HRC
- lunga vita utensile grazie al rivestimento molto forte



d1 h8 **mm**	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	r mm	β °	Z	Codice
2,000	6,000	1,800	57,000	3,000	6,200	20,000	1,000	6,100	2	2,000
3,000	6,000	2,800	57,000	3,500	8,400	20,000	1,500	4,700	2	3,000
4,000	6,000	3,800	57,000	4,000	9,400	20,000	2,000	3,200	2	4,000
6,000	6,000	5,600	57,000	6,000	19,000	21,000	3,000		2	6,000
8,000	8,000	7,600	63,000	7,000	25,000	27,000	4,000		2	8,000
10,000	10,000	9,600	72,000	8,000	28,000	32,000	5,000		2	10,000
12,000	12,000	11,500	83,000	10,000	33,000	38,000	6,000		2	12,000

Frese in MD

Frese a raggio per copiatori

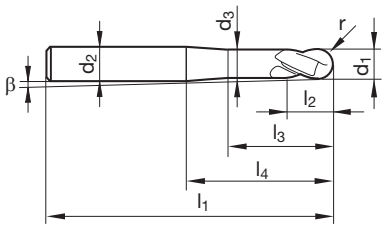
Catalogo n° 54301

N	WN	VHM	TiAl-SiN	h8	R	HA	30°

P	M	K	N	S	H
●	●	●	●	○	

Parametri di lav. ind. a pag. 576

- lungo
- tagliente al centro
- con raggio di azione extra lungo per sgrossatura, lappatura e superfinitura a condizioni HSC nell'industria dello stampo e formatura
- lunga vita utensile grazie al rivestimento molto forte



d1 h8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	r mm	β °	Z	Codice
2,000	6,000	1,800	80,000	3,000	8,000	40,000	1,000	3,000	2	2,000
3,000	6,000	2,800	80,000	3,500	12,000	40,000	1,500	2,300	2	3,000
4,000	6,000	3,800	80,000	4,000	20,000	40,000	2,000	1,600	2	4,000
6,000	8,000	5,600	100,000	6,000	59,000	60,000	3,000	1,100	2	6,000
8,000	10,000	7,600	120,000	7,000	74,000	75,000	4,000	0,900	2	8,000
10,000	12,000	9,600	120,000	8,000	68,000	70,000	5,000	0,900	2	10,000
12,000	16,000	11,500	150,000	10,000	95,800	100,000	6,000	1,300	2	12,000

Frese in MD

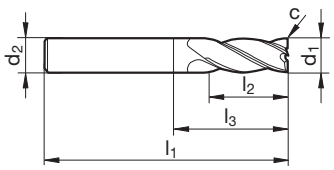
Fresa pilota

Catalogo n° 54700

N	DIN 6527 L	VHM	Al-TiN+	m8	R	HA	30°

P	M	K	N	S	H
●	●	●	●	●	●

- per fresare e foratura pilota
- adatto anche in combinazione con punte a cannone o punte per fori profondi, tipo SUPERV-T o SUPERV-NX
- tagliente al centro



d1 m8 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Codice
1,400	3,000	38,000	3,000	5,900	0,010	4	1,400
1,500	3,000	38,000	4,000	6,900	0,020	4	1,500
1,800	3,000	38,000	6,000	8,900	0,020	4	1,800
2,000	3,000	38,000	6,500	9,400	0,020	4	2,000
2,100	3,000	38,000	6,500	9,900	0,020	4	2,100
2,300	3,000	38,000	6,500	9,900	0,020	4	2,300
2,500	3,000	38,000	6,500	9,900	0,030	4	2,500
2,800	3,000	38,000	6,500	10,000	0,030	4	2,800
3,000	6,000	57,000	8,000	12,400	0,030	4	3,000
3,500	6,000	57,000	10,000	14,900	0,040	4	3,500
4,000	6,000	57,000	11,000	15,900	0,040	4	4,000
4,500	6,000	57,000	11,000	17,400	0,050	4	4,500
5,000	6,000	57,000	13,000	19,400	0,050	4	5,000
5,500	6,000	57,000	13,000	20,400	0,060	4	5,500
6,000	8,000	63,000	13,000	20,400	0,060	4	6,000
6,500	8,000	63,000	13,000	20,900	0,070	4	6,500
7,000	8,000	63,000	16,000	23,900	0,070	4	7,000
7,500	8,000	63,000	16,000	23,900	0,080	4	7,500
8,000	10,000	72,000	19,000	26,900	0,080	4	8,000
8,500	10,000	72,000	19,000	28,400	0,090	4	8,500
9,000	10,000	72,000	19,000	28,400	0,090	4	9,000
10,000	12,000	83,000	22,000	31,400	0,100	4	10,000
11,000	12,000	83,000	26,000	36,400	0,110	4	11,000
12,000	14,000	83,000	26,000	37,400	0,120	4	12,000

Utensili di sbavatura e smussatura

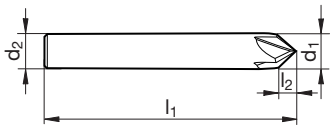
Fresa frontali a 60° per sbavatura

Catalogo n° 53393

Super AF-60 | WN | VHM | Al-TiN | 60° | js9 | R | HA

P	M	K	N	S	H
●	●	●	●	●	

- Utensile per sbavatura e smusso per la lavorazione in entrata del foro con angolo di 60°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
4,000	4,000	50,000	3,500	4	**4,000**
6,000	6,000	57,000	5,200	4	**6,000**
8,000	8,000	63,000	7,000	4	**8,000**
10,000	10,000	72,000	8,700	4	**10,000**
12,000	12,000	83,000	10,400	4	**12,000**

Utensili di sbavatura e smussatura

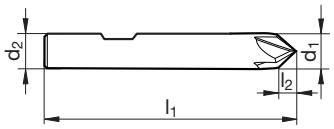
Fresa frontali a 60° per sbavatura

Catalogo n° 53394

Super AF-60 | WN | VHM | Al-TiN | 60° | js9 | R | HB

P	M	K	N	S	H
●	●	●	●	●	

- Utensile per sbavatura e smusso per la lavorazione in entrata del foro con angolo di 60°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
6,000	6,000	57,000	5,200	4	**6,000**
8,000	8,000	63,000	7,000	4	**8,000**
10,000	10,000	72,000	8,700	4	**10,000**
12,000	12,000	83,000	10,400	4	**12,000**

Utensili di sbavatura e smussatura

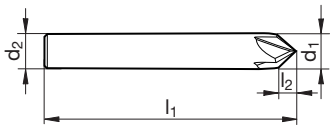
Fresa frontali a 90°per sbavatura

Catalogo n° 53395

Super AF-90 | WN | VHM | Al-TiN | 90° | js9 | R | HA

P	M	K	N	S	H
●	●	●	●	●	

- Utensile per sbavatura e smusso per la lavorazione in entrata del foro con angolo di 90°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
4,000	4,000	50,000	2,000	4	**4,000**
6,000	6,000	57,000	3,000	4	**6,000**
8,000	8,000	63,000	4,000	4	**8,000**
10,000	10,000	72,000	5,000	4	**10,000**
12,000	12,000	83,000	6,000	4	**12,000**

Utensili di sbavatura e smussatura

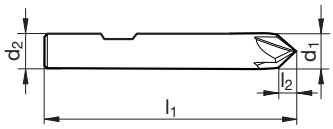
Fresa frontali a 90°per sbavatura

Catalogo n° 53396

Super AF-90 | WN | VHM | Al-TiN | 90° | js9 | R | HB

P	M	K	N	S	H
●	●	●	●	●	

- Utensile per sbavatura e smusso per la lavorazione in entrata del foro con angolo di 90°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
4,000	4,000	50,000	2,000	4	**4,000**
6,000	6,000	57,000	3,000	4	**6,000**
8,000	8,000	63,000	4,000	4	**8,000**
10,000	10,000	72,000	5,000	4	**10,000**
12,000	12,000	83,000	6,000	4	**12,000**

Utensili di sbavatura e smussatura

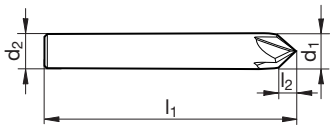
Fresa frontali a 120°per sbavatura

Catalogo n° 53397

Super AF-120	WN	VHM	Al-TiN	120°	js9	R	HA

P	M	K	N	S	H
●	●	●	●	●	

- Utensile per sbavatura e smusso per la lavorazione in entrata del foro con angolo di 120°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	**Codice**
4,000	4,000	50,000	1,200	4	**4,000**
6,000	6,000	57,000	1,800	4	**6,000**
8,000	8,000	63,000	2,400	4	**8,000**
10,000	10,000	72,000	2,900	4	**10,000**
12,000	12,000	83,000	3,500	4	**12,000**

Utensili di sbavatura e smussatura

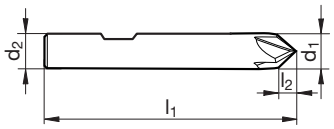
Fresa frontali a 120°per sbavatura

Catalogo n° 53398

Super AF-120 | WN | VHM | Al-TiN | 120° | js9 | R | HB

P	M	K	N	S	H
●	●	●	●	●	

- Utensile per sbavatura e smusso per la lavorazione in entrata del foro con angolo di 120°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
6,000	6,000	57,000	1,800	4	**6,000**
8,000	8,000	63,000	2,400	4	**8,000**
10,000	10,000	72,000	2,900	4	**10,000**
12,000	12,000	83,000	3,500	4	**12,000**

Utensili di sbavatura e smussatura

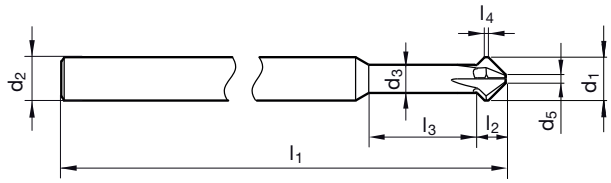
Sbavatori a 90° ad avanzamento ed estrazione

Catalogo n° 52365

Super AD-90 | WN | VHM | AlTiN nano | R | HA

P	M	K	N	S	H
●	●				

- Utensile per sbavatura e smussatura per la lavorazione in entrata e uscita dal foro con un angolo di smusso 90 °
- per impiego in mandrini ad espansione idraulica e per calettamento
- con codolo a DIN 6535



d1 mm	d2 h6 mm	d3 mm	d5 mm	l1 mm	l2 mm	l3 mm	l4 mm	Z	Codice
3,000	4,000	2,200	0,600	75,000	2,10	9,300	0,500	4	3,000
4,000	4,000	2,900	0,800	75,000	2,70	12,300	0,500	4	4,000
5,000	5,000	3,900	1,000	75,000	3,00	15,000	0,500	4	5,000
6,000	6,000	3,900	1,200	100,000	3,90	14,300	0,500	4	6,000
8,000	6,000	6,000	1,600	100,000	4,70		0,500	4	8,000
10,000	6,000	6,000	2,000	100,000	6,50		0,500	4	10,000
12,000	6,000	6,000	2,400	100,000	8,30		0,500	4	12,000

Frese per acciaio ad alta velocità

Frese frontali (a 2 taglienti)

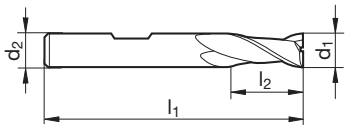
Catalogo n° 74231

N	DIN 327	M42	lucido	e8/h10	R	B	30°

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 580

- extra corto
- tagliente al centro
- materiale fino a circa 1200 N/mm²



d1 mm	Tolleranza d1	d2 mm	l1 mm	l2 mm	Z	Codice
1,000	h10	6,000	47,000	2,000	2	1,000
1,500	h10	6,000	47,000	3,000	2	1,500
2,000	e8	6,000	48,000	4,000	2	2,000
2,500	e8	6,000	49,000	5,000	2	2,500
3,000	e8	6,000	49,000	5,000	2	3,000
3,500	h10	6,000	50,000	6,000	2	3,500
4,000	e8	6,000	51,000	7,000	2	4,000
4,500	h10	6,000	51,000	7,000	2	4,500
5,000	e8	6,000	52,000	8,000	2	5,000
5,500	h10	6,000	52,000	8,000	2	5,500
6,000	e8	6,000	52,000	8,000	2	6,000
7,000	e8	10,000	60,000	10,000	2	7,000
8,000	e8	10,000	61,000	11,000	2	8,000
9,000	h10	10,000	61,000	11,000	2	9,000
10,000	e8	10,000	63,000	13,000	2	10,000
12,000	e8	12,000	73,000	16,000	2	12,000
14,000	e8	12,000	73,000	16,000	2	14,000
16,000	e8	16,000	79,000	19,000	2	16,000
18,000	e8	16,000	79,000	19,000	2	18,000
20,000	e8	20,000	88,000	22,000	2	20,000
25,000	e8	25,000	102,000	26,000	2	25,000

Frese per acciaio ad alta velocità

Frese frontali (a 2 taglienti)

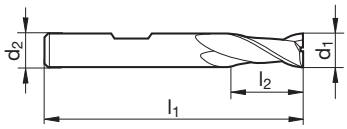
Catalogo n° 64640

N	DIN 327	M42	TiAlN	e8/h10	R	B	30°

P	M	K	N	S	H
●	●	●	○		

Parametri di lav. ind. a pag. 580

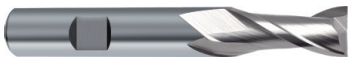
- extra corto
- tagliente al centro
- materiale fino a circa 1200 N/mm²



d1 mm	Tolleranza d1	d2 mm	l1 mm	l2 mm	Z	Codice
1,000	h10	6,000	47,000	2,000	2	1,000
1,500	h10	6,000	47,000	3,000	2	1,500
2,000	e8	6,000	48,000	4,000	2	2,000
2,500	e8	6,000	49,000	5,000	2	2,500
3,000	e8	6,000	49,000	5,000	2	3,000
3,500	h10	6,000	50,000	6,000	2	3,500
4,000	e8	6,000	51,000	7,000	2	4,000
4,500	h10	6,000	51,000	7,000	2	4,500
5,000	e8	6,000	52,000	8,000	2	5,000
5,500	h10	6,000	52,000	8,000	2	5,500
6,000	e8	6,000	52,000	8,000	2	6,000
7,000	e8	10,000	60,000	10,000	2	7,000
8,000	e8	10,000	61,000	11,000	2	8,000
9,000	h10	10,000	61,000	11,000	2	9,000
10,000	e8	10,000	63,000	13,000	2	10,000
12,000	e8	12,000	73,000	16,000	2	12,000
14,000	e8	12,000	73,000	16,000	2	14,000
16,000	e8	16,000	79,000	19,000	2	16,000
18,000	e8	16,000	79,000	19,000	2	18,000
20,000	e8	20,000	88,000	22,000	2	20,000

Frese per acciaio ad alta velocità

Frese frontali (a 2 taglienti)



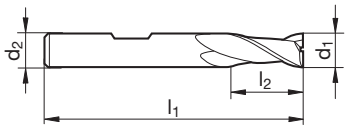
Catalogo n° 74243

N	DIN 844K	M42	lucido	e8/h10	R	B	30°

P	M	K	N	S	H
•	•	•	•		

Parametri di lav. ind. a pag. 580

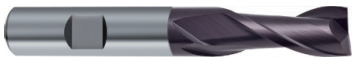
- tagliente al centro
- materiale fino a circa 1200 N/mm²



d1 mm	Tolleranza d1	d2 mm	l1 mm	l2 mm	Z	Codice
3,000	e8	6,000	52,000	8,000	2	3,000
3,500	h10	6,000	54,000	10,000	2	3,500
4,000	e8	6,000	55,000	11,000	2	4,000
4,500	h10	6,000	55,000	11,000	2	4,500
5,000	e8	6,000	57,000	13,000	2	5,000
5,500	h10	6,000	57,000	13,000	2	5,500
6,000	e8	6,000	57,000	13,000	2	6,000
7,000	e8	10,000	66,000	16,000	2	7,000
8,000	e8	10,000	69,000	19,000	2	8,000
10,000	e8	10,000	72,000	22,000	2	10,000
12,000	e8	12,000	83,000	26,000	2	12,000
14,000	e8	12,000	83,000	26,000	2	14,000
16,000	e8	16,000	92,000	32,000	2	16,000
18,000	e8	16,000	92,000	32,000	2	18,000
20,000	e8	20,000	104,000	38,000	2	20,000

Frese per acciaio ad alta velocità

Frese frontali (a 2 taglienti)



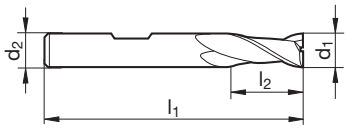
Catalogo n° 64670

N	DIN 844K	M42	TiAlN	e8/h10	R	B	30°

P	M	K	N	S	H
●	●	●	○		

Parametri di lav. ind. a pag. 580

- tagliente al centro
- materiale fino a circa 1200 N/mm²



d1 mm	Tolleranza d1	d2 mm	l1 mm	l2 mm	Z	Codice
3,000	e8	6,000	52,000	8,000	2	3,000
4,000	e8	6,000	55,000	11,000	2	4,000
5,000	e8	6,000	57,000	13,000	2	5,000
6,000	e8	6,000	57,000	13,000	2	6,000
8,000	e8	10,000	69,000	19,000	2	8,000
10,000	e8	10,000	72,000	22,000	2	10,000
12,000	e8	12,000	83,000	26,000	2	12,000
16,000	e8	16,000	92,000	32,000	2	16,000
18,000	e8	16,000	92,000	32,000	2	18,000
20,000	e8	20,000	104,000	38,000	2	20,000

Frese per acciaio ad alta velocità

Frese frontali (a 2 taglienti)

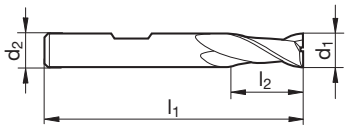
Catalogo n° 74244

N	DIN 844L	M42	lucido	h10	R	B	30°

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 580

- extra lungo
- tagliente al centro
- materiale fino a circa 1000 N/mm²



d1 mm	Tolleranza d1	d2 mm	l1 mm	l2 mm	Z	Codice
3,000	h10	6,000	56,000	12,000	2	3,000
4,000	h10	6,000	63,000	19,000	2	4,000
5,000	h10	6,000	68,000	24,000	2	5,000
6,000	h10	6,000	68,000	24,000	2	6,000
8,000	h10	10,000	88,000	38,000	2	8,000
10,000	h10	10,000	95,000	45,000	2	10,000
12,000	h10	12,000	110,000	53,000	2	12,000
14,000	h10	12,000	110,000	53,000	2	14,000
16,000	h10	16,000	123,000	63,000	2	16,000
18,000	h10	16,000	123,000	63,000	2	18,000
20,000	h10	20,000	141,000	75,000	2	20,000

Frese per acciaio ad alta velocità

Frese frontali (a 2 taglienti)

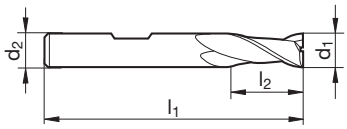
Catalogo n° 64671

N	DIN 844L	M42	TiAlN	h10	R	B	30° A

P	M	K	N	S	H
●		●			

Parametri di lav. ind. a pag. 580

- extra lungo
- tagliente al centro
- materiale fino a circa 1000 N/mm²



d1 mm	Tolleranza d1	d2 mm	l1 mm	l2 mm	Z	Codice
4,000	h10	6,000	63,000	19,000	2	4,000
5,000	h10	6,000	68,000	24,000	2	5,000
6,000	h10	6,000	68,000	24,000	2	6,000
8,000	h10	10,000	88,000	38,000	2	8,000
10,000	h10	10,000	95,000	45,000	2	10,000
12,000	h10	12,000	110,000	53,000	2	12,000
14,000	h10	12,000	110,000	53,000	2	14,000
16,000	h10	16,000	123,000	63,000	2	16,000
18,000	h10	16,000	123,000	63,000	2	18,000
20,000	h10	20,000	141,000	75,000	2	20,000

Frese per acciaio ad alta velocità

Frese frontali (a 3 taglienti)

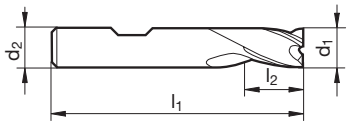
Catalogo n° 74280

N	DIN 327	M42	lucido	e8/h10	R	B	30°

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 580

- extra corto
- tagliente al centro
- materiale fino a circa 1200 N/mm²



d1 mm	d1	d2 mm	l1 mm	l2 mm	Z	Codice
2,800	h10	6,000	49,000	5,000	3	2,800
3,000	e8	6,000	49,000	5,000	3	3,000
3,800	h10	6,000	51,000	7,000	3	3,800
4,000	e8	6,000	51,000	7,000	3	4,000
4,800	h10	6,000	52,000	8,000	3	4,800
5,000	e8	6,000	52,000	8,000	3	5,000
5,750	h10	6,000	52,000	8,000	3	5,750
6,000	e8	6,000	52,000	8,000	3	6,000
6,750	h10	10,000	60,000	10,000	3	6,750
7,000	e8	10,000	60,000	10,000	3	7,000
7,750	h10	10,000	61,000	11,000	3	7,750
8,000	e8	10,000	61,000	11,000	3	8,000
9,700	h10	10,000	63,000	13,000	3	9,700
10,000	e8	10,000	63,000	13,000	3	10,000
11,700	h10	12,000	70,000	13,000	3	11,700
12,000	e8	12,000	73,000	16,000	3	12,000
13,700	h10	12,000	73,000	16,000	3	13,700
14,000	e8	12,000	73,000	16,000	3	14,000
15,700	h10	16,000	79,000	19,000	3	15,700
16,000	e8	16,000	79,000	19,000	3	16,000
18,000	e8	16,000	79,000	19,000	3	18,000
20,000	e8	20,000	88,000	22,000	3	20,000
25,000	e8	25,000	102,000	26,000	3	25,000

Frese per acciaio ad alta velocità

Frese frontali (a 3 taglienti)

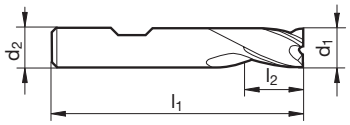
Catalogo n° 64604

N	DIN 327	M42	TiAlN	e8/h10	R	B	30°

P	M	K	N	S	H
●	●	●	○		

Parametri di lav. ind. a pag. 580

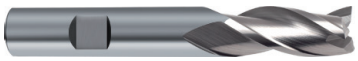
- extra corto
- tagliente al centro
- materiale fino a circa 1200 N/mm²



d1 mm	d1	d2 mm	l1 mm	l2 mm	Z	Codice
2,800	h10	6,000	49,000	5,000	3	2,800
3,000	e8	6,000	49,000	5,000	3	3,000
3,800	h10	6,000	51,000	7,000	3	3,800
4,000	e8	6,000	51,000	7,000	3	4,000
4,800	h10	6,000	52,000	8,000	3	4,800
5,000	e8	6,000	52,000	8,000	3	5,000
5,750	h10	6,000	52,000	8,000	3	5,750
6,000	e8	6,000	52,000	8,000	3	6,000
7,000	e8	10,000	60,000	10,000	3	7,000
7,750	h10	10,000	61,000	11,000	3	7,750
8,000	e8	10,000	61,000	11,000	3	8,000
9,700	h10	10,000	63,000	13,000	3	9,700
10,000	e8	10,000	63,000	13,000	3	10,000
11,700	h10	12,000	70,000	13,000	3	11,700
12,000	e8	12,000	73,000	16,000	3	12,000
14,000	e8	12,000	73,000	16,000	3	14,000
16,000	e8	16,000	79,000	19,000	3	16,000
18,000	e8	16,000	79,000	19,000	3	18,000
20,000	e8	20,000	88,000	22,000	3	20,000
25,000	e8	25,000	102,000	26,000	3	25,000

Frese per acciaio ad alta velocità

Frese frontali (a 3 taglienti)



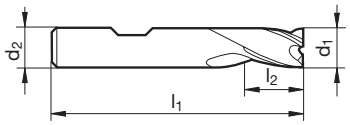
Catalogo n° 74282

N	DIN 844K	M42	lucido	e8/h10	R	B	30°

P	M	K	N	S	H
•	•	•	•		

Parametri di lav. ind. a pag. 580

- tagliente al centro
- materiale fino a circa 1200 N/mm²



d1 mm	d1	d2 mm	l1 mm	l2 mm	Z	Codice
3,000	e8	6,000	52,000	8,000	3	3,000
4,000	e8	6,000	55,000	11,000	3	4,000
5,000	e8	6,000	57,000	13,000	3	5,000
5,750	h10	6,000	57,000	13,000	3	5,750
6,000	e8	6,000	57,000	13,000	3	6,000
6,750	h10	10,000	66,000	16,000	3	6,750
7,000	e8	10,000	66,000	16,000	3	7,000
7,750	h10	10,000	69,000	19,000	3	7,750
8,000	e8	10,000	69,000	19,000	3	8,000
9,700	h10	10,000	72,000	22,000	3	9,700
10,000	e8	10,000	72,000	22,000	3	10,000
11,700	h10	12,000	79,000	22,000	3	11,700
12,000	e8	12,000	83,000	26,000	3	12,000
13,700	h10	12,000	83,000	26,000	3	13,700
14,000	e8	12,000	83,000	26,000	3	14,000
15,700	h10	16,000	92,000	32,000	3	15,700
16,000	e8	16,000	92,000	32,000	3	16,000
18,000	e8	16,000	92,000	32,000	3	18,000
20,000	e8	20,000	104,000	38,000	3	20,000

Frese per acciaio ad alta velocità

Frese frontali (a 3 taglienti)

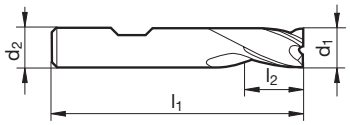
Catalogo n° 64641

N	DIN 844K	M42	TiAlN	e8/h10	R	B	30°

P	M	K	N	S	H
●	●	●	○		

Parametri di lav. ind. a pag. 580

- tagliente al centro
- materiale fino a circa 1200 N/mm²



d1 mm	d1	d2 mm	l1 mm	l2 mm	Z	Codice
3,000	e8	6,000	52,000	8,000	3	3,000
4,000	e8	6,000	55,000	11,000	3	4,000
4,800	h10	6,000	57,000	13,000	3	4,800
5,000	e8	6,000	57,000	13,000	3	5,000
6,000	e8	6,000	57,000	13,000	3	6,000
7,000	e8	10,000	66,000	16,000	3	7,000
8,000	e8	10,000	69,000	19,000	3	8,000
10,000	e8	10,000	72,000	22,000	3	10,000
12,000	e8	12,000	83,000	26,000	3	12,000
14,000	e8	12,000	83,000	26,000	3	14,000
16,000	e8	16,000	92,000	32,000	3	16,000
18,000	e8	16,000	92,000	32,000	3	18,000
20,000	e8	20,000	104,000	38,000	3	20,000

Frese per acciaio ad alta velocità

Frese frontali (a 3 taglienti)

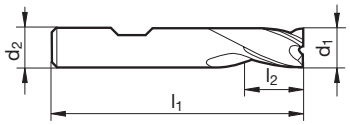
Catalogo n° 54294

N	DIN 844L	M42	TiAlN	e8	R	B	30° A

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 580

- extra lungo
- tagliente al centro
- materiale fino a circa 1000 N/mm²



d1 mm	d1	d2 mm	l1 mm	l2 mm	Z	Codice
4,000	e8	6,000	63,000	19,000	3	4,000
5,000	e8	6,000	68,000	24,000	3	5,000
6,000	e8	6,000	68,000	24,000	3	6,000
8,000	e8	10,000	88,000	38,000	3	8,000
10,000	e8	10,000	95,000	45,000	3	10,000
12,000	e8	12,000	110,000	53,000	3	12,000
14,000	e8	12,000	110,000	53,000	3	14,000
16,000	e8	16,000	123,000	63,000	3	16,000
18,000	e8	16,000	123,000	63,000	3	18,000

Frese per acciaio ad alta velocità

Frese frontali (a 3 taglienti)

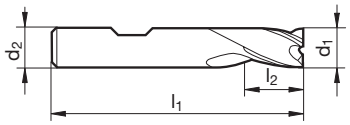
Catalogo n° 74294

N	DIN 844L	M42	lucido	h10	R	B	30°

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 580

- extra lungo
- tagliente al centro
- materiale fino a circa 1000 N/mm²



d1 mm	d1	d2 mm	l1 mm	l2 mm	Z	Codice
3,000	h10	6,000	56,000	12,000	3	3,000
4,000	h10	6,000	63,000	19,000	3	4,000
5,000	h10	6,000	68,000	24,000	3	5,000
6,000	h10	6,000	68,000	24,000	3	6,000
8,000	h10	10,000	88,000	38,000	3	8,000
10,000	h10	10,000	95,000	45,000	3	10,000
12,000	h10	12,000	110,000	53,000	3	12,000
14,000	h10	12,000	110,000	53,000	3	14,000
16,000	h10	16,000	123,000	63,000	3	16,000
18,000	h10	16,000	123,000	63,000	3	18,000
20,000	h10	20,000	141,000	75,000	3	20,000

Frese per acciaio ad alta velocità

Mini frese frontali (a 3 taglienti)

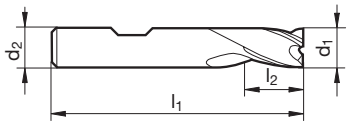
Catalogo n° 54080

N	WN	M42	TiAlN	e8	R	B	30° A

P	M	K	N	S	H
○	●	●	●	○	

Parametri di lav. ind. a pag. 580

- extra corto
- tagliente al centro
- materiale fino a circa 1200 N/mm²



d1 e8 mm	d2 mm	l1 mm	l2 mm	Z	Codice
3,000	6,000	36,000	5,000	3	3,000
4,000	6,000	38,000	7,000	3	4,000
5,000	6,000	39,000	8,000	3	5,000
6,000	6,000	39,000	8,000	3	6,000
8,000	8,000	43,000	11,000	3	8,000
10,000	10,000	50,000	13,000	3	10,000

Frese per acciaio ad alta velocità

Mini frese frontali (a 3 taglienti)

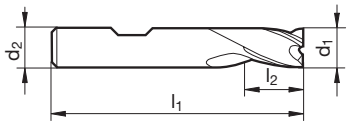
Catalogo n° 54180

N	WN	M42	TiAlN	e8	R	B	30° A

P	M	K	N	S	H
○	●	●	●	○	

Parametri di lav. ind. a pag. 580

- tagliente al centro
- materiale fino a circa 1200 N/mm²



d1 e8 mm	d2 mm	l1 mm	l2 mm	Z	Codice
3,000	6,000	39,000	8,000	3	3,000
4,000	6,000	42,000	11,000	3	4,000
5,000	6,000	44,000	13,000	3	5,000
6,000	6,000	44,000	13,000	3	6,000
8,000	8,000	51,000	19,000	3	8,000
10,000	10,000	59,000	22,000	3	10,000

Frese per acciaio ad alta velocità

Frese universali, taglienti multipli

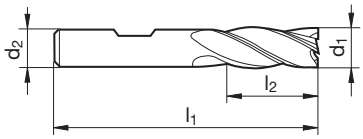
Catalogo n° 74617

N	DIN 844K	M42	lucido	k10	R	B	30° A

P	M	K	N	S	H
●	●	○	○		

Parametri di lav. ind. a pag. 582

- tagliente al centro
- materiale fino a circa 1200 N/mm²



d1 k10 mm	d2 mm	l1 mm	l2 mm	Z	Codice
2,000	6,000	51,000	7,000	4	2,000
3,000	6,000	52,000	8,000	4	3,000
4,000	6,000	55,000	11,000	4	4,000
5,000	6,000	57,000	13,000	4	5,000
6,000	6,000	57,000	13,000	4	6,000
8,000	10,000	69,000	19,000	4	8,000
9,000	10,000	69,000	19,000	4	9,000
10,000	10,000	72,000	22,000	4	10,000
12,000	12,000	83,000	26,000	4	12,000
14,000	12,000	83,000	26,000	4	14,000
15,000	12,000	83,000	26,000	4	15,000
16,000	16,000	92,000	32,000	4	16,000
18,000	16,000	92,000	32,000	4	18,000
20,000	20,000	104,000	38,000	4	20,000
25,000	25,000	121,000	45,000	5	25,000

Frese per acciaio ad alta velocità

Frese universali, taglienti multipli

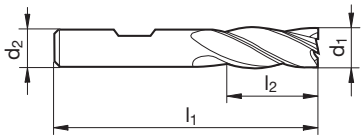
Catalogo n° 64667

N	DIN 844K	M42	TiAlN	k10	R	B	30° A

P	M	K	N	S	H
●	●	●	○		

Parametri di lav. ind. a pag. 582

- tagliente al centro
- materiale fino a circa 1200 N/mm²



d1 k10 mm	d2 mm	l1 mm	l2 mm	Z	Codice
3,000	6,000	52,000	8,000	4	3,000
4,000	6,000	55,000	11,000	4	4,000
5,000	6,000	57,000	13,000	4	5,000
6,000	6,000	57,000	13,000	4	6,000
7,000	10,000	66,000	16,000	4	7,000
8,000	10,000	69,000	19,000	4	8,000
9,000	10,000	69,000	19,000	4	9,000
10,000	10,000	72,000	22,000	4	10,000
11,000	12,000	79,000	22,000	4	11,000
12,000	12,000	83,000	26,000	4	12,000
13,000	12,000	83,000	26,000	4	13,000
14,000	12,000	83,000	26,000	4	14,000
15,000	12,000	83,000	26,000	4	15,000
16,000	16,000	92,000	32,000	4	16,000
18,000	16,000	92,000	32,000	4	18,000
20,000	20,000	104,000	38,000	4	20,000
25,000	25,000	121,000	45,000	6	25,000

Frese per acciaio ad alta velocità

Frese universali, taglienti multipli

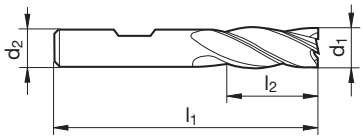
Catalogo n° 74847

N	DIN 844L	M42	lucido	k10	R	B	30°

P	M	K	N	S	H
●	○	●	○		

Parametri di lav. ind. a pag. 582

- lungo
- tagliente al centro
- materiale fino a circa 1000 N/mm²



d1 k10 mm	d2 mm	l1 mm	l2 mm	Z	Codice
3,000	6,000	56,000	12,000	4	3,000
4,000	6,000	63,000	19,000	4	4,000
5,000	6,000	68,000	24,000	4	5,000
6,000	6,000	68,000	24,000	4	6,000
7,000	10,000	80,000	30,000	4	7,000
8,000	10,000	88,000	38,000	4	8,000
9,000	10,000	88,000	38,000	4	9,000
10,000	10,000	95,000	45,000	4	10,000
11,000	12,000	102,000	45,000	4	11,000
12,000	12,000	110,000	53,000	4	12,000
14,000	12,000	110,000	53,000	4	14,000
15,000	12,000	110,000	53,000	4	15,000
16,000	16,000	123,000	63,000	4	16,000
18,000	16,000	123,000	63,000	4	18,000
20,000	20,000	141,000	75,000	4	20,000
25,000	25,000	166,000	90,000	5	25,000

Frese per acciaio ad alta velocità

Frese universali, taglienti multipli

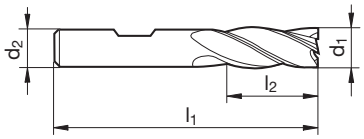
Catalogo n° 54847

N	DIN 844L	M42	TiAlN	k10	R	B	30° A

P	M	K	N	S	H
●	●	●	○		

Parametri di lav. ind. a pag. 582

- lungo
- tagliente al centro
- materiale fino a circa 1000 N/mm²



d1 k10 mm	d2 mm	l1 mm	l2 mm	Z	Codice
3,000	6,000	56,000	12,000	4	3,000
4,000	6,000	63,000	19,000	4	4,000
5,000	6,000	68,000	24,000	4	5,000
6,000	6,000	68,000	24,000	4	6,000
7,000	10,000	80,000	30,000	4	7,000
8,000	10,000	88,000	38,000	4	8,000
10,000	10,000	95,000	45,000	4	10,000
12,000	12,000	110,000	53,000	4	12,000
16,000	16,000	123,000	63,000	4	16,000
20,000	20,000	141,000	75,000	4	20,000
25,000	25,000	166,000	90,000	6	25,000
32,000	32,000	186,000	106,000	6	32,000

Frese per acciaio ad alta velocità

Frese frontali (a 4 taglienti)

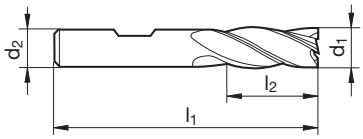
Catalogo n° 74800

N	WN	M42	luci-do	js12	R	B	30°

P	M	K	N	S	H
●	○				

Parametri di lav. ind. a pag. 582

- extra lungo
- tagliente al centro
- materiale fino a circa 1000 N/mm²



d1 js12 mm	d2 mm	l1 mm	l2 mm	Z	Codice
6,000	6,000	79,000	40,000	4	6,000
8,000	10,000	105,000	56,000	4	8,000
10,000	10,000	112,000	63,000	4	10,000
12,000	12,000	125,000	71,000	4	12,000
14,000	12,000	125,000	71,000	4	14,000
16,000	16,000	141,000	80,000	4	16,000
18,000	16,000	141,000	80,000	4	18,000
20,000	20,000	163,000	100,000	4	20,000

Frese per acciaio ad alta velocità

Frese di semifinitura

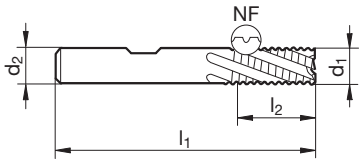
Catalogo n° 54815

NF | DIN 844K | M42 | TiAlN | k12 | R | B | 30°

P	M	K	N	S	H
●	●	●			

Parametri di lav. ind. a pag. 582

- dentatura zigrinata per sgrossatura fine
- tagliente al centro



d1 k12 **mm**	d2 mm	l1 mm	l2 mm	Z	Codice
6,000	6,000	57,000	13,000	4	6,000
8,000	10,000	69,000	19,000	4	8,000
10,000	10,000	72,000	22,000	4	10,000
12,000	12,000	83,000	26,000	4	12,000
14,000	12,000	83,000	26,000	4	14,000
16,000	16,000	92,000	32,000	4	16,000
18,000	16,000	92,000	32,000	4	18,000
20,000	20,000	104,000	38,000	4	20,000
25,000	25,000	121,000	45,000	4	25,000

Frese per acciaio ad alta velocità

Frese a sgrossare (3 taglienti)

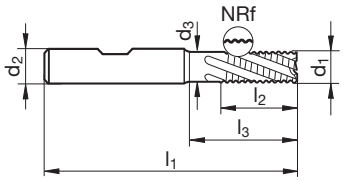
Catalogo n° 74825

NRf | DIN 844K | HSS-E-PM | lucido | k10 | R | B | 30°

P	M	K	N	S	H
●	●	●			

Parametri di lav. ind. a pag. 582

- dentatura zigrinata di sgrossatura fine
- tagliente al centro
- materiali difficilmente asportabili fino a circa 1400 N/mm²



d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
6,000	6,000	57,000	13,000	3	6,000
8,000	10,000	69,000	19,000	3	8,000
10,000	10,000	72,000	22,000	3	10,000
12,000	12,000	83,000	26,000	3	12,000
14,000	12,000	83,000	26,000	3	14,000
16,000	16,000	92,000	32,000	3	16,000
18,000	16,000	92,000	32,000	3	18,000
20,000	20,000	104,000	38,000	3	20,000

Frese per acciaio ad alta velocità

Frese a sgrossare (3 taglienti)

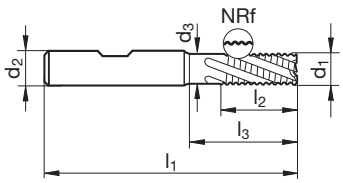
Catalogo n° 54825

NRf | DIN 844K | HSS-E-PM | TiAlN | k10 | R | B | 30° A

P	M	K	N	S	H
●	●	●			

Parametri di lav. ind. a pag. 582

- dentatura zigrinata di sgrossatura fine
- tagliente al centro
- materiali difficilmente asportabili fino a circa 1400 N/mm²



d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
6,000	6,000	57,000	13,000	3	6,000
8,000	10,000	69,000	19,000	3	8,000
10,000	10,000	72,000	22,000	3	10,000
12,000	12,000	83,000	26,000	3	12,000
16,000	16,000	92,000	32,000	3	16,000
20,000	20,000	104,000	38,000	3	20,000

Frese per acciaio ad alta velocità

Frese a sgrossare (4 taglienti)

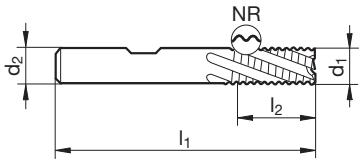
Catalogo n° 74816

NR | DIN 844K | M42 | lucido | js12 | R | B | 30°

P	M	K	N	S	H
●	●	●			

Parametri di lav. ind. a pag. 582

- dentatura grossolana per sgrossatura
- tagliente al centro



d1 js12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
6,000	6,000	57,000	13,000	4	6,000
7,000	10,000	66,000	16,000	4	7,000
8,000	10,000	69,000	19,000	4	8,000
9,000	10,000	69,000	19,000	4	9,000
10,000	10,000	72,000	22,000	4	10,000
11,000	12,000	79,000	22,000	4	11,000
12,000	12,000	83,000	26,000	4	12,000
14,000	12,000	83,000	26,000	4	14,000
15,000	12,000	83,000	26,000	4	15,000
16,000	16,000	92,000	32,000	4	16,000
18,000	16,000	92,000	32,000	4	18,000
20,000	20,000	104,000	38,000	4	20,000
25,000	25,000	121,000	45,000	4	25,000
28,000	25,000	121,000	45,000	4	28,000
30,000	25,000	121,000	45,000	4	30,000

Frese per acciaio ad alta velocità

Frese a sgrossare (4 taglienti)

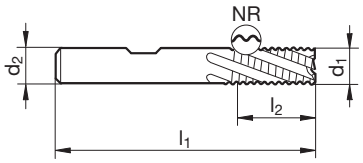
Catalogo n° 54816

NR | DIN 844K | M42 | TiAlN | k12 | R | B | 30° A

P	M	K	N	S	H
●	●	●			

Parametri di lav. ind. a pag. 582

- dentatura grossolana per sgrossatura
- tagliente al centro



d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
6,000	6,000	57,000	13,000	4	6,000
8,000	10,000	69,000	19,000	4	8,000
10,000	10,000	72,000	22,000	4	10,000
12,000	12,000	83,000	26,000	4	12,000
14,000	12,000	83,000	26,000	4	14,000
16,000	16,000	92,000	32,000	4	16,000
18,000	16,000	92,000	32,000	4	18,000
20,000	20,000	104,000	38,000	4	20,000
22,000	20,000	104,000	38,000	4	22,000
25,000	25,000	121,000	45,000	4	25,000
28,000	25,000	121,000	45,000	4	28,000
30,000	25,000	121,000	45,000	4	30,000
32,000	32,000	133,000	53,000	4	32,000

Frese per acciaio ad alta velocità

Frese a sgrossare (4 taglienti)

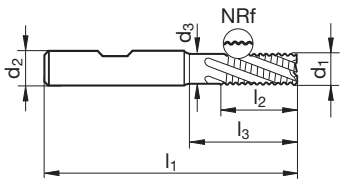
Catalogo n° 74845

NRf | DIN 844K | HSS-E-PM | lucido | k12 | R | B | 30°

P	M	K	N	S	H
●	●	●			

Parametri di lav. ind. a pag. 582

- dentatura zigrinata di sgrossatura fine
- tagliente al centro
- materiali difficilmente asportabili fino a circa 1400 N/mm²



d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
6,000	6,000	57,000	13,000	4	6,000
8,000	10,000	69,000	19,000	4	8,000
10,000	10,000	72,000	22,000	4	10,000
12,000	12,000	83,000	26,000	4	12,000
14,000	12,000	83,000	26,000	4	14,000
16,000	16,000	92,000	32,000	4	16,000
18,000	16,000	92,000	32,000	4	18,000
20,000	20,000	104,000	38,000	4	20,000
25,000	25,000	121,000	45,000	5	25,000

Frese per acciaio ad alta velocità

Frese a sgrossare (4 taglienti)

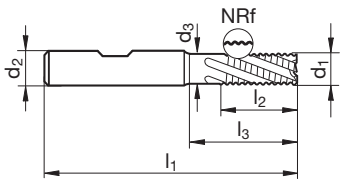
Catalogo n° 54845

NRf | DIN 844K | HSS-E-PM | TiAlN | k12 | R | B | 30°

P	M	K	N	S	H
●	●	●			

Parametri di lav. ind. a pag. 582

- dentatura zigrinata di sgrossatura fine
- tagliente al centro
- materiali difficilmente asportabili fino a circa 1400 N/mm²



d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
6,000	6,000	57,000	13,000	4	6,000
8,000	10,000	69,000	19,000	4	8,000
10,000	10,000	72,000	22,000	4	10,000
12,000	12,000	83,000	26,000	4	12,000
14,000	12,000	83,000	26,000	4	14,000
16,000	16,000	92,000	32,000	4	16,000
18,000	16,000	92,000	32,000	4	18,000
20,000	20,000	104,000	38,000	4	20,000
25,000	25,000	121,000	45,000	5	25,000

Frese per acciaio ad alta velocità

Frese a sgrossare (4 taglienti)

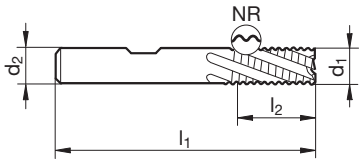
Catalogo n° 74836

NR | DIN 844L | M42 | lucido | k12 | R | B | 30°

P	M	K	N	S	H
●	●	●			

Parametri di lav. ind. a pag. 582

- dentatura grossolana per sgrossatura
- lungo
- tagliente al centro



d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
6,000	6,000	68,000	24,000	4	6,000
8,000	10,000	88,000	38,000	4	8,000
10,000	10,000	95,000	45,000	4	10,000
12,000	12,000	110,000	53,000	4	12,000
16,000	16,000	123,000	63,000	4	16,000
18,000	16,000	123,000	63,000	4	18,000
20,000	20,000	141,000	75,000	4	20,000
25,000	25,000	166,000	90,000	4	25,000

Frese per acciaio ad alta velocità

Frese a sgrossare (4 taglienti)

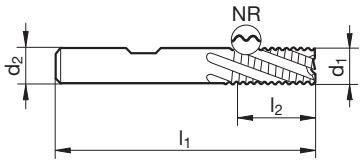
Catalogo n° 54836

NR | DIN 844L | M42 | TiAlN | k12 | R | B | 30° A

P	M	K	N	S	H
●	●	●			

Parametri di lav. ind. a pag. 582

- dentatura grossolana per sgrossatura
- lungo
- tagliente al centro



d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
6,000	6,000	68,000	24,000	4	6,000
8,000	10,000	88,000	38,000	4	8,000
10,000	10,000	95,000	45,000	4	10,000
12,000	12,000	110,000	53,000	4	12,000
14,000	12,000	110,000	53,000	4	14,000
16,000	16,000	123,000	63,000	4	16,000
18,000	16,000	123,000	63,000	4	18,000
20,000	20,000	141,000	75,000	4	20,000
25,000	25,000	166,000	90,000	4	25,000

Frese per acciaio ad alta velocità

Frese a raggio

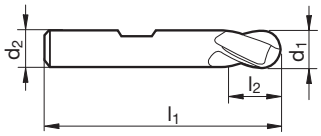
Catalogo n° 54275

N | DIN 327 | M42 | TiAlN | e8/h10 | R | B | 30°

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 580

- extra corto
- tagliente al centro
- raggio
- materiale fino a circa 1000 N/mm²



d1 mm	d1	d2 mm	l1 mm	l2 mm	Z	Codice
2,000	e8	6,000	48,000	4,000	2	2,000
3,000	e8	6,000	49,000	5,000	2	3,000
4,000	e8	6,000	51,000	7,000	2	4,000
5,000	e8	6,000	52,000	8,000	2	5,000
6,000	e8	6,000	52,000	8,000	2	6,000
7,000	e8	10,000	60,000	10,000	2	7,000
8,000	e8	10,000	61,000	11,000	2	8,000
10,000	e8	10,000	63,000	13,000	2	10,000
12,000	e8	12,000	73,000	16,000	2	12,000
13,000	h10	12,000	73,000	16,000	2	13,000
14,000	e8	12,000	73,000	16,000	2	14,000
15,000	h10	12,000	73,000	16,000	2	15,000
16,000	e8	16,000	79,000	19,000	2	16,000
20,000	e8	20,000	88,000	22,000	2	20,000

Frese per acciaio ad alta velocità

Frese a raggio

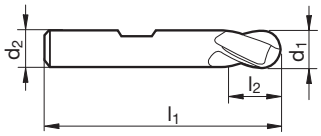
Catalogo n° 54276

N	WN	M42	TiAlN	h10	R	B	30°

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 580

- tagliente al centro
- raggio
- materiale fino a circa 1000 N/mm²



d1 **mm**	d1	d2 mm	l1 mm	l2 mm	Z	Codice
3,000	h10	6,000	56,000	8,000	2	3,000
4,000	h10	6,000	63,000	11,000	2	4,000
5,000	h10	6,000	68,000	13,000	2	5,000
6,000	h10	6,000	68,000	13,000	2	6,000
7,000	h10	10,000	80,000	16,000	2	7,000
8,000	h10	10,000	88,000	19,000	2	8,000
10,000	h10	10,000	95,000	22,000	2	10,000
12,000	h10	12,000	110,000	26,000	2	12,000
14,000	h10	12,000	110,000	26,000	2	14,000
16,000	h10	16,000	123,000	32,000	2	16,000
18,000	h10	16,000	123,000	32,000	2	18,000
20,000	h10	20,000	141,000	38,000	2	20,000

UTENSILI PER ALESARE/ SVASARE

CODICI ISO

P	acciaio, acciaio legato in alta percentuale
M	acciaio inossidabile
K	ghisa grigia, ghisa sferoidale e ghisa malleabile
N	alluminio ed altri metalli non ferrosi
S	leghe speciali, superleghe e leghe di titanio
H	acciaio temprato e ghisa temprata

Nelle pagine successive, contenenti programma, trovate per ciascun utensile consigli sull'idoneità in base ai seguenti gruppi di impiego:

● Idoneità ottima

○ Idoneità limitata

LEGENDA DEI PITTOGRAMMI

MATERIALE TAGLIENTE

VHM — Int. in metallo duro

HM — Metallo duro

HSS-E

HSS

TRATT. DI SUPERFICIE

lucido | nitrurado | tratt. a vapore | AlTiN nano | Al-TiN | TiN

TOLLERANZA SUL Ø

H7 | +0,005 | +0,004 +0,005 | js9

ANGOLO DI SVASATURA

60° | 90°

DIREZIONE DI TAGLIO

R — a destra

FORMA DEL CODOLO

HB | Cyl | HA | MK — Conico Morse

ANGOLI DELL'ELICA

0° | 7° | 8° | 25° | 45°

NORMA

DIN 9 | DIN 206 | DIN 208 | DIN 212-2 | DIN 212-3 | DIN 311 | DIN 334 | DIN 335 | DIN 373

DIN 2179 | ~DIN 8050 | ~DIN 8051 | ~DIN 8093 | WN — Norma di fabricca

TIPO

SuperR- HS-S | SuperR- HS-D | Super AF-60 | Super AF-90 | Super AF-120 | Super AD-90 | SuperE- U

FORMA

A | B | C | D

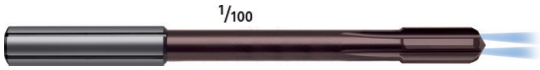
P	M	K	N	S	H	Tipo	Direzione di taglio	Forma	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Alesatori ad alto rendimento VHM

•	•	•	•		•	SuperR-HS-S	destra		**Metallo duro**	AlTiN nano	Norma di fab.	3,000 - 20,000	**72870**	694

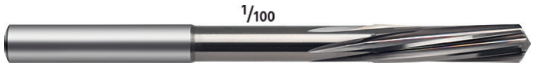
•	•	•	•		•	SuperR-HS-D	destra		**Metallo duro**	AlTiN nano	Norma di fab.	3,000 - 20,000	**72871**	695

•	•	•	•		•	SuperR-HS-S	destra		**Metallo duro**	AlTiN nano	Norma di fab.	2,970 - 12,030	**72872**	696



•	•	•	•		•	SuperR-HS-D	destra		**Metallo duro**	AlTiN nano	Norma di fab.	2,970 - 12,030	**72873**	698

Alesatori a macchina NC



•	•	•	•				destra	B	**Metallo duro**	lucido	Norma di fab.	0,980 - 12,050	**72920**	700

•	•	•	•				destra	B	**Metallo duro**	lucido	Norma di fab.	3,000 - 12,000	**72930**	702

Alesatori a macchina in MD

•	•	•	•		○		destra	A	**Metallo duro**	lucido	~DIN 8050	5,000 - 20,000	**72868**	704

•	•	•	•		○		destra	B	**Metallo duro**	lucido	~DIN 8050	5,000 - 20,000	**72867**	705

•	•	•	•		○		destra	A	**Metallo duro**	lucido	~DIN 8051	10,000 - 30,000	**72860**	708

•	•	•	•		○		destra	B	**Metallo duro**	lucido	~DIN 8051	6,000 - 32,000	**72859**	709

•	•	•	•		○		destra	A	**Metallo duro**	lucido	~DIN 8093	1,200 - 16,000	**72880**	706

•	•	•	•		○		destra	B	**Metallo duro**	lucido	~DIN 8093	1,000 - 16,000	**72881**	707

P	M	K	N	S	H	Tipo	Direzione di taglio	Forma	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Alesatori a macchina NC

●	●	●	●	○			destra	B	HSS-E	lucido	DIN 212-3	1,000 - 12,030	**72900**	710

●	●	●	●	○			destra	B	HSS-E	lucido	DIN 212-3	1,500 - 20,000	**72910**	712

Alesatori a macchina

●	○	●	●	○			destra	A	HSS-E	lucido	DIN 208	8,000 - 35,000	**72660**	718

●	○	●	●	○			destra	B	HSS-E	lucido	DIN 208	5,000 - 50,000	**72670**	719

●	○	●	●	○			destra	A	HSS-E	lucido	DIN 212-2	2,200 - 20,000	**72640**	716

●	○	●	●	○			destra	B	HSS-E	lucido	DIN 212-2	2,200 - 20,000	**72650**	717

●	○	●	●	○			destra	B	HSS-E	lucido	DIN 212-2	0,980 - 12,000	**72654**	714

Alesatori a macchina a forte torsione

●			●				destra	C	HSS-E	lucido	DIN 212-2	4,000 - 13,000	**72690**	720

Alesatori a macchina per chiodi

●	○	●	●				destra		HSS	nitrurato	DIN 311	9,500 - 37,000	**72680**	721

Alesatori a macchina per spine coniche

●		●	●				destra		HSS-E	lucido	DIN 2179	2,000 - 12,000	**72741**	722

P	M	K	N	S	H	Tipo	Direzione di taglio	Forma	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Alesatori a mano cilindrici, per spine coniche

●		●	●				destra	A	**HSS**	lucido	DIN 9	1,000 - 16,000	**72730**	723

Alesatori a mano

●		●	●				destra	A	**HSS**	lucido	DIN 206	2,500 - 34,000	**72600**	724

●		●	●				destra	B	**HSS**	lucido	DIN 206	2,000 - 35,000	**72610**	725

Svasatori 60°

●	●	●	●	○			destra	C	**HSS**	TiN	DIN 334	6,300 - 25,000	**62327**	727

●	○	●	●	●			destra	C	**HSS**	lucido	DIN 334	6,300 - 25,000	**72326**	726

Svasatori 90°

●	○	●	●	●			destra	A	**HSS**	trattati a vapore	DIN 335	8,000 - 20,000	**72345**	731

●	○	●	○	●			destra	C	**HSS**	TiN	DIN 335	4,300 - 31,000	**62347**	729

●	○	●	●	●			destra	C	**HSS**	lucido	DIN 335	4,300 - 31,000	**72346**	728

●	○	●	●	●			destra	D	**HSS**	lucido	DIN 335	15,000 - 80,000	**72356**	730

P	M	K	N	S	H	Tipo	Direzione di taglio	Forma	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Assortimenti di svasatori cilindrici a 90°

●	○	●	○	○			destra	C	**HSS**	TiN	DIN 335		**62399**	733

●	○	●	●	○			destra	C	**HSS**	lucido	DIN 335		**72399**	732

Frese per sedi viti con guide, esecuzione fine

●	○	●	●	○			destra		**HSS**	lucido	DIN 373	6,000 - 20,000	**72304**	734

Frese per sedi viti con guide, esecuzione media

●	○	●	●	○			destra		**HSS**	lucido	DIN 373	6,000 - 18,000	**72305**	735

Fresa frontali a 60° per sbavatura

●	●	●	●	●		SuperAF-60	destra		**Metallo duro**	AlTiN	Norma di fab.	4,000 - 12,000	**53393**	736

●	●	●	●	●		SuperAF-60	destra		**Metallo duro**	AlTiN	Norma di fab.	6,000 - 12,000	**53394**	737

Fresa frontali a 90°per sbavatura

●	●	●	●	●		SuperAF-90	destra		**Metallo duro**	AlTiN	Norma di fab.	4,000 - 12,000	**53395**	738

P	M	K	N	S	H	Tipo	Direzione di taglio	Forma	Materiale tagliente	Superficie	Norma	d1/mm	Catalogo n°	Pagina

Fresa frontali a 90°per sbavatura

•	•	•	•	•		SuperAF-90	destra		**Metallo duro**	AlTiN	Norma di fab.	4,000 - 12,000	**53396**	739

Fresa frontali a 120°per sbavatura

•	•	•	•	•		Super-AF-120	destra		**Metallo duro**	AlTiN	Norma di fab.	4,000 - 12,000	**53397**	740

•	•	•	•	•		Super-AF-120	destra		**Metallo duro**	AlTiN	Norma di fab.	6,000 - 12,000	**53398**	741

Sbavatori a 90° ad avanzamento ed estrazione

•	•					SuperAD-90	destra		**Metallo duro**	AlTiN nano	Norma di fab.	3,000 - 12,000	**52365**	742

Utensili sbavatori

•	•		○			SuperE-U	destra		**Metallo duro**	lucido	Norma di fab.		**52360**	743

Parametri di lavoro indicativi per utensili per alesare

Serie d'avanzamento

Le lettere d'identificazione d'avanzamento stampate in grassetto, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

Ø utensile mm	Codice lettera E	F	G	H	I	J
3,15	0,080	0,100	0,125	0,300	0,500	0,800
4,00	0,100	0,125	0,160	0,300	0,500	1,000
5,00	0,100	0,125	0,160	0,400	0,600	1,000
6,30	0,125	0,160	0,200	0,400	0,700	1,200
8,00	0,160	0,200	0,250	0,600	1,000	1,800
10,00	0,200	0,250	0,315	0,600	1,200	1,800
12,50	0,200	0,250	0,315	0,800	1,200	2,000
16,00	0,250	0,315	0,400	0,800	1,400	2,200
20,00	0,315	0,400	0,500	0,800	1,400	2,200

Avanzamento f (mm/giro)

Diametro	**Sottomisure (valori indicativi)**
< 6 mm	0,1 - 0,2 mm
< 10 mm	0,2 mm
< 16 mm	0,2 - 0,3 mm
< 25 mm	0,3 - 0,4 mm
> 25 mm	0,4 mm

Impiego del refrigerante:

olio da taglio attivo, lubrificanti con additivi che reagiscono chimicamente causando uno speciale strato adesivo e abrasivo riducendo il film del lubrificante ■

emulsione ■

senza lubrificante □

solo refrigerazione ad aria ⊡

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⊡
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

Alesatori SuperR-HS

Catalogo n°	72870	72871	72872	72873
Mat. da taglio	M.D./K10		M.D./K10	
Superficie	AlTiN nano		AlTiN nano	
Norma	Stock std.		Stock std.	
Forma				
a pagina	694	695	696	698

Alesatori NC

Catalogo n°	72920	72930
Mat. da taglio	M.D./K10	
Superficie	lucida	lucida
Norma	Stock std.	
Forma	B	B
a pagina	700	702

Alesatori a macchina

Catalogo n°	72868	72867	72860	72859	72880	72881
Mat. da taglio	M.D./K10					
Superficie	lucida	lucida	lucida	lucida	lucida	lucida
Norma	8050	8050	8051	8051	8093	8093
Forma	A	B	A	B	A	B
a pagina	704	705	708	709	706	707

v_c m/min	Codice d'avanz.		v_c m/min	Codice d'avanz.		v_c m/min	Codice d'avanz.		v_c m/min	Codice d'avanz.				
185	I-J	I-J	185	I-J	I-J	18	F	F	18	F	F	F	F	F
185	I-J	I-J	185	I-J	I-J	16	F	F	16	F	F	F	F	F
185	I-J	I-J	185	I-J	I-J	18	F	F	18	F	F	F	F	F
185	I-J	I-J	185	I-J	I-J	16	F	F	16	F	F	F	F	F
185	I-J	I-J	185	I-J	I-J	18	E	E	18	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	16	F	F	16	F	F	F	F	F
185	I-J	I-J	185	I-J	I-J	14	E	E	14	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	14	E	E	14	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	12	E	E	12	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	18	E	E	18	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	14	E	E	14	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	12	E	E	12	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	14	E	E	14	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	12	E	E	12	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	12	E	E	12	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	10	E	E	10	E	E	E	E	E
90	I-J	I-J	90	I-J	I-J	10	E	E	10	E	E	E	E	E
45	G-H	G-H	45	G-H	G-H									
50	G-H	G-H	50	G-H	G-H									
45	G-H	G-H	45	G-H	G-H									
90	H-I	H-I	90	H-I	H-I	8	E	E	8	E	E	E	E	E
60	H-I	H-I	60	H-I	H-I	6	E	E	6	E	E	E	E	E
90	H-I	H-I	90	H-I	H-I	6	E	E	6	E	E	E	E	E
100	I-J	I-J	100	I-J	I-J	20	E	E	20	E	E	E	E	E
100	I-J	I-J	100	I-J	I-J	18	E	E	18	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	20	E	E	20	E	E	E	E	E
90	I-J	I-J	90	I-J	I-J	18	E	E	18	E	E	E	E	E
40	H-I	H-I	40	H-I	H-I									
80	I-J	I-J	80	I-J	I-J	16	E	E	16	E	E	E	E	E
80	I-J	I-J	80	I-J	I-J	16	E	E	16	E	E	E	E	E
80	I-J	I-J	80	I-J	I-J									
80	I-J	I-J	80	I-J	I-J									
50	G-H	G-H	50	G-H	G-H									
60	H-I	H-I	60	H-I	H-I	10	E	E	10	E	E	E	E	E
60	H-I	H-I	60	H-I	H-I	10	E	E	10	E	E	E	E	E
						30	G	G	30	G	G	G	G	G
						30	G	G	30	G	G	G	G	G
						40	F	F	40	F	F	F	F	F
						30	F	F	30	F	F	F	F	F
120	I-J	I-J	120	I-J	I-J	25	F	F	25	F	F	F	F	F
						25	F	F	25	F	F	F	F	F
175	I-J	I-J	175	I-J	I-J	35	F	F	35	F	F	F	F	F
						30	F	F	30	F	F	F	F	F
175	I-J	I-J	175	I-J	I-J	35	F	F	35	F	F	F	F	F
175	I-J	I-J	175	I-J	I-J	30	F	F	30	F	F	F	F	F
						30	F	F	30	F	F	F	F	F
						25	F	F	25	F	F	F	F	F
140	I-J	I-J	140	I-J	I-J	20	G	G	20	G	G	G	G	G
140	I-J	I-J	140	I-J	I-J	20	G	G	20	G	G	G	G	G
80	E	E	80	E	E									
80	E	E	80	E	E									

Parametri di lavoro indicativi per utensili per alesare

Serie d'avanzamento

Le lettere d'identificazione d'avanzamento stampate in grassetto, sono da utilizzarsi principalmente per i gruppi di materiale corrispondenti.

Ø utensile mm	E	F	G	H	I	J
3,15	0,080	0,100	0,125	0,300	0,500	0,800
4,00	0,100	0,125	0,160	0,300	0,500	1,000
5,00	0,100	0,125	0,160	0,400	0,600	1,000
6,30	0,125	0,160	0,200	0,400	0,700	1,200
8,00	0,160	0,200	0,250	0,600	1,000	1,800
10,00	0,200	0,250	0,315	0,600	1,200	1,800
12,50	0,200	0,250	0,315	0,800	1,200	2,000
16,00	0,250	0,315	0,400	0,800	1,400	2,200
20,00	0,315	0,400	0,500	0,800	1,400	2,200

Avanzamento f (mm/giro)

Diametro	**Sottomisure (valori indicativi)**
< 6 mm	0,1 - 0,2 mm
< 10 mm	0,2 mm
< 16 mm	0,2 - 0,3 mm
< 25 mm	0,3 - 0,4 mm
> 25 mm	0,4 mm

Impiego del refrigerante:

olio da taglio attivo, lubrificanti con additivi che reagiscono chimicamente causando uno speciale strato adesivo e abrasivo riducendo il film del lubrificante ■

emulsione ■

senza lubrificante □

solo refrigerazione ad aria ⊡

Gruppo materiale	Esempi materiale, nuova denominazione (tra parentesi vecchia denominazione) Cifre in grassetto = materiale secondo DIN EN	Resist. a trazione MPa (N/mm²)	Durezza	Refrigerante
Acciai da costruzione generici	**1.0035** S185(St33),**1.0486** P275N(StE285),**1.0345** P235GH(H1),**1.0425** P265GH(H2)	≤500		■
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	>500-850		■
Acciai automatici	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Acciai da bonifica non legati	**1.0402** C22, **1.1178** C30E (Ck30)	≤ 700		■
	1.0503 C45, **1.1191** C45E (Ck45)	700-850		■
	1.0601 C60, **1.1221** C60E (Ck60)	850-1000		■
Acciai da bonifica legati	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Acciai da cementazione non legati	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Acciai da cementazione legati	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Acciai da nitrurazione	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Acciai da utensile	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Acciai rapidi	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Acciai per molle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Acciai temprati	–		≤40-48 HRC	■
			>48-60 HRC	■
Acciai inossidabili, solforati	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitici	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤850		■
martensitisch	**1.4057** X20CrNi 17 2 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤850		■
Ghisa	**0.6010** EN-GJL-100(GG10), **0.6020** EN-GJL-200(GG20)	850-≤1000		■ □
	0.6025 EN-GJL-250(GG25), **0.6035** EN-GJL-350(GG35)	1000-1200		■ □
Ghisa sferoidale e temprata	**0.7050** EN-GJS-500-7(GGG50), **0.8035** EN-GJMW-350-4(GTW35)		≤240 HB	■
	0.7070 EN-GJS-700-2(GGG70), **0.8170** EN-GJMB-700-2(GTS70)		<300 HB	■
Ghisa dura	–		≤350 HB	■
Nuova ghisa GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Nuova ghisa ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	800-1000		■ □
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	1200-1400		■ □
Leghe speciali	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titanio e sue leghe	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		■
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	>850-1200		■
Alluminio e sue leghe	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Leghe di alluminio per lavorazione plastica	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Leghe ghisa alluminio ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		■
> 10 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		■
Leghe al magnesio	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⊡
Rame basso legato	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Ottone, a truciolo corto	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
a truciolo lungo	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzi a truciolo corto	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzi a truciolo lungo	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Mat. plastiche termoindurenti	Resina epossidica, Resopal, Pertinax, Moltopren		–	□
Materie termoplastiche	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Mat. plast. a fibre aramidiche	Kevlar		–	□
a fibre di vetro/C rinforzate	GFK/CFK		–	□

Alesatori per chiodi

Catalogo n°	72680
Mat. da taglio	HSS
Superficie	nitrurata
Norma	311
Forma	
a pagina	721

v_c m/min	Codice d'avanz.
14	F
12	F
10	F
10	E
8	E
6	E
12	F
6	E
8	E
12	E
8	E
5	E
4	E
12	E
12	E
10	E
4	E
3	E
18	G
18	G
18	G
16	F
16	F
20	E
16	F
14	F
10	F

Alesatori a macchina NC

Catalogo n°	72900	72910
Mat. da taglio	HSS-E	
Superficie	lucida	lucida
Norma	Stock std.	
Forma	B	B
a pagina	710	712

v_c m/min	Codice d'avanz.	
16	F	F
12	F	F
12	F	F
10	E	E
14	F	F
12	E	E
10	E	E
10	E	E
8	E	E
16	F	F
10	E	E
8	E	E
10	E	E
8	E	E
14	F	F
10	E	E
10	E	E
6	F	F
6	F	F
4	F	F
14	E	E
12	E	E
12	E	E
10	E	E
8	E	E
8	E	E
6	E	E
4	E	E
18	G	G
18	G	G
20	F	F
18	F	F
20	F	F
18	F	F
18	F	F
16	F	F
20	F	F
18	F	F
18	F	F
14	F	F
12	G	G
14	G	G

Alesatori per spine coniche

Catalogo n°	72741
Mat. da taglio	HSS-E
Superficie	lucida
Norma	2179
Forma	
a pagina	722

v_c m/min	Codice d'avanz.
8	F
8	F
8	F
8	E
8	E
8	E
8	E
6	E
6	E
6	E
6	E
6	E
6	E
6	E
6	E
6	E
6	E
6	E
8	G
8	G
8	G
8	F
8	F
8	F
8	F
8	F
8	F

Alesatori a macchina

Catalogo n°	72640	72654	72650	72660	72670
Mat. da taglio	HSS-E				
Superficie	lucida	lucida	lucida	lucida	lucida
Norma	212	212	212	208	208
Forma	A	B	B	A	B
a pagina	716	714	717	718	719

v_c m/min	Codice d'avanz.				
16	F	F	F	F	F
12	F	F	F	F	F
12	F	F	F	F	F
10	E	E	E	E	E
14	F	F	F	F	F
12	E	E	E	E	E
10	E	E	E	E	E
10	E	E	E	E	E
8	E	E	E	E	E
16	F	F	F	F	F
10	E	E	E	E	E
8	E	E	E	E	E
10	E	E	E	E	E
8	E	E	E	E	E
14	F	F	F	F	F
10	E	E	E	E	E
10	E	E	E	E	E
6	F	F	F	F	F
6	F	F	F	F	F
4	F	F	F	F	F
14	E	E	E	E	E
12	E	E	E	E	E
12	E	E	E	E	E
10	E	E	E	E	E
8	E	E	E	E	E
8	E	E	E	E	E
6	E	E	E	E	E
4	E	E	E	E	E
18	G	G	G	G	G
18	G	G	G	G	G
20	F	F	F	F	F
18	F	F	F	F	F
20	F	F	F	F	F
18	F	F	F	F	F
18	F	F	F	F	F
16	F	F	F	F	F
20	F	F	F	F	F
18	F	F	F	F	F
18	F	F	F	F	F
14	F	F	F	F	F
12	G	G	G	G	G
14	G	G	G	G	G

Alesatori a forte torsione

Catalogo n°	72690
Mat. da taglio	HSS-E
Superficie	lucida
Norma	212
Forma	C
a pagina	720

v_c m/min	Codice d'avanz.
16	G
12	G
12	G
14	G
12	G
16	G
10	G
5	E
22	G
22	G
20	G
16	G
18	G
12	G
14	G

Alesatori in metallo duro

Alesatori ad alto rendimento VHM

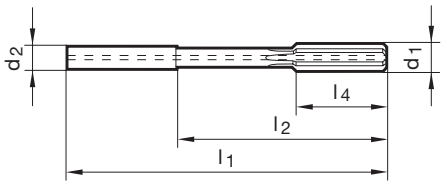
Catalogo n° 72870

SuperR-HS-S | WN | VHM | AlTiN nano | H7 | R | HA | 0°

P	M	K	N	S	H
●	●	●	●		●

Parametri di lav. ind. a pag. 690

- con refrigerazione assiale, per la lavorazione di fori ciechi
- per alti valori di taglio e alta qualità di foratura
- dritto, con divisione estremamente diseguale
- codolo cilindrico toll. h6 per serraggio in mandrini ad espansione idraulica o mandrini di calettamento
- è possibile un considerevole risparmio nei costi di processo



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
3,000	4,000	68,000	40,000	12,000	4	**3,000**
3,500	4,000	68,000	40,000	12,000	4	**3,500**
4,000	4,000	68,000	40,000	12,000	4	**4,000**
4,500	6,000	76,000	40,000	12,000	4	**4,500**
5,000	6,000	76,000	40,000	12,000	4	**5,000**
5,500	6,000	76,000	40,000	12,000	4	**5,500**
6,000	6,000	76,000	40,000	12,000	4	**6,000**
6,500	8,000	101,000	65,000	16,000	6	**6,500**
7,000	8,000	101,000	65,000	16,000	6	**7,000**
7,500	8,000	101,000	65,000	16,000	6	**7,500**
8,000	8,000	101,000	65,000	16,000	6	**8,000**
8,500	10,000	101,000	61,000	19,000	6	**8,500**
9,000	10,000	101,000	61,000	19,000	6	**9,000**
9,500	10,000	101,000	61,000	19,000	6	**9,500**
10,000	10,000	101,000	61,000	19,000	6	**10,000**
10,500	12,000	130,000	85,000	19,000	6	**10,500**
11,000	12,000	130,000	85,000	19,000	6	**11,000**
11,500	12,000	130,000	85,000	19,000	6	**11,500**
12,000	12,000	130,000	85,000	19,000	6	**12,000**
13,000	14,000	130,000	85,000	22,000	6	**13,000**
14,000	14,000	130,000	85,000	22,000	6	**14,000**
15,000	16,000	150,000	102,000	22,000	6	**15,000**
16,000	16,000	150,000	102,000	22,000	6	**16,000**
17,000	18,000	150,000	102,000	25,000	6	**17,000**
18,000	18,000	150,000	102,000	25,000	6	**18,000**
19,000	20,000	150,000	100,000	25,000	6	**19,000**
20,000	20,000	150,000	100,000	25,000	6	**20,000**

Alesatori in metallo duro

Alesatori ad alto rendimento VHM

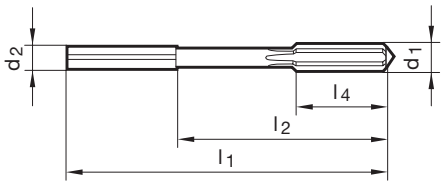
Catalogo n° 72871

SuperR-HS-D | WN | VHM | AlTiN nano | H7 | R | HA | 0°

P	M	K	N	S	H
●	●	●	●		●

Parametri di lav. ind. a pag. 690

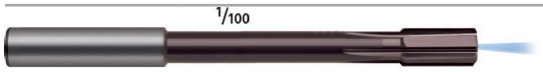
- con scanalature longitudinali sul codolo per alimentazione refrigerante nella lavorazione di fori passanti
- dritto, con divisione estremamente diseguale
- per alti valori di taglio e alta qualità di foratura
- codolo cilindrico toll. h6 per serraggio in mandrini ad espansione idraulica o mandrini di calettamento
- è possibile un considerevole risparmio nei costi di processo



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
3,000	4,000	68,000	40,000	12,000	4	**3,000**
3,500	4,000	68,000	40,000	12,000	4	**3,500**
4,000	4,000	68,000	40,000	12,000	4	**4,000**
4,500	6,000	76,000	40,000	12,000	4	**4,500**
5,000	6,000	76,000	40,000	12,000	4	**5,000**
5,500	6,000	76,000	40,000	12,000	4	**5,500**
6,000	6,000	76,000	40,000	12,000	4	**6,000**
6,500	8,000	101,000	65,000	16,000	6	**6,500**
7,000	8,000	101,000	65,000	16,000	6	**7,000**
7,500	8,000	101,000	65,000	16,000	6	**7,500**
8,000	8,000	101,000	65,000	16,000	6	**8,000**
8,500	10,000	101,000	61,000	19,000	6	**8,500**
9,000	10,000	101,000	61,000	19,000	6	**9,000**
9,500	10,000	101,000	61,000	19,000	6	**9,500**
10,000	10,000	101,000	61,000	19,000	6	**10,000**
10,500	12,000	130,000	85,000	19,000	6	**10,500**
11,000	12,000	130,000	85,000	19,000	6	**11,000**
11,500	12,000	130,000	85,000	19,000	6	**11,500**
12,000	12,000	130,000	85,000	19,000	6	**12,000**
13,000	14,000	130,000	85,000	22,000	6	**13,000**
14,000	14,000	130,000	85,000	22,000	6	**14,000**
15,000	16,000	150,000	102,000	22,000	6	**15,000**
16,000	16,000	150,000	102,000	22,000	6	**16,000**
17,000	18,000	150,000	102,000	25,000	6	**17,000**
18,000	18,000	150,000	102,000	25,000	6	**18,000**
19,000	20,000	150,000	100,000	25,000	6	**19,000**
20,000	20,000	150,000	100,000	25,000	6	**20,000**

Alesatori in metallo duro

Alesatori ad alto rendimento VHM



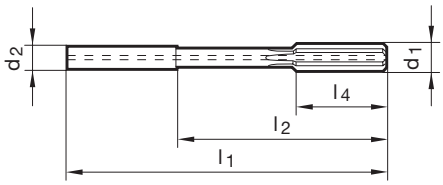
Catalogo n° 72872

SuperR- HS-S | WN | VHM | AlTiN nano | +0,005 | R | HA | 0°

P	M	K	N	S	H
●	●	●	●		●

Parametri di lav. ind. a pag. 690

- con refrigerazione assiale, per la lavorazione di fori ciechi
- per alti valori di taglio e alta qualità di foratura
- dritto, con divisione estremamente diseguale
- codolo cilindrico toll. h6 per serraggio in mandrini ad espansione idraulica o mandrini di calettamento
- è possibile un considerevole risparmio nei costi di processo



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
2,970	4,000	68,000	40,000	12,000	4	**2,970**
2,980	4,000	68,000	40,000	12,000	4	**2,980**
2,990	4,000	68,000	40,000	12,000	4	**2,990**
3,000	4,000	68,000	40,000	12,000	4	**3,000**
3,010	4,000	68,000	40,000	12,000	4	**3,010**
3,020	4,000	68,000	40,000	12,000	4	**3,020**
3,030	4,000	68,000	40,000	12,000	4	**3,030**
3,970	4,000	68,000	40,000	12,000	4	**3,970**
3,980	4,000	68,000	40,000	12,000	4	**3,980**
3,990	4,000	68,000	40,000	12,000	4	**3,990**
4,000	4,000	68,000	40,000	12,000	4	**4,000**
4,010	4,000	68,000	40,000	12,000	4	**4,010**
4,020	4,000	68,000	40,000	12,000	4	**4,020**
4,030	4,000	68,000	40,000	12,000	4	**4,030**
4,970	6,000	76,000	40,000	12,000	4	**4,970**
4,980	6,000	76,000	40,000	12,000	4	**4,980**
4,990	6,000	76,000	40,000	12,000	4	**4,990**
5,000	6,000	76,000	40,000	12,000	4	**5,000**
5,010	6,000	76,000	40,000	12,000	4	**5,010**
5,020	6,000	76,000	40,000	12,000	4	**5,020**
5,030	6,000	76,000	40,000	12,000	4	**5,030**
5,970	6,000	76,000	40,000	12,000	4	**5,970**
5,980	6,000	76,000	40,000	12,000	4	**5,980**
5,990	6,000	76,000	40,000	12,000	4	**5,990**
6,000	6,000	76,000	40,000	12,000	4	**6,000**
6,010	6,000	76,000	40,000	12,000	4	**6,010**
6,020	6,000	76,000	40,000	12,000	4	**6,020**
6,030	6,000	76,000	40,000	12,000	4	**6,030**
7,000	8,000	101,000	65,000	16,000	6	**7,000**
7,970	8,000	101,000	65,000	16,000	6	**7,970**
7,980	8,000	101,000	65,000	16,000	6	**7,980**
7,990	8,000	101,000	65,000	16,000	6	**7,990**
8,000	8,000	101,000	65,000	16,000	6	**8,000**
8,010	8,000	101,000	65,000	16,000	6	**8,010**
8,020	8,000	101,000	65,000	16,000	6	**8,020**
8,030	8,000	101,000	65,000	16,000	6	**8,030**
9,000	10,000	101,000	61,000	19,000	6	**9,000**
9,970	10,000	101,000	61,000	19,000	6	**9,970**
9,980	10,000	101,000	61,000	19,000	6	**9,980**
9,990	10,000	101,000	61,000	19,000	6	**9,990**
10,000	10,000	101,000	61,000	19,000	6	**10,000**
10,010	10,000	101,000	61,000	19,000	6	**10,010**
10,020	10,000	101,000	61,000	19,000	6	**10,020**
10,030	10,000	101,000	61,000	19,000	6	**10,030**
11,000	12,000	130,000	85,000	19,000	6	**11,000**
11,970	12,000	130,000	85,000	19,000	6	**11,970**
11,980	12,000	130,000	85,000	19,000	6	**11,980**
11,990	12,000	130,000	85,000	19,000	6	**11,990**

d1 **mm**	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	**Codice**
12,000	12,000	130,000	85,000	19,000	6	**12,000**
12,010	12,000	130,000	85,000	19,000	6	**12,010**
12,020	12,000	130,000	85,000	19,000	6	**12,020**
12,030	12,000	130,000	85,000	19,000	6	**12,030**

Alesatori in metallo duro

Alesatori ad alto rendimento VHM

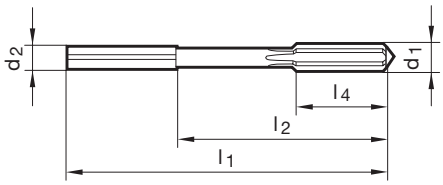
Catalogo n° 72873

SuperR-HS-D | WN | VHM | AlTiN nano | +0,005 | R | HA | 0°

P	M	K	N	S	H
●	●	●	●		●

Parametri di lav. ind. a pag. 690

- con scanalature longitudinali sul codolo per alimentazione refrigerante nella lavorazione di fori passanti
- dritto, con divisione estremamente diseguale
- per alti valori di taglio e alta qualità di foratura
- codolo cilindrico toll. h6 per serraggio in mandrini ad espansione idraulica o mandrini di calettamento
- è possibile un considerevole risparmio nei costi di processo

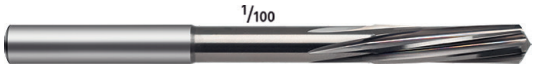


d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
2,970	4,000	68,000	40,000	12,000	4	**2,970**
2,980	4,000	68,000	40,000	12,000	4	**2,980**
2,990	4,000	68,000	40,000	12,000	4	**2,990**
3,000	4,000	68,000	40,000	12,000	4	**3,000**
3,010	4,000	68,000	40,000	12,000	4	**3,010**
3,020	4,000	68,000	40,000	12,000	4	**3,020**
3,030	4,000	68,000	40,000	12,000	4	**3,030**
3,970	4,000	68,000	40,000	12,000	4	**3,970**
3,980	4,000	68,000	40,000	12,000	4	**3,980**
3,990	4,000	68,000	40,000	12,000	4	**3,990**
4,000	4,000	68,000	40,000	12,000	4	**4,000**
4,010	4,000	68,000	40,000	12,000	4	**4,010**
4,020	4,000	68,000	40,000	12,000	4	**4,020**
4,030	4,000	68,000	40,000	12,000	4	**4,030**
4,970	6,000	76,000	40,000	12,000	4	**4,970**
4,980	6,000	76,000	40,000	12,000	4	**4,980**
4,990	6,000	76,000	40,000	12,000	4	**4,990**
5,000	6,000	76,000	40,000	12,000	4	**5,000**
5,010	6,000	76,000	40,000	12,000	4	**5,010**
5,020	6,000	76,000	40,000	12,000	4	**5,020**
5,030	6,000	76,000	40,000	12,000	4	**5,030**
5,970	6,000	76,000	40,000	12,000	4	**5,970**
5,980	6,000	76,000	40,000	12,000	4	**5,980**
5,990	6,000	76,000	40,000	12,000	4	**5,990**
6,000	6,000	76,000	40,000	12,000	4	**6,000**
6,010	6,000	76,000	40,000	12,000	4	**6,010**
6,020	6,000	76,000	40,000	12,000	4	**6,020**
6,030	6,000	76,000	40,000	12,000	4	**6,030**
7,000	8,000	101,000	65,000	16,000	6	**7,000**
7,970	8,000	101,000	65,000	16,000	6	**7,970**
7,980	8,000	101,000	65,000	16,000	6	**7,980**
7,990	8,000	101,000	65,000	16,000	6	**7,990**
8,000	8,000	101,000	65,000	16,000	6	**8,000**
8,010	8,000	101,000	65,000	16,000	6	**8,010**
8,020	8,000	101,000	65,000	16,000	6	**8,020**
8,030	8,000	101,000	65,000	16,000	6	**8,030**
9,000	10,000	101,000	61,000	19,000	6	**9,000**
9,970	10,000	101,000	61,000	19,000	6	**9,970**
9,980	10,000	101,000	61,000	19,000	6	**9,980**
9,990	10,000	101,000	61,000	19,000	6	**9,990**
10,000	10,000	101,000	61,000	19,000	6	**10,000**
10,010	10,000	101,000	61,000	19,000	6	**10,010**
10,020	10,000	101,000	61,000	19,000	6	**10,020**
10,030	10,000	101,000	61,000	19,000	6	**10,030**
11,000	12,000	130,000	85,000	19,000	6	**11,000**
11,970	12,000	130,000	85,000	19,000	6	**11,970**
11,980	12,000	130,000	85,000	19,000	6	**11,980**
11,990	12,000	130,000	85,000	19,000	6	**11,990**

d1 **mm**	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	**Codice**
12,000	12,000	130,000	85,000	19,000	6	**12,000**
12,010	12,000	130,000	85,000	19,000	6	**12,010**
12,020	12,000	130,000	85,000	19,000	6	**12,020**
12,030	12,000	130,000	85,000	19,000	6	**12,030**

Alesatori in metallo duro

Alesatori a macchina NC



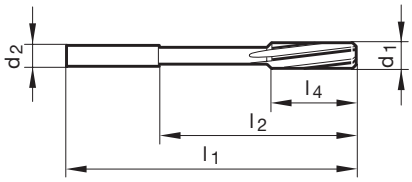
Catalogo n° 72920

WN | B | VHM | lucido | +0,004 +0,005 | R | HA | 8°

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 690

- Ø > 3,75 con taglienti molto sfalsati
- ≤ Ø 5,50 mm: 0,00/+0,004
- > Ø 5,50 mm: 0,00/+0,005
- codolo cilindrico toll. h6 per serraggio in mandrini ad espansione idraulica o mandrini di calettamento



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
0,980	4,000	50,000	22,000	6,000	3	**0,980**
0,990	4,000	50,000	22,000	6,000	3	**0,990**
1,000	4,000	50,000	22,000	6,000	3	**1,000**
1,010	4,000	50,000	22,000	6,000	3	**1,010**
1,020	4,000	50,000	22,000	6,000	3	**1,020**
1,030	4,000	50,000	22,000	9,000	3	**1,030**
1,480	4,000	50,000	22,000	9,000	3	**1,480**
1,490	4,000	50,000	22,000	9,000	3	**1,490**
1,500	4,000	50,000	22,000	9,000	3	**1,500**
1,510	4,000	50,000	22,000	9,000	3	**1,510**
1,520	4,000	50,000	22,000	9,000	3	**1,520**
1,530	4,000	50,000	22,000	9,000	3	**1,530**
1,980	4,000	50,000	22,000	12,000	4	**1,980**
1,990	4,000	50,000	22,000	12,000	4	**1,990**
2,000	4,000	50,000	22,000	12,000	4	**2,000**
2,010	4,000	50,000	22,000	12,000	4	**2,010**
2,020	4,000	50,000	22,000	12,000	4	**2,020**
2,030	4,000	50,000	22,000	12,000	4	**2,030**
2,480	4,000	60,000	32,000	16,000	4	**2,480**
2,490	4,000	60,000	32,000	16,000	4	**2,490**
2,500	4,000	60,000	32,000	16,000	4	**2,500**
2,510	4,000	60,000	32,000	16,000	4	**2,510**
2,520	4,000	60,000	32,000	16,000	4	**2,520**
2,530	4,000	60,000	32,000	16,000	4	**2,530**
2,970	4,000	64,000	36,000	17,000	6	**2,970**
2,980	4,000	64,000	36,000	17,000	6	**2,980**
2,990	4,000	64,000	36,000	17,000	6	**2,990**
3,000	4,000	64,000	36,000	17,000	6	**3,000**
3,010	4,000	64,000	36,000	17,000	6	**3,010**
3,020	4,000	64,000	36,000	17,000	6	**3,020**
3,030	4,000	64,000	36,000	17,000	6	**3,030**
3,970	4,000	77,000	45,000	21,000	6	**3,970**
3,980	4,000	77,000	45,000	21,000	6	**3,980**
3,990	4,000	77,000	45,000	21,000	6	**3,990**
4,000	4,000	77,000	45,000	21,000	6	**4,000**
4,010	4,000	77,000	45,000	21,000	6	**4,010**
4,020	4,000	77,000	45,000	21,000	6	**4,020**
4,030	4,000	77,000	45,000	21,000	6	**4,030**
4,970	6,000	93,000	59,000	26,000	6	**4,970**
4,980	6,000	93,000	59,000	26,000	6	**4,980**
4,990	6,000	93,000	59,000	26,000	6	**4,990**
5,000	6,000	93,000	59,000	26,000	6	**5,000**
5,010	6,000	93,000	59,000	26,000	6	**5,010**
5,020	6,000	93,000	59,000	26,000	6	**5,020**
5,030	6,000	93,000	59,000	26,000	6	**5,030**
5,970	6,000	93,000	57,000	26,000	6	**5,970**
5,980	6,000	93,000	57,000	26,000	6	**5,980**
5,990	6,000	93,000	57,000	26,000	6	**5,990**

d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
6,000	6,000	93,000	57,000	26,000	6	**6,000**
6,010	6,000	93,000	57,000	26,000	6	**6,010**
6,020	6,000	93,000	57,000	26,000	6	**6,020**
6,030	6,000	93,000	57,000	26,000	6	**6,030**
7,000	8,000	109,000	69,000	31,000	6	**7,000**
7,970	8,000	117,000	75,000	33,000	6	**7,970**
7,980	8,000	117,000	75,000	33,000	6	**7,980**
7,990	8,000	117,000	75,000	33,000	6	**7,990**
8,000	8,000	117,000	75,000	33,000	6	**8,000**
8,010	8,000	117,000	75,000	33,000	6	**8,010**
8,020	8,000	117,000	75,000	33,000	6	**8,020**
8,030	8,000	117,000	75,000	33,000	6	**8,030**
8,040	8,000	117,000	75,000	33,000	6	**8,040**
9,000	10,000	125,000	81,000	36,000	6	**9,000**
9,970	10,000	133,000	87,000	38,000	6	**9,970**
9,980	10,000	133,000	87,000	38,000	6	**9,980**
9,990	10,000	133,000	87,000	38,000	6	**9,990**
10,000	10,000	133,000	87,000	38,000	6	**10,000**
10,010	10,000	133,000	87,000	38,000	6	**10,010**
10,020	10,000	133,000	87,000	38,000	6	**10,020**
10,030	10,000	133,000	87,000	38,000	6	**10,030**
10,040	10,000	133,000	87,000	38,000	6	**10,040**
10,050	10,000	133,000	87,000	38,000	6	**10,050**
11,970	12,000	151,000	105,000	44,000	6	**11,970**
11,980	12,000	151,000	105,000	44,000	6	**11,980**
11,990	12,000	151,000	105,000	44,000	6	**11,990**
12,000	12,000	151,000	105,000	44,000	6	**12,000**
12,010	12,000	151,000	105,000	44,000	6	**12,010**
12,020	12,000	151,000	105,000	44,000	6	**12,020**
12,030	12,000	151,000	105,000	44,000	6	**12,030**
12,040	12,000	151,000	105,000	44,000	6	**12,040**
12,050	12,000	151,000	105,000	44,000	6	**12,050**

Alesatori in metallo duro

Alesatori a macchina NC

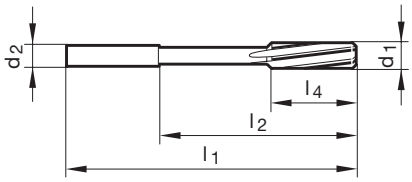
Catalogo n° 72930

WN | B | VHM | lucido | H7 | R | HA | 8°

P	M	K	N	S	H
●	●	●	●		

Parametri di lav. ind. a pag. 690

- Ø > 3,75 con taglienti molto sfalsati
- codolo cilindrico toll. h6 per serraggio in mandrini ad espansione idraulica o mandrini di calettamento



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
3,000	4,000	64,000	36,000	17,000	6	**3,000**
3,100	4,000	68,000	40,000	18,000	6	**3,100**
3,200	4,000	68,000	40,000	18,000	6	**3,200**
3,300	4,000	68,000	40,000	18,000	6	**3,300**
3,400	4,000	74,000	46,000	20,000	6	**3,400**
3,500	4,000	74,000	46,000	20,000	6	**3,500**
3,600	4,000	74,000	46,000	20,000	6	**3,600**
3,700	4,000	74,000	46,000	20,000	6	**3,700**
3,800	4,000	77,000	45,000	21,000	6	**3,800**
3,900	4,000	77,000	45,000	21,000	6	**3,900**
4,000	4,000	77,000	45,000	21,000	6	**4,000**
4,100	6,000	82,000	50,000	23,000	6	**4,100**
4,200	6,000	82,000	50,000	23,000	6	**4,200**
4,300	6,000	82,000	50,000	23,000	6	**4,300**
4,400	6,000	82,000	50,000	23,000	6	**4,400**
4,500	6,000	82,000	50,000	23,000	6	**4,500**
4,600	6,000	82,000	50,000	23,000	6	**4,600**
4,700	6,000	82,000	50,000	23,000	6	**4,700**
4,800	6,000	93,000	59,000	26,000	6	**4,800**
4,900	6,000	93,000	59,000	26,000	6	**4,900**
5,000	6,000	93,000	59,000	26,000	6	**5,000**
5,100	6,000	93,000	59,000	26,000	6	**5,100**
5,200	6,000	93,000	59,000	26,000	6	**5,200**
5,300	6,000	93,000	59,000	26,000	6	**5,300**
5,400	6,000	93,000	57,000	26,000	6	**5,400**
5,500	6,000	93,000	57,000	26,000	6	**5,500**
5,600	6,000	93,000	57,000	26,000	6	**5,600**
5,700	6,000	93,000	57,000	26,000	6	**5,700**
5,800	6,000	93,000	57,000	26,000	6	**5,800**
5,900	6,000	93,000	57,000	26,000	6	**5,900**
6,000	6,000	93,000	57,000	26,000	6	**6,000**
6,100	8,000	101,000	63,000	28,000	6	**6,100**
6,200	8,000	101,000	63,000	28,000	6	**6,200**
6,300	8,000	101,000	63,000	28,000	6	**6,300**
6,400	8,000	101,000	63,000	28,000	6	**6,400**
6,500	8,000	101,000	63,000	28,000	6	**6,500**
6,600	8,000	101,000	63,000	28,000	6	**6,600**
6,700	8,000	101,000	63,000	28,000	6	**6,700**
6,800	8,000	109,000	69,000	31,000	6	**6,800**
6,900	8,000	109,000	69,000	31,000	6	**6,900**
7,000	8,000	109,000	69,000	31,000	6	**7,000**
7,100	8,000	109,000	69,000	31,000	6	**7,100**
7,200	8,000	109,000	69,000	31,000	6	**7,200**
7,300	8,000	109,000	69,000	31,000	6	**7,300**
7,400	8,000	109,000	69,000	31,000	6	**7,400**
7,500	8,000	109,000	69,000	31,000	6	**7,500**
7,600	8,000	109,000	69,000	31,000	6	**7,600**
7,700	8,000	117,000	75,000	33,000	6	**7,700**

d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
7,800	8,000	117,000	75,000	33,000	6	**7,800**
7,900	8,000	117,000	75,000	33,000	6	**7,900**
8,000	8,000	117,000	75,000	33,000	6	**8,000**
8,100	10,000	117,000	75,000	33,000	6	**8,100**
8,200	10,000	117,000	75,000	33,000	6	**8,200**
8,300	10,000	117,000	75,000	33,000	6	**8,300**
8,400	10,000	117,000	75,000	33,000	6	**8,400**
8,500	10,000	117,000	75,000	33,000	6	**8,500**
8,600	10,000	117,000	75,000	33,000	6	**8,600**
8,700	10,000	125,000	81,000	36,000	6	**8,700**
8,800	10,000	125,000	81,000	36,000	6	**8,800**
8,900	10,000	125,000	81,000	36,000	6	**8,900**
9,000	10,000	125,000	81,000	36,000	6	**9,000**
9,100	10,000	125,000	81,000	36,000	6	**9,100**
9,200	10,000	125,000	81,000	36,000	6	**9,200**
9,300	10,000	125,000	81,000	36,000	6	**9,300**
9,400	10,000	125,000	81,000	36,000	6	**9,400**
9,500	10,000	125,000	81,000	36,000	6	**9,500**
9,600	10,000	125,000	81,000	36,000	6	**9,600**
9,700	10,000	133,000	87,000	38,000	6	**9,700**
9,800	10,000	133,000	87,000	38,000	6	**9,800**
9,900	10,000	133,000	87,000	38,000	6	**9,900**
10,000	10,000	133,000	87,000	38,000	6	**10,000**
10,100	10,000	133,000	87,000	38,000	6	**10,100**
10,200	10,000	133,000	87,000	38,000	6	**10,200**
10,300	10,000	133,000	87,000	38,000	6	**10,300**
10,400	10,000	133,000	87,000	38,000	6	**10,400**
10,500	10,000	133,000	87,000	38,000	6	**10,500**
10,600	10,000	133,000	87,000	38,000	6	**10,600**
10,700	10,000	142,000	96,000	41,000	6	**10,700**
10,800	10,000	142,000	96,000	41,000	6	**10,800**
10,900	10,000	142,000	96,000	41,000	6	**10,900**
11,000	10,000	142,000	96,000	41,000	6	**11,000**
11,100	10,000	142,000	96,000	41,000	6	**11,100**
11,200	10,000	142,000	96,000	41,000	6	**11,200**
11,300	10,000	142,000	96,000	41,000	6	**11,300**
11,400	10,000	142,000	96,000	41,000	6	**11,400**
11,500	10,000	142,000	96,000	41,000	6	**11,500**
11,600	10,000	142,000	96,000	41,000	6	**11,600**
11,700	10,000	142,000	96,000	41,000	6	**11,700**
11,800	10,000	142,000	96,000	41,000	6	**11,800**
11,900	12,000	151,000	105,000	44,000	6	**11,900**
12,000	12,000	151,000	105,000	44,000	6	**12,000**

Alesatori in metallo duro

Alesatori a macchina in MD

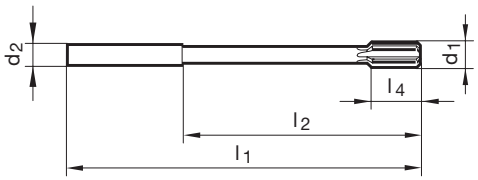
Catalogo n° 72868

~DIN 8050 | A | HM | lucido | H7 | R | Cyl | 0°

P	M	K	N	S	H
●	●	●	●		○

Parametri di lav. ind. a pag. 690

- > Ø 9,50 mm: taglienti con riporti in MD
- ≤ Ø 9,50 mm: Int. im MD
- ≤ Ø 9,50 mm con centrino su entrambi i lati
- > Ø 9,50 mm con fori di centraggio su entrambi i lati
- per resistenza a trazione fino ad un massimo di 1400 N/mm² / 44 HRC



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	**Codice**
5,000	5,000	86,000	52,000	12,000	6	**5,000**
6,000	5,600	93,000	57,000	12,000	6	**6,000**
7,000	7,100	109,000	69,000	16,000	6	**7,000**
8,000	8,000	117,000	75,000	16,000	6	**8,000**
9,000	9,000	125,000	81,000	19,000	6	**9,000**
10,000	10,000	133,000	87,000	12,000	6	**10,000**
12,000	10,000	151,000	105,000	12,000	6	**12,000**
14,000	12,000	160,000	110,000	16,000	6	**14,000**
15,000	12,000	162,000	112,000	16,000	6	**15,000**
16,000	12,000	170,000	120,000	19,000	6	**16,000**
20,000	16,000	195,000	137,000	19,000	6	**20,000**

Alesatori in metallo duro

Alesatori a macchina in MD

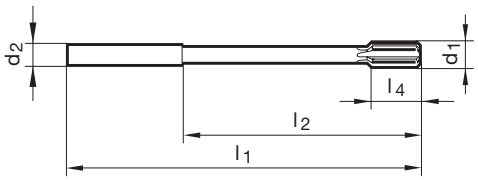
Catalogo n° 72867

~DIN 8050 | B | HM | lucido | H7 | R | Cyl | 7° A

P	M	K	N	S	H
●	●	●	●		○

Parametri di lav. ind. a pag. 690

- > Ø 9,50 mm: taglienti con riporti in MD
- ≤ Ø 9,50 mm: Int. im MD
- ≤ Ø 9,50 mm con centrino su entrambi i lati
- > Ø 9,50 mm con fori di centraggio su entrambi i lati
- per resistenza a trazione fino ad un massimo di 1400 N/mm² / 44 HRC
- solo per fori passanti



d1 **mm**	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	**Codice**
5,000	5,000	86,000	52,000	12,000	6	**5,000**
6,000	5,600	93,000	57,000	12,000	6	**6,000**
7,000	7,100	109,000	69,000	16,000	6	**7,000**
8,000	8,000	117,000	75,000	16,000	6	**8,000**
9,000	9,000	125,000	81,000	19,000	6	**9,000**
10,000	10,000	133,000	87,000	12,000	6	**10,000**
11,000	10,000	142,000	96,000	12,000	6	**11,000**
12,000	10,000	151,000	105,000	12,000	6	**12,000**
13,000	10,000	151,000	105,000	12,000	6	**13,000**
14,000	12,000	160,000	110,000	16,000	6	**14,000**
15,000	12,000	162,000	112,000	16,000	6	**15,000**
16,000	12,000	170,000	120,000	19,000	6	**16,000**
18,000	14,000	182,000	130,000	19,000	6	**18,000**
20,000	16,000	195,000	137,000	19,000	6	**20,000**

Alesatori in metallo duro

Alesatori a macchina in MD

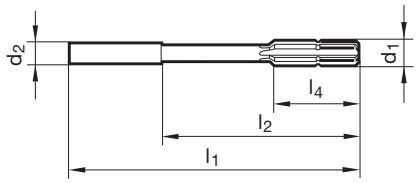
Catalogo n° 72880

~DIN 8093 | A | HM | lucido | H7 | R | Cyl | 0°

P	M	K	N	S	H
●	●	●	●		○

Parametri di lav. ind. a pag. 690

- ≥ Ø 3,0 mm con taglienti molto sfalsati
- ≤ Ø 9,50 mm: Int. im MD
- > Ø 9,50 mm: taglienti con riporti in MD
- ≤ Ø 9,50 mm con centrino su entrambi i lati
- > Ø 9,50 mm con fori di centraggio su entrambi i lati
- shank Ø < 10.0 mm tolerance h9, shank Ø ≥ 10,0 mm tolerance h6
- per resistenza a trazione fino ad un massimo di 1400 N/mm² / 44 HRC



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
1,200	1,200	38,000	16,500	7,500	3	**1,200**
1,500	1,500	40,000	18,000	8,000	3	**1,500**
1,600	1,600	43,000	20,000	9,000	3	**1,600**
2,000	2,000	49,000	24,000	11,000	4	**2,000**
2,500	2,500	57,000	29,000	14,000	4	**2,500**
3,000	3,000	61,000	33,000	15,000	6	**3,000**
4,000	4,000	75,000	43,000	19,000	6	**4,000**
4,500	4,500	80,000	47,000	21,000	6	**4,500**
5,000	5,000	86,000	52,000	23,000	6	**5,000**
6,000	5,600	93,000	57,000	26,000	6	**6,000**
7,000	7,100	109,000	69,000	31,000	6	**7,000**
8,000	8,000	117,000	75,000	33,000	6	**8,000**
9,000	9,000	125,000	81,000	36,000	6	**9,000**
10,000	10,000	133,000	87,000	38,000	6	**10,000**
11,000	10,000	142,000	96,000	41,000	6	**11,000**
12,000	10,000	151,000	105,000	44,000	6	**12,000**
13,000	10,000	151,000	105,000	44,000	6	**13,000**
14,000	12,000	160,000	110,000	47,000	6	**14,000**
16,000	12,000	170,000	120,000	52,000	6	**16,000**

Alesatori in metallo duro

Alesatori a macchina in MD

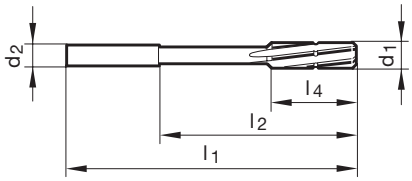
Catalogo n° 72881

~DIN 8093 | B | HM | lucido | H7 | R | Cyl | 7° A

P	M	K	N	S	H
●	●	●	●		○

Parametri di lav. ind. a pag. 690

- ≥ Ø 3,0 mm con taglienti molto sfalsati
- ≤ Ø 9,50 mm: Int. im MD
- > Ø 9,50 mm: taglienti con riporti in MD
- ≤ Ø 9,50 mm con centrino su entrambi i lati
- > Ø 9,50 mm con fori di centraggio su entrambi i lati
- shank Ø < 10.0 mm tolerance h9, shank Ø ≥ 10,0 mm tolerance h6
- per resistenza a trazione fino ad un massimo di 1400 N/mm² / 44 HRC
- solo per fori passanti



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
1,000	1,000	34,000	15,000	5,500	3	**1,000**
1,200	1,200	38,000	16,500	7,500	3	**1,200**
1,500	1,500	40,000	18,000	8,000	3	**1,500**
2,000	2,000	49,000	24,000	11,000	4	**2,000**
2,500	2,500	57,000	29,000	14,000	4	**2,500**
3,000	3,000	61,000	33,000	15,000	6	**3,000**
3,500	3,500	70,000	42,000	18,000	6	**3,500**
4,000	4,000	75,000	43,000	19,000	6	**4,000**
4,500	4,500	80,000	47,000	21,000	6	**4,500**
5,000	5,000	86,000	52,000	23,000	6	**5,000**
6,000	5,600	93,000	57,000	26,000	6	**6,000**
7,000	7,100	109,000	69,000	31,000	6	**7,000**
8,000	8,000	117,000	75,000	33,000	6	**8,000**
9,000	9,000	125,000	81,000	36,000	6	**9,000**
10,000	10,000	133,000	87,000	38,000	6	**10,000**
11,000	10,000	142,000	96,000	41,000	6	**11,000**
12,000	10,000	151,000	105,000	44,000	6	**12,000**
13,000	10,000	151,000	105,000	44,000	6	**13,000**
14,000	12,000	160,000	110,000	47,000	6	**14,000**
16,000	12,000	170,000	120,000	52,000	6	**16,000**

Alesatori a macchina in MD

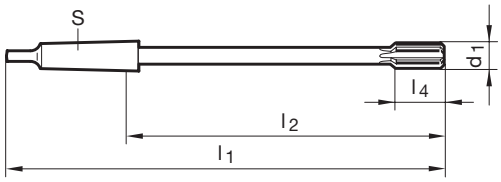
Catalogo n° 72860

~DIN 8051 | A | HM | lucido | H7 | R | MK | 0°

P	M	K	N	S	H
●	●	●	●		○

Parametri di lav. ind. a pag. 690

- ≤ Ø 9,50 mm: Int. im MD
- > Ø 9,50 mm: taglienti con riporti in MD
- ≤ Ø 9,50 mm lati taglienti con centrino
- codolo con foro di centraggio
- > Ø 9,50 mm con fori di centraggio su entrambi i lati
- per resistenza a trazione fino ad un massimo di 1400 N/mm² / 44 HRC



d1 mm	S	l1 mm	l4 mm	l4 mm	Z	Codice
10,000	MK-1	168,000	106,000	12,000	6	**10,000**
12,000	MK-1	182,000	120,000	12,000	6	**12,000**
13,000	MK-1	182,000	120,000	12,000	6	**13,000**
14,000	MK-1	189,000	127,000	16,000	6	**14,000**
15,000	MK-2	204,000	129,000	16,000	6	**15,000**
16,000	MK-2	210,000	135,000	19,000	6	**16,000**
17,000	MK-2	214,000	139,000	19,000	6	**17,000**
18,000	MK-2	219,000	144,000	19,000	6	**18,000**
20,000	MK-2	228,000	153,000	19,000	6	**20,000**
22,000	MK-2	237,000	162,000	22,000	6	**22,000**
24,000	MK-3	268,000	174,000	22,000	6	**24,000**
25,000	MK-3	268,000	174,000	22,000	6	**25,000**
28,000	MK-3	277,000	183,000	25,000	6	**28,000**
30,000	MK-3	281,000	187,000	25,000	6	**30,000**

Alesatori in metallo duro

Alesatori a macchina in MD

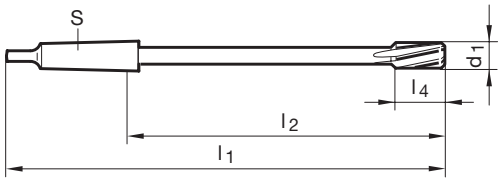
Catalogo n° 72859

~DIN 8051 | B | HM | lucido | H7 | R | MK | 7°

P	M	K	N	S	H
●	●	●	●		○

Parametri di lav. ind. a pag. 690

- ≤ Ø 9,50 mm: Int. im MD
- > Ø 9,50 mm: taglienti con riporti in MD
- ≤ Ø 9,50 mm lati taglienti con centrino
- codolo con foro di centraggio
- > Ø 9,50 mm con fori di centraggio su entrambi i lati
- per resistenza a trazione fino ad un massimo di 1400 N/mm² / 44 HRC



d1 mm	S	l1 mm	l4 mm	l4 mm	Z	Codice
6,000	MK-1	138,000	76,000	12,000	6	**6,000**
8,000	MK-1	156,000	94,000	16,000	6	**8,000**
10,000	MK-1	168,000	106,000	12,000	6	**10,000**
11,000	MK-1	175,000	113,000	12,000	6	**11,000**
12,000	MK-1	182,000	120,000	12,000	6	**12,000**
13,000	MK-1	182,000	120,000	12,000	6	**13,000**
14,000	MK-1	189,000	127,000	16,000	6	**14,000**
15,000	MK-2	204,000	129,000	16,000	6	**15,000**
16,000	MK-2	210,000	135,000	19,000	6	**16,000**
17,000	MK-2	214,000	139,000	19,000	6	**17,000**
18,000	MK-2	219,000	144,000	19,000	6	**18,000**
20,000	MK-2	228,000	153,000	19,000	6	**20,000**
21,000	MK-2	232,000	157,000	22,000	6	**21,000**
22,000	MK-2	237,000	162,000	22,000	6	**22,000**
23,000	MK-2	241,000	166,000	22,000	6	**23,000**
24,000	MK-3	268,000	174,000	22,000	8	**24,000**
25,000	MK-3	268,000	174,000	22,000	8	**25,000**
26,000	MK-3	273,000	179,000	22,000	8	**26,000**
27,000	MK-3	277,000	183,000	25,000	8	**27,000**
30,000	MK-3	281,000	187,000	25,000	8	**30,000**
32,000	MK-4	317,000	199,500	25,000	8	**32,000**

Alesatori in acciaio HSS

Alesatori a macchina NC

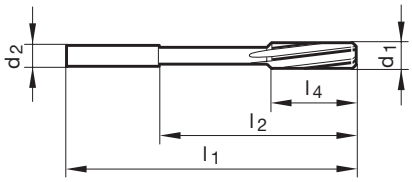
Catalogo n° 72900

DIN 212-3 | B | HSS-E | lucido | +0,004 +0,005 | R | HA | 7°

P	M	K	N	S	H
●	●	●	●	○	

Parametri di lav. ind. a pag. 692

- > Ø 3,75 mm con fori di centraggio su entrambi i lati
- ≤ Ø 3,75 mm con centrino su entrambi i lati
- ≤ Ø 5,50 mm: 0,00/+0,004
- > Ø 5,50 mm: 0,00/+0,005
- codolo cilindrico toll. h6 per serraggio in mandrini ad espansione idraulica o mandrini di calettamento
- per resistenza a trazione fino ad un massimo di 1000 N/mm²



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
1,000	1,000	34,000	15,000	5,500	3	**1,000**
1,010	1,000	34,000	15,000	5,500	3	**1,010**
1,020	1,000	34,000	15,000	5,500	3	**1,020**
1,030	1,000	34,000	15,000	5,500	3	**1,030**
1,500	2,000	40,000	18,000	8,000	3	**1,500**
1,510	2,000	43,000	20,000	9,000	3	**1,510**
1,520	2,000	43,000	20,000	9,000	3	**1,520**
1,530	2,000	43,000	20,000	9,000	3	**1,530**
1,970	2,000	49,000	24,000	11,000	4	**1,970**
1,980	2,000	49,000	24,000	11,000	4	**1,980**
1,990	2,000	49,000	24,000	11,000	4	**1,990**
2,000	2,000	49,000	24,000	11,000	4	**2,000**
2,010	2,000	49,000	24,000	11,000	4	**2,010**
2,020	2,000	49,000	24,000	11,000	4	**2,020**
2,030	2,000	49,000	24,000	11,000	4	**2,030**
2,470	3,000	57,000	29,000	14,000	4	**2,470**
2,480	3,000	57,000	29,000	14,000	4	**2,480**
2,490	3,000	57,000	29,000	14,000	4	**2,490**
2,500	3,000	57,000	29,000	14,000	4	**2,500**
2,510	3,000	57,000	29,000	14,000	4	**2,510**
2,520	3,000	57,000	29,000	14,000	4	**2,520**
2,530	3,000	57,000	29,000	14,000	4	**2,530**
2,970	3,000	61,000	33,000	15,000	6	**2,970**
2,980	3,000	61,000	33,000	15,000	6	**2,980**
2,990	3,000	61,000	33,000	15,000	6	**2,990**
3,000	3,000	61,000	33,000	15,000	6	**3,000**
3,010	4,000	65,000	37,000	16,000	6	**3,010**
3,020	4,000	65,000	37,000	16,000	6	**3,020**
3,030	4,000	65,000	37,000	16,000	6	**3,030**
3,970	4,000	75,000	47,000	19,000	6	**3,970**
3,980	4,000	75,000	47,000	19,000	6	**3,980**
3,990	4,000	75,000	47,000	19,000	6	**3,990**
4,000	4,000	75,000	47,000	19,000	6	**4,000**
4,010	4,000	75,000	47,000	19,000	6	**4,010**
4,020	4,000	75,000	47,000	19,000	6	**4,020**
4,030	4,000	75,000	47,000	19,000	6	**4,030**
4,970	5,000	86,000	58,000	23,000	6	**4,970**
4,980	5,000	86,000	58,000	23,000	6	**4,980**
4,990	5,000	86,000	58,000	23,000	6	**4,990**
5,000	5,000	86,000	58,000	23,000	6	**5,000**
5,010	5,000	86,000	58,000	23,000	6	**5,010**
5,020	5,000	86,000	58,000	23,000	6	**5,020**
5,030	5,000	86,000	58,000	23,000	6	**5,030**
5,970	6,000	93,000	57,000	26,000	6	**5,970**
5,980	6,000	93,000	57,000	26,000	6	**5,980**
5,990	6,000	93,000	57,000	26,000	6	**5,990**
6,000	6,000	93,000	57,000	26,000	6	**6,000**
6,010	6,000	101,000	65,000	28,000	6	**6,010**

d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
6,020	6,000	101,000	65,000	28,000	6	**6,020**
6,030	6,000	101,000	65,000	28,000	6	**6,030**
7,970	8,000	117,000	81,000	33,000	6	**7,970**
7,980	8,000	117,000	81,000	33,000	6	**7,980**
7,990	8,000	117,000	81,000	33,000	6	**7,990**
8,000	8,000	117,000	81,000	33,000	6	**8,000**
8,010	8,000	117,000	81,000	33,000	6	**8,010**
8,020	8,000	117,000	81,000	33,000	6	**8,020**
8,030	8,000	117,000	81,000	33,000	6	**8,030**
9,000	10,000	125,000	85,000	36,000	6	**9,000**
9,010	10,000	125,000	85,000	36,000	6	**9,010**
9,020	10,000	125,000	85,000	36,000	6	**9,020**
9,030	10,000	125,000	85,000	36,000	6	**9,030**
9,970	10,000	133,000	93,000	38,000	6	**9,970**
9,980	10,000	133,000	93,000	38,000	6	**9,980**
9,990	10,000	133,000	93,000	38,000	6	**9,990**
10,000	10,000	133,000	93,000	38,000	6	**10,000**
10,010	10,000	133,000	93,000	38,000	6	**10,010**
10,020	10,000	133,000	93,000	38,000	6	**10,020**
10,030	10,000	133,000	93,000	38,000	6	**10,030**
11,970	10,000	151,000	111,000	44,000	6	**11,970**
11,980	10,000	151,000	111,000	44,000	6	**11,980**
11,990	10,000	151,000	111,000	44,000	6	**11,990**
12,000	10,000	151,000	111,000	44,000	6	**12,000**
12,010	10,000	151,000	111,000	44,000	6	**12,010**
12,020	10,000	151,000	111,000	44,000	6	**12,020**
12,030	10,000	151,000	111,000	44,000	6	**12,030**

Alesatori in acciaio HSS

Alesatori a macchina NC

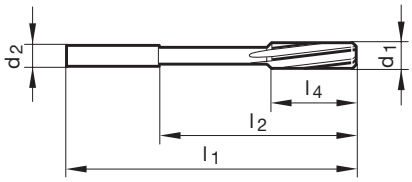
Catalogo n° 72910

DIN 212-3 | B | HSS-E | lucido | H7 | R | HA | 7° A

P	M	K	N	S	H
●	●	●	●	○	

Parametri di lav. ind. a pag. 692

- ≤ Ø 3,75 mm con centrino su entrambi i lati
- > Ø 3,75 mm con fori di centraggio su entrambi i lati
- codolo cilindrico toll. h6 per serraggio in mandrini ad espansione idraulica o mandrini di calettamento
- per resistenza a trazione fino ad un massimo di 1000 N/mm²



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
1,500	2,000	40,000	18,000	8,000	3	**1,500**
1,600	2,000	43,000	20,000	9,000	3	**1,600**
1,700	2,000	43,000	20,000	9,000	3	**1,700**
1,800	2,000	46,000	22,000	10,000	4	**1,800**
1,900	2,000	46,000	22,000	10,000	4	**1,900**
2,000	2,000	49,000	24,000	11,000	4	**2,000**
2,100	2,000	49,000	24,000	11,000	4	**2,100**
2,200	3,000	53,000	25,000	12,000	4	**2,200**
2,300	3,000	53,000	25,000	12,000	4	**2,300**
2,400	3,000	57,000	29,000	14,000	4	**2,400**
2,500	3,000	57,000	29,000	14,000	4	**2,500**
2,600	3,000	57,000	29,000	14,000	4	**2,600**
2,700	3,000	61,000	33,000	15,000	6	**2,700**
2,800	3,000	61,000	33,000	15,000	6	**2,800**
2,900	3,000	61,000	33,000	15,000	6	**2,900**
3,000	3,000	61,000	33,000	15,000	6	**3,000**
3,100	4,000	65,000	37,000	16,000	6	**3,100**
3,200	4,000	65,000	37,000	16,000	6	**3,200**
3,300	4,000	65,000	37,000	16,000	6	**3,300**
3,400	4,000	70,000	42,000	18,000	6	**3,400**
3,500	4,000	70,000	42,000	18,000	6	**3,500**
3,600	4,000	70,000	42,000	18,000	6	**3,600**
3,700	4,000	70,000	42,000	18,000	6	**3,700**
3,800	4,000	75,000	47,000	19,000	6	**3,800**
3,900	4,000	75,000	47,000	19,000	6	**3,900**
4,000	4,000	75,000	47,000	19,000	6	**4,000**
4,100	4,000	75,000	47,000	19,000	6	**4,100**
4,200	4,000	75,000	47,000	19,000	6	**4,200**
4,300	5,000	80,000	52,000	21,000	6	**4,300**
4,400	5,000	80,000	52,000	21,000	6	**4,400**
4,500	5,000	80,000	52,000	21,000	6	**4,500**
4,600	5,000	80,000	52,000	21,000	6	**4,600**
4,700	5,000	80,000	52,000	21,000	6	**4,700**
4,800	5,000	86,000	58,000	23,000	6	**4,800**
4,900	5,000	86,000	58,000	23,000	6	**4,900**
5,000	5,000	86,000	58,000	23,000	6	**5,000**
5,100	5,000	86,000	58,000	23,000	6	**5,100**
5,200	5,000	86,000	58,000	23,000	6	**5,200**
5,300	5,000	86,000	58,000	23,000	6	**5,300**
5,400	6,000	93,000	57,000	26,000	6	**5,400**
5,500	6,000	93,000	57,000	26,000	6	**5,500**
5,600	6,000	93,000	57,000	26,000	6	**5,600**
5,700	6,000	93,000	57,000	26,000	6	**5,700**
5,800	6,000	93,000	57,000	26,000	6	**5,800**
5,900	6,000	93,000	57,000	26,000	6	**5,900**
6,000	6,000	93,000	57,000	26,000	6	**6,000**
6,100	6,000	101,000	65,000	28,000	6	**6,100**
6,200	6,000	101,000	65,000	28,000	6	**6,200**

d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
6,300	6,000	101,000	65,000	28,000	6	**6,300**
6,400	6,000	101,000	65,000	28,000	6	**6,400**
6,500	6,000	101,000	65,000	28,000	6	**6,500**
6,600	6,000	101,000	65,000	28,000	6	**6,600**
6,700	6,000	101,000	65,000	28,000	6	**6,700**
6,800	8,000	109,000	73,000	31,000	6	**6,800**
6,900	8,000	109,000	73,000	31,000	6	**6,900**
7,000	8,000	109,000	73,000	31,000	6	**7,000**
7,100	8,000	109,000	73,000	31,000	6	**7,100**
7,200	8,000	109,000	73,000	31,000	6	**7,200**
7,300	8,000	109,000	73,000	31,000	6	**7,300**
7,400	8,000	109,000	73,000	31,000	6	**7,400**
7,500	8,000	109,000	73,000	31,000	6	**7,500**
7,600	8,000	117,000	81,000	33,000	6	**7,600**
7,700	8,000	117,000	81,000	33,000	6	**7,700**
7,800	8,000	117,000	81,000	33,000	6	**7,800**
7,900	8,000	117,000	81,000	33,000	6	**7,900**
8,000	8,000	117,000	81,000	33,000	6	**8,000**
8,100	8,000	117,000	81,000	33,000	6	**8,100**
8,200	8,000	117,000	81,000	33,000	6	**8,200**
8,300	8,000	117,000	81,000	33,000	6	**8,300**
8,400	8,000	117,000	81,000	33,000	6	**8,400**
8,500	8,000	117,000	81,000	33,000	6	**8,500**
8,600	10,000	125,000	85,000	36,000	6	**8,600**
8,700	10,000	125,000	85,000	36,000	6	**8,700**
8,800	10,000	125,000	85,000	36,000	6	**8,800**
8,900	10,000	125,000	85,000	36,000	6	**8,900**
9,000	10,000	125,000	85,000	36,000	6	**9,000**
9,100	10,000	125,000	85,000	36,000	6	**9,100**
9,200	10,000	125,000	85,000	36,000	6	**9,200**
9,300	10,000	125,000	85,000	36,000	6	**9,300**
9,400	10,000	125,000	85,000	36,000	6	**9,400**
9,500	10,000	125,000	85,000	36,000	6	**9,500**
9,600	10,000	133,000	93,000	38,000	6	**9,600**
9,700	10,000	133,000	93,000	38,000	6	**9,700**
9,800	10,000	133,000	93,000	38,000	6	**9,800**
9,900	10,000	133,000	93,000	38,000	6	**9,900**
10,000	10,000	133,000	93,000	38,000	6	**10,000**
11,000	10,000	142,000	102,000	41,000	6	**11,000**
12,000	10,000	151,000	111,000	44,000	6	**12,000**
13,000	10,000	151,000	111,000	44,000	6	**13,000**
14,000	14,000	160,000	115,000	47,000	8	**14,000**
15,000	14,000	162,000	117,000	50,000	8	**15,000**
16,000	14,000	170,000	125,000	52,000	8	**16,000**
17,000	14,000	175,000	130,000	54,000	8	**17,000**
18,000	14,000	182,000	137,000	56,000	8	**18,000**
19,000	16,000	189,000	141,000	58,000	8	**19,000**
20,000	16,000	195,000	147,000	60,000	8	**20,000**

Alesatori in acciaio HSS

Alesatori a macchina

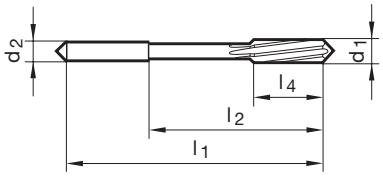
Catalogo n° 72654

DIN 212-2 | B | HSS-E | lucido | +0,004 +0,005 | R | Cyl | 7°

P	M	K	N	S	H
●	○	●	●	○	

Parametri di lav. ind. a pag. 692

- per lavorazione in serie su macchine automatiche
- con imbocco corto, ≤ Ø 3,75 mm: 15°, > Ø 3,75 mm: 45°
- Ø in progressione di 0,01 mm
- ≤ Ø 3,75 mm con centrino su entrambi i lati
- > Ø 3,75 mm con fori di centraggio su entrambi i lati
- tolleranza di costruzione:
- Ø 0,95 - 5,50 mm: 0,00/+0,004
- Ø 5,51 - 12,05 mm: 0,00/+0,005
- per resistenza a trazione fino ad un massimo di 1000 N/mm²



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
0,980	1,000	34,000	15,000	5,500	3	**0,980**
0,990	1,000	34,000	15,000	5,500	3	**0,990**
1,000	1,000	34,000	15,000	5,500	3	**1,000**
1,010	1,100	34,000	15,000	5,500	3	**1,010**
1,020	1,100	34,000	15,000	5,500	3	**1,020**
1,100	1,100	36,000	15,500	6,500	3	**1,100**
1,200	1,200	38,000	16,500	7,500	3	**1,200**
1,300	1,300	38,000	16,500	7,500	3	**1,300**
1,400	1,400	40,000	18,000	8,000	3	**1,400**
1,480	1,500	40,000	18,000	8,000	3	**1,480**
1,490	1,500	40,000	18,000	8,000	3	**1,490**
1,500	1,500	40,000	18,000	8,000	3	**1,500**
1,510	1,600	43,000	20,000	9,000	3	**1,510**
1,520	1,600	43,000	20,000	9,000	3	**1,520**
1,600	1,600	43,000	20,000	9,000	3	**1,600**
1,700	1,700	43,000	20,000	9,000	3	**1,700**
1,800	1,800	46,000	22,000	10,000	4	**1,800**
1,980	2,000	49,000	24,000	11,000	4	**1,980**
1,990	2,000	49,000	24,000	11,000	4	**1,990**
2,000	2,000	49,000	24,000	11,000	4	**2,000**
2,010	2,100	49,000	24,000	11,000	4	**2,010**
2,030	2,100	49,000	24,000	11,000	4	**2,030**
2,100	2,000	49,000	24,000	11,000	4	**2,100**
2,200	2,200	53,000	25,000	12,000	4	**2,200**
2,300	2,300	53,000	25,000	12,000	4	**2,300**
2,400	2,500	57,000	29,000	14,000	4	**2,400**
2,500	2,500	57,000	29,000	14,000	4	**2,500**
2,600	2,500	57,000	29,000	14,000	4	**2,600**
2,700	2,800	61,000	33,000	15,000	6	**2,700**
2,750	2,800	61,000	33,000	15,000	6	**2,750**
2,800	2,800	61,000	33,000	15,000	6	**2,800**
2,900	3,000	61,000	33,000	15,000	6	**2,900**
2,980	3,000	61,000	33,000	15,000	6	**2,980**
2,990	3,000	61,000	33,000	15,000	6	**2,990**
3,000	3,000	61,000	33,000	15,000	6	**3,000**
3,010	3,200	65,000	37,000	16,000	6	**3,010**
3,020	3,200	65,000	37,000	16,000	6	**3,020**
3,050	3,200	65,000	37,000	16,000	6	**3,050**
3,100	3,200	65,000	37,000	16,000	6	**3,100**
3,200	3,200	65,000	37,000	16,000	6	**3,200**
3,250	3,200	65,000	37,000	16,000	6	**3,250**
3,300	3,200	65,000	37,000	16,000	6	**3,300**
3,400	3,500	70,000	42,000	18,000	6	**3,400**
3,500	3,500	70,000	42,000	18,000	6	**3,500**
3,600	3,500	70,000	42,000	18,000	6	**3,600**
3,700	3,500	70,000	42,000	18,000	6	**3,700**
3,800	4,000	75,000	47,000	19,000	6	**3,800**
3,900	4,000	75,000	47,000	19,000	6	**3,900**

d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
3,970	4,000	75,000	47,000	19,000	6	**3,970**
3,980	4,000	75,000	47,000	19,000	6	**3,980**
3,990	4,000	75,000	47,000	19,000	6	**3,990**
4,000	4,000	75,000	47,000	19,000	6	**4,000**
4,010	4,000	75,000	47,000	19,000	6	**4,010**
4,020	4,000	75,000	47,000	19,000	6	**4,020**
4,030	4,000	75,000	47,000	19,000	6	**4,030**
4,040	4,000	75,000	47,000	19,000	6	**4,040**
4,100	4,000	75,000	47,000	19,000	6	**4,100**
4,200	4,000	75,000	47,000	19,000	6	**4,200**
4,500	4,500	80,000	52,000	21,000	6	**4,500**
4,800	5,000	86,000	58,000	23,000	6	**4,800**
4,980	5,000	86,000	58,000	23,000	6	**4,980**
4,990	5,000	86,000	58,000	23,000	6	**4,990**
5,000	5,000	86,000	58,000	23,000	6	**5,000**
5,010	5,000	86,000	58,000	23,000	6	**5,010**
5,020	5,000	86,000	58,000	23,000	6	**5,020**
5,030	5,000	86,000	58,000	23,000	6	**5,030**
5,100	5,000	86,000	58,000	23,000	6	**5,100**
5,200	5,000	86,000	58,000	23,000	6	**5,200**
5,500	5,600	93,000	57,000	26,000	6	**5,500**
5,800	5,600	93,000	57,000	26,000	6	**5,800**
5,980	5,600	93,000	57,000	26,000	6	**5,980**
5,990	5,600	93,000	57,000	26,000	6	**5,990**
6,000	5,600	93,000	57,000	26,000	6	**6,000**
6,010	6,300	101,000	65,000	28,000	6	**6,010**
6,020	6,300	101,000	65,000	28,000	6	**6,020**
6,100	6,300	101,000	65,000	28,000	6	**6,100**
6,200	6,300	101,000	65,000	28,000	6	**6,200**
6,350	6,300	101,000	65,000	28,000	6	**6,350**
6,500	6,300	101,000	65,000	28,000	6	**6,500**
7,000	7,100	109,000	73,000	31,000	6	**7,000**
7,010	7,100	109,000	73,000	31,000	6	**7,010**
7,020	7,100	109,000	73,000	31,000	6	**7,020**
7,100	7,100	109,000	73,000	31,000	6	**7,100**
7,500	7,100	109,000	73,000	31,000	6	**7,500**
7,980	8,000	117,000	81,000	33,000	6	**7,980**
8,000	8,000	117,000	81,000	33,000	6	**8,000**
8,010	8,000	117,000	81,000	33,000	6	**8,010**
8,020	8,000	117,000	81,000	33,000	6	**8,020**
8,030	8,000	117,000	81,000	33,000	6	**8,030**
8,050	8,000	117,000	81,000	33,000	6	**8,050**
8,100	8,000	117,000	81,000	33,000	6	**8,100**
8,200	8,000	117,000	81,000	33,000	6	**8,200**
8,500	8,000	117,000	81,000	33,000	6	**8,500**
8,900	9,000	125,000	85,000	36,000	6	**8,900**
9,000	9,000	125,000	85,000	36,000	6	**9,000**
9,010	9,000	125,000	85,000	36,000	6	**9,010**
9,020	9,000	125,000	85,000	36,000	6	**9,020**
9,500	9,000	125,000	85,000	36,000	6	**9,500**
9,980	10,000	133,000	93,000	38,000	6	**9,980**
10,000	10,000	133,000	93,000	38,000	6	**10,000**
10,010	10,000	133,000	93,000	38,000	6	**10,010**
10,020	10,000	133,000	93,000	38,000	6	**10,020**
10,030	10,000	133,000	93,000	38,000	6	**10,030**
10,500	10,000	133,000	93,000	38,000	6	**10,500**
11,000	10,000	142,000	102,000	41,000	6	**11,000**
11,010	10,000	142,000	102,000	41,000	6	**11,010**
11,020	10,000	142,000	102,000	41,000	6	**11,020**
11,500	10,000	142,000	102,000	41,000	6	**11,500**
12,000	10,000	151,000	111,000	44,000	6	**12,000**

Alesatori in acciaio HSS

Alesatori a macchina

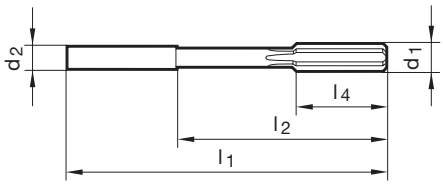
Catalogo n° 72640

DIN 212-2 | A | HSS-E | lucido | H7 | R | Cyl | 0°

P	M	K	N	S	H
●	○	●	●	○	

Parametri di lav. ind. a pag. 692

- ≤ Ø 3,75 mm con centrino su entrambi i lati
- > Ø 3,75 mm con fori di centraggio su entrambi i lati
- per resistenza a trazione fino ad un massimo di 1000 N/mm²



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
2,200	2,200	53,000	25,000	12,000	4	**2,200**
2,800	2,800	61,000	33,000	15,000	6	**2,800**
3,200	3,200	65,000	37,000	16,000	6	**3,200**
3,500	3,500	70,000	42,000	18,000	6	**3,500**
4,000	4,000	75,000	47,000	19,000	6	**4,000**
4,500	4,500	80,000	52,000	21,000	6	**4,500**
5,000	5,000	86,000	58,000	23,000	6	**5,000**
6,000	5,600	93,000	57,000	26,000	6	**6,000**
7,000	7,100	109,000	73,000	31,000	6	**7,000**
8,000	8,000	117,000	81,000	33,000	6	**8,000**
9,000	9,000	125,000	85,000	36,000	6	**9,000**
10,000	10,000	133,000	93,000	38,000	6	**10,000**
11,000	10,000	142,000	102,000	41,000	6	**11,000**
12,000	10,000	151,000	111,000	44,000	6	**12,000**
13,000	10,000	151,000	111,000	44,000	6	**13,000**
14,000	12,500	160,000	115,000	47,000	6	**14,000**
15,000	12,500	162,000	117,000	50,000	6	**15,000**
16,000	12,500	170,000	125,000	52,000	6	**16,000**
17,000	14,000	175,000	130,000	54,000	6	**17,000**
19,000	16,000	189,000	141,000	58,000	6	**19,000**
20,000	16,000	195,000	147,000	60,000	6	**20,000**

Alesatori in acciaio HSS

Alesatori a macchina

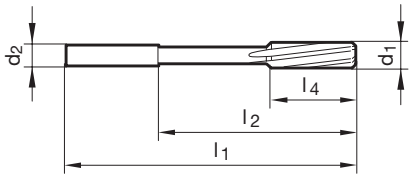
Catalogo n° 72650

DIN 212-2 | B | HSS-E | lucido | H7 | R | Cyl | 7° A

P	M	K	N	S	H
●	○	●	●	○	

Parametri di lav. ind. a pag. 692

- > Ø 3,75 mm con fori di centraggio su entrambi i lati
- ≤ Ø 3,75 mm con centrino su entrambi i lati
- per resistenza a trazione fino ad un massimo di 1000 N/mm²
- solo per fori passanti



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Codice
2,200	2,200	53,000	25,000	12,000	6	**2,200**
2,800	2,800	61,000	33,000	15,000	6	**2,800**
3,200	3,200	65,000	37,000	16,000	6	**3,200**
4,000	4,000	75,000	47,000	19,000	6	**4,000**
4,500	4,500	80,000	52,000	21,000	6	**4,500**
5,000	5,000	86,000	58,000	23,000	6	**5,000**
5,500	5,600	93,000	57,000	26,000	6	**5,500**
6,000	5,600	93,000	57,000	26,000	6	**6,000**
6,500	6,300	101,000	65,000	28,000	6	**6,500**
7,000	7,100	109,000	73,000	31,000	6	**7,000**
8,000	8,000	117,000	81,000	33,000	6	**8,000**
9,000	9,000	125,000	85,000	36,000	6	**9,000**
10,000	10,000	133,000	93,000	38,000	6	**10,000**
11,000	10,000	142,000	102,000	41,000	6	**11,000**
12,000	10,000	151,000	111,000	44,000	6	**12,000**
13,000	10,000	151,000	111,000	44,000	6	**13,000**
14,000	12,500	160,000	115,000	47,000	6	**14,000**
15,000	12,500	162,000	117,000	50,000	6	**15,000**
16,000	12,500	170,000	125,000	52,000	6	**16,000**
17,000	14,000	175,000	130,000	54,000	6	**17,000**
18,000	14,000	182,000	137,000	56,000	6	**18,000**
20,000	16,000	195,000	147,000	60,000	6	**20,000**

Alesatori in acciaio HSS

Alesatori a macchina

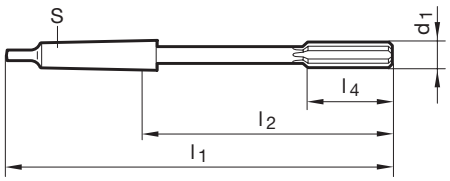
Catalogo n° 72660

DIN 208	A	HSS-E	lucido	H7	R	MK	0°

P	M	K	N	S	H
●	○	●	●	○	

Parametri di lav. ind. a pag. 692

- Ø 3,00 mm lato tagliente con centrino, codolo con foro di centraggio
- ≤ Ø 4,00 mm a norma di fab.
- > Ø 3,00 mm con fori di centraggio su entrambi i lati
- per resistenza a trazione fino ad un massimo di 1000 N/mm²



d1 mm	S	l1 mm	l2 mm	l4 mm	Z	Codice
8,000	MK-1	156,000	94,000	33,000	6	**8,000**
9,000	MK-1	162,000	100,000	36,000	6	**9,000**
10,000	MK-1	168,000	106,000	38,000	6	**10,000**
11,000	MK-1	175,000	113,000	41,000	6	**11,000**
12,000	MK-1	182,000	120,000	44,000	6	**12,000**
13,000	MK-1	182,000	120,000	44,000	6	**13,000**
14,000	MK-1	189,000	127,000	47,000	8	**14,000**
15,000	MK-2	204,000	129,000	50,000	8	**15,000**
16,000	MK-2	210,000	135,000	52,000	8	**16,000**
17,000	MK-2	214,000	139,000	54,000	8	**17,000**
18,000	MK-2	219,000	144,000	56,000	8	**18,000**
19,000	MK-2	223,000	148,000	58,000	8	**19,000**
20,000	MK-2	228,000	153,000	60,000	8	**20,000**
21,000	MK-2	232,000	157,000	62,000	8	**21,000**
22,000	MK-2	237,000	162,000	64,000	8	**22,000**
23,000	MK-2	241,000	166,000	66,000	8	**23,000**
24,000	MK-3	268,000	174,000	68,000	8	**24,000**
25,000	MK-3	268,000	174,000	68,000	8	**25,000**
26,000	MK-3	273,000	179,000	70,000	8	**26,000**
28,000	MK-3	277,000	183,000	71,000	10	**28,000**
30,000	MK-3	281,000	187,000	73,000	10	**30,000**
35,000	MK-4	321,000	203,500	78,000	10	**35,000**

Alesatori in acciaio HSS

Alesatori a macchina

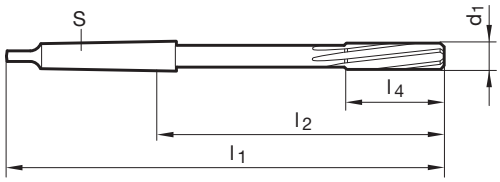
Catalogo n° 72670

DIN 208 | B | HSS-E | lucido | H7 | R | MK | 7°

P	M	K	N	S	H
●	○	●	●	○	

Parametri di lav. ind. a pag. 692

- ≤ Ø 4,00 mm a norma di fab.
- > Ø 3,00 mm con fori di centraggio su entrambi i lati
- Ø 3,00 mm lato tagliente con centrino, codolo con foro di centraggio
- per resistenza a trazione fino ad un massimo di 1000 N/mm²
- solo per fori passanti

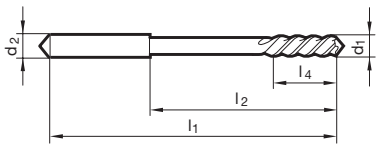


d1 mm	S	l1 mm	l2 mm	l4 mm	Z	Codice
5,000	MK-1	133,000	71,000	23,000	6	**5,000**
6,000	MK-1	138,000	76,000	26,000	6	**6,000**
7,000	MK-1	150,000	88,000	31,000	6	**7,000**
8,000	MK-1	156,000	94,000	33,000	6	**8,000**
9,000	MK-1	162,000	100,000	36,000	6	**9,000**
10,000	MK-1	168,000	106,000	38,000	6	**10,000**
11,000	MK-1	175,000	113,000	41,000	6	**11,000**
12,000	MK-1	182,000	120,000	44,000	6	**12,000**
13,000	MK-1	182,000	120,000	44,000	6	**13,000**
14,000	MK-1	189,000	127,000	47,000	8	**14,000**
15,000	MK-2	204,000	129,000	50,000	8	**15,000**
16,000	MK-2	210,000	135,000	52,000	8	**16,000**
17,000	MK-2	214,000	139,000	54,000	8	**17,000**
18,000	MK-2	219,000	144,000	56,000	8	**18,000**
19,000	MK-2	223,000	148,000	58,000	8	**19,000**
20,000	MK-2	228,000	153,000	60,000	8	**20,000**
21,000	MK-2	232,000	157,000	62,000	8	**21,000**
22,000	MK-2	237,000	162,000	64,000	8	**22,000**
23,000	MK-2	241,000	166,000	66,000	8	**23,000**
24,000	MK-3	268,000	174,000	68,000	8	**24,000**
25,000	MK-3	268,000	174,000	68,000	8	**25,000**
26,000	MK-3	273,000	179,000	70,000	8	**26,000**
27,000	MK-3	277,000	183,000	71,000	10	**27,000**
28,000	MK-3	277,000	183,000	71,000	10	**28,000**
29,000	MK-3	281,000	187,000	73,000	10	**29,000**
30,000	MK-3	281,000	187,000	73,000	10	**30,000**
31,000	MK-3	285,000	191,000	75,000	10	**31,000**
32,000	MK-4	317,000	199,500	77,000	10	**32,000**
33,000	MK-4	317,000	199,500	77,000	10	**33,000**
34,000	MK-4	321,000	203,500	78,000	10	**34,000**
35,000	MK-4	321,000	203,500	78,000	10	**35,000**
38,000	MK-4	329,000	211,500	81,000	10	**38,000**
40,000	MK-4	329,000	211,500	81,000	10	**40,000**
44,000	MK-4	336,000	218,500	83,000	12	**44,000**
45,000	MK-4	336,000	218,500	83,000	12	**45,000**
50,000	MK-4	344,000	226,500	86,000	12	**50,000**

Alesatori in acciaio HSS

Alesatori a macchina a forte torsione

Catalogo n° 72690



DIN 212-2 | C | HSS-E | lucido | H7 | R | Cyl | 45°

P	M	K	N	S	H
●			●		

Parametri di lav. ind. a pag. 692

- con imbocco conico, circa 1/6 della lunghezza del tagliente
- la particolare geometria dell'utensile richiede un aumento del sovrametallo dell'alesatura del foro del 50 fino al 100%
- > Ø 3,75 mm con fori di centraggio su entrambi i lati
- ≤ Ø 3,75 mm con centrino su entrambi i lati
- l'avanzamento dovrebbe essere scelto al 50% maggiore come per tutti gli altri alesatori
- per resistenza a trazione fino ad un massimo di 1000 N/mm²

d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	**Codice**
4,000	4,000	75,000	47,000	19,000	3	**4,000**
4,500	4,500	80,000	52,000	21,000	3	**4,500**
5,000	5,000	86,000	58,000	23,000	3	**5,000**
5,500	5,600	93,000	57,000	26,000	3	**5,500**
6,000	5,600	93,000	57,000	26,000	3	**6,000**
7,000	7,100	109,000	73,000	31,000	3	**7,000**
8,000	8,000	117,000	81,000	33,000	3	**8,000**
9,000	9,000	125,000	85,000	36,000	3	**9,000**
10,000	10,000	133,000	93,000	38,000	3	**10,000**
12,000	10,000	151,000	111,000	44,000	3	**12,000**
13,000	10,000	151,000	111,000	44,000	3	**13,000**

Alesatori in acciaio HSS

Alesatori a macchina per chiodi

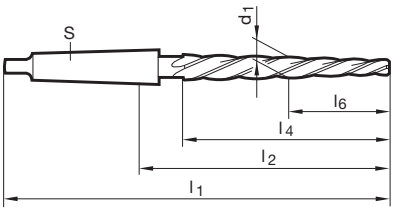
Catalogo n° 72680

DIN 311 | HSS | nitru-rato | R | MK | 25°

P	M	K	N	S	H
●	○	●	●		

Parametri di lav. ind. a pag. 692

- con imbocco lungo, conico 1:10
- corregge la scentratura del foro delle parti di lamiera ordinate in modo sovrapposto al diametro di foratura desiderato (per esempio per chiodare o collegare a vite)
- tolleranza di costruzione k11
- con fori di centraggio su entrambi i lati
- Area di utilizzo principale:
- carpenteria metallica, caldaie e container, costruzione navale
- utensili con alta capacità di truciolatura
- anche per macchine foratrici a mano lente
- per resistenza a trazione fino ad un massimo di 1000 N/mm²



d1 mm	S	l1 mm	l2 mm	l4 mm	l6 mm	Z	Codice
9,500	MK-1	166,000	104,000	90,000	27,000	4	**9,500**
10,000	MK-1	171,000	109,000	95,000	30,000	4	**10,000**
12,000	MK-2	199,000	124,000	105,000	39,000	4	**12,000**
13,000	MK-2	199,000	124,000	105,000	39,000	4	**13,000**
15,000	MK-2	219,000	144,000	125,000	45,000	5	**15,000**
17,000	MK-3	251,000	157,000	135,000	51,000	5	**17,000**
19,000	MK-3	261,000	167,000	145,000	58,000	5	**19,000**
20,000	MK-3	271,000	177,000	155,000	62,000	5	**20,000**
21,000	MK-3	271,000	177,000	155,000	62,000	5	**21,000**
23,000	MK-3	281,000	187,000	165,000	66,000	5	**23,000**
25,000	MK-3	296,000	202,000	180,000	72,000	5	**25,000**
36,000	MK-4	364,000	246,500	220,000	88,000	5	**36,000**
37,000	MK-4	364,000	246,500	220,000	88,000	5	**37,000**

Alesatori in acciaio HSS

Alesatori a macchina per spine coniche

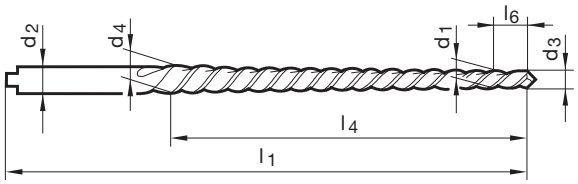
Catalogo n° 72741

DIN 2179 | HSS-E | lucido | R | Cyl | 45°

P	M	K	N	S	H
●		●	●		

Parametri di lav. ind. a pag. 692

- per lavorazione singola e riparazioni
- conicità 1:50 per l'alesatura di fori per spine coniche a DIN 1, 258, 7977 e 7978
- > Ø 4,00 mm con fori di centraggio su entrambi i lati
- ≤ Ø 4,00 mm con centrino su entrambi i lati
- preforatura: cilindrica
- con dente di trascinamento secondo DIN 1809
- per resistenza a trazione fino ad un massimo di 1000 N/mm²



d1 mm	d2 mm	d3 mm	d4 mm	l1 mm	l4 mm	l6 mm	Z	**Codice**
2,000	3,150	1,900	2,860	86,000	48,000	5,000	3	**2,000**
2,500	3,150	2,400	3,360	86,000	48,000	5,000	3	**2,500**
3,000	4,000	2,900	4,060	100,000	58,000	5,000	3	**3,000**
4,000	5,000	3,900	5,260	112,000	68,000	5,000	3	**4,000**
5,000	6,300	4,900	6,360	122,000	73,000	5,000	3	**5,000**
6,000	8,000	5,900	8,000	160,000	105,000	5,000	3	**6,000**
6,500	8,500	6,400	8,780	188,000	119,000	5,000	3	**6,500**
8,000	10,000	7,900	10,800	207,000	145,000	5,000	3	**8,000**
10,000	12,500	9,900	13,400	245,000	175,000	5,000	3	**10,000**
12,000	16,000	11,860	16,000	290,000	210,000	7,000	3	**12,000**

Alesatori in acciaio HSS

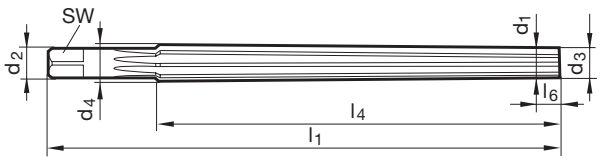
Alesatori a mano cilindrici, per spine coniche

Catalogo n° 72730

DIN 9 | A | HSS | lucido | R | Cyl | 0°

P	M	K	N	S	H
●		●	●		

- per lavorazione singola e riparazioni
- conicità 1:50 per l'alesatura di fori per spine coniche
- quadro a DIN 10
- Ø 3,50; 4,50, 5,50; 6,50; 7,00; 9,00; 13,00 e 14,00 mm a norma di fabbrica
- preforatura: cilindrica
- per resistenza a trazione fino ad un massimo di 900 N/mm²



d1 mm	d2 mm	d3 mm	d4 mm	l1 mm	l4 mm	l6 mm	SW mm	Z	**Codice**
1,000	3,150	0,900	1,460	46,000	28,000	5,000	2,400	3	**1,000**
1,200	3,150	1,100	1,740	50,000	32,000	5,000	2,400	3	**1,200**
2,000	3,150	1,900	2,860	68,000	48,000	5,000	2,400	3	**2,000**
3,000	4,000	2,900	4,060	80,000	58,000	5,000	3,000	5	**3,000**
4,000	5,000	3,900	5,260	93,000	68,000	5,000	3,800	5	**4,000**
5,000	6,300	4,900	6,360	100,000	73,000	5,000	4,900	5	**5,000**
6,000	8,000	5,900	8,000	135,000	105,000	5,000	6,200	6	**6,000**
8,000	10,000	7,900	10,800	180,000	145,000	5,000	8,000	6	**8,000**
10,000	12,500	9,900	13,400	215,000	175,000	5,000	10,000	6	**10,000**
12,000	14,000	11,800	16,000	255,000	210,000	10,000	11,000	8	**12,000**
16,000	18,000	15,800	20,400	280,000	230,000	10,000	14,500	8	**16,000**

Alesatori in acciaio HSS

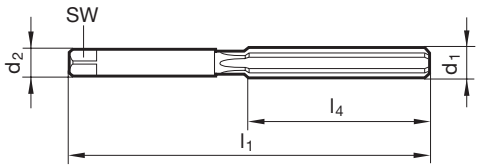
Alesatori a mano

Catalogo n° 72600

DIN 206	A	HSS	lucido	H7	R	Cyl	0°

P	M	K	N	S	H
●		●	●		

- per lavorazione singola e riparazioni
- con imbocco lungo, conico, circa 1/3 della lunghezza del tagliente
- non è adatto per fori ciechi a causa delle lunghezze di taglio
- quadro a DIN 10
- ≤ Ø 3,75 mm con centrino su entrambi i lati
- > Ø 3,75 mm con fori di centraggio su entrambi i lati
- ≤ 1,75 mm a norma di fab
- per resistenza a trazione fino ad un massimo di 900 N/mm²

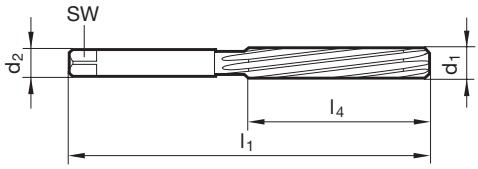


d1 **mm**	d2 mm	l1 mm	l4 mm	SW mm	Z	**Codice**
2,500	2,500	58,000	29,000	2,100	4	**2,500**
3,000	3,000	62,000	31,000	2,400	6	**3,000**
4,000	4,000	76,000	38,000	3,000	6	**4,000**
4,500	4,500	81,000	41,000	3,400	6	**4,500**
5,000	5,000	87,000	44,000	3,800	6	**5,000**
5,500	5,500	93,000	47,000	4,300	6	**5,500**
6,000	6,000	93,000	47,000	4,900	6	**6,000**
8,000	8,000	115,000	58,000	6,200	6	**8,000**
9,000	9,000	124,000	62,000	7,000	6	**9,000**
10,000	10,000	133,000	66,000	8,000	6	**10,000**
11,000	11,000	142,000	71,000	9,000	6	**11,000**
12,000	12,000	152,000	76,000	9,000	6	**12,000**
13,000	13,000	152,000	76,000	10,000	6	**13,000**
14,000	14,000	163,000	81,000	11,000	8	**14,000**
15,000	15,000	163,000	81,000	12,000	8	**15,000**
16,000	16,000	175,000	87,000	12,000	8	**16,000**
17,000	17,000	175,000	87,000	13,000	8	**17,000**
18,000	18,000	188,000	93,000	14,500	8	**18,000**
19,000	19,000	188,000	93,000	14,500	8	**19,000**
20,000	20,000	201,000	100,000	16,000	8	**20,000**
25,000	25,000	231,000	115,000	20,000	8	**25,000**
28,000	28,000	247,000	124,000	22,000	10	**28,000**
32,000	32,000	265,000	133,000	24,000	10	**32,000**
34,000	34,000	284,000	142,000	26,000	10	**34,000**

Alesatori in acciaio HSS

Alesatori a mano

Catalogo n° 72610



DIN 206 | B | HSS | lucido | H7 | R | Cyl | 7° A

P	M	K	N	S	H
●		●	●		

- per lavorazione singola e riparazioni
- con imbocco lungo, conico, circa 1/3 della lunghezza del tagliente
- per fori con taglio interrotto, per esempio pezzi divisi, interruzioni di parete, fori trasversali e simili
- quadro a DIN 10
- ≤ Ø 3,75 mm con centrino su entrambi i lati
- > Ø 3,75 mm con fori di centraggio su entrambi i lati
- ≤ 1,75 mm a norma di fab
- per resistenza a trazione fino ad un massimo di 900 N/mm²

d1 mm	d2 mm	l1 mm	l4 mm	SW mm	Z	**Codice**
2,000	2,000	50,000	25,000	1,600	4	**2,000**
2,800	2,800	62,000	31,000	2,100	6	**2,800**
3,000	3,000	62,000	31,000	2,400	6	**3,000**
4,000	4,000	76,000	38,000	3,000	6	**4,000**
4,500	4,500	81,000	41,000	3,400	6	**4,500**
5,000	5,000	87,000	44,000	3,800	6	**5,000**
6,000	6,000	93,000	47,000	4,900	6	**6,000**
7,000	7,000	107,000	54,000	5,500	6	**7,000**
8,000	8,000	115,000	58,000	6,200	6	**8,000**
9,000	9,000	124,000	62,000	7,000	6	**9,000**
10,000	10,000	133,000	66,000	8,000	6	**10,000**
12,000	12,000	152,000	76,000	9,000	6	**12,000**
13,000	13,000	152,000	76,000	10,000	6	**13,000**
14,000	14,000	163,000	81,000	11,000	8	**14,000**
15,000	15,000	163,000	81,000	12,000	8	**15,000**
16,000	16,000	175,000	87,000	12,000	8	**16,000**
18,000	18,000	188,000	93,000	14,500	8	**18,000**
19,000	19,000	188,000	93,000	14,500	8	**19,000**
20,000	20,000	201,000	100,000	16,000	8	**20,000**
22,000	22,000	215,000	107,000	18,000	8	**22,000**
24,000	24,000	231,000	115,000	18,000	8	**24,000**
25,000	25,000	231,000	115,000	20,000	8	**25,000**
28,000	28,000	247,000	124,000	22,000	10	**28,000**
30,000	30,000	247,000	124,000	24,000	10	**30,000**
32,000	32,000	265,000	133,000	24,000	10	**32,000**
34,000	34,000	284,000	142,000	26,000	10	**34,000**
35,000	35,000	284,000	142,000	29,000	10	**35,000**

Svasatori en HSS

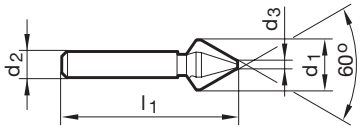
Svasatori 60°

Catalogo n° 72326

DIN 334 | C | HSS | lucido | 60° | R | Cyl

P	M	K	N	S	H
●	○	●	●	●	

- sbavatore e svasatore universale, per esempio per fori
- spogliati radialmente
- a tre taglienti



d1 mm	d2 mm	d3 mm	l1 mm	Z	Codice
6,300	5,000	1,600	45,000	3	**6,300**
8,000	6,000	2,000	50,000	3	**8,000**
12,500	8,000	3,200	56,000	3	**12,500**
16,000	10,000	4,000	63,000	3	**16,000**
20,000	10,000	5,000	67,000	3	**20,000**
25,000	10,000	6,300	71,000	3	**25,000**

Svasatori en HSS

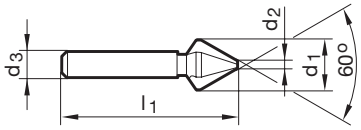
Svasatori 60°

Catalogo n° 62327

DIN 334 | C | HSS | TiN | 60° | R | Cyl

P	M	K	N	S	H
●	●	●	●	○	

- sbavatore e svasatore universale, per esempio per fori
- spogliati radialmente
- a tre taglienti

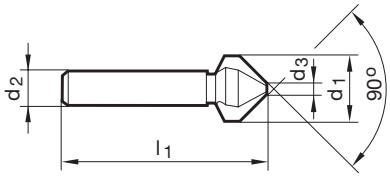


d1 mm	d2 mm	d3 mm	l1 mm	Z	Codice
6,300	5,000	1,600	45,000	3	**6,300**
8,000	6,000	2,000	50,000	3	**8,000**
12,500	8,000	3,200	56,000	3	**12,500**
25,000	10,000	6,300	71,000	3	**25,000**

Svasatori en HSS

Svasatori 90°

Catalogo n° 72346



DIN 335 | C | HSS | lucido | 90° | R | Cyl

P	M	K	N	S	H
●	○	●	●	●	

- sbavatore e svasatore universale, per esempio per fori
- spogliati radialmente
- a tre taglienti

d1 mm	d2 mm	d3 mm	l1 mm	Z	Codice
4,300	4,000	1,300	40,000	3	**4,300**
5,000	4,000	1,500	40,000	3	**5,000**
5,300	4,000	1,500	40,000	3	**5,300**
5,800	5,000	1,500	45,000	3	**5,800**
6,000	5,000	1,500	45,000	3	**6,000**
6,300	5,000	1,500	45,000	3	**6,300**
7,000	6,000	1,800	50,000	3	**7,000**
7,300	6,000	1,800	50,000	3	**7,300**
8,000	6,000	2,000	50,000	3	**8,000**
8,300	6,000	2,000	50,000	3	**8,300**
9,400	6,000	2,200	50,000	3	**9,400**
10,000	6,000	2,500	50,000	3	**10,000**
10,400	6,000	2,500	50,000	3	**10,400**
11,500	8,000	2,800	56,000	3	**11,500**
12,400	8,000	2,800	56,000	3	**12,400**
13,400	8,000	2,900	56,000	3	**13,400**
15,000	10,000	3,200	60,000	3	**15,000**
16,500	10,000	3,200	60,000	3	**16,500**
19,000	10,000	3,500	63,000	3	**19,000**
20,500	10,000	3,500	63,000	3	**20,500**
23,000	10,000	3,800	67,000	3	**23,000**
25,000	10,000	3,800	67,000	3	**25,000**
26,000	10,000	3,800	67,000	3	**26,000**
28,000	12,000	4,000	71,000	3	**28,000**
30,000	12,000	4,200	71,000	3	**30,000**
31,000	12,000	4,200	71,000	3	**31,000**

Svasatori en HSS

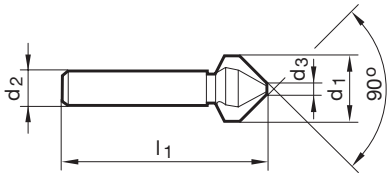
Svasatori 90°

Catalogo n° 62347

DIN 335 | C | HSS | TiN | 90° | R | Cyl

P	M	K	N	S	H
●	○	●	○	●	

- sbavatore e svasatore universale, per esempio per fori
- spogliati radialmente
- a tre taglienti

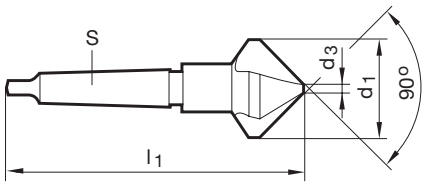


d1 mm	d2 mm	d3 mm	l1 mm	Z	Codice
4,300	4,000		40,000	3	**4,300**
5,000	4,000	1,500	40,000	3	**5,000**
6,300	5,000	1,500	45,000	3	**6,300**
7,300	6,000	1,800	50,000	3	**7,300**
8,000	6,000	2,000	50,000	3	**8,000**
8,300	6,000	2,000	50,000	3	**8,300**
9,400	6,000	2,200	50,000	3	**9,400**
10,000	6,000	2,500	50,000	3	**10,000**
10,400	6,000	2,500	50,000	3	**10,400**
11,500	8,000	2,800	56,000	3	**11,500**
12,400	8,000	2,800	56,000	3	**12,400**
15,000	10,000	3,200	60,000	3	**15,000**
16,500	10,000	3,200	60,000	3	**16,500**
19,000	10,000	3,500	63,000	3	**19,000**
20,500	10,000	3,500	63,000	3	**20,500**
25,000	10,000	3,800	67,000	3	**25,000**
30,000	12,000	4,200	71,000	3	**30,000**
31,000	12,000	4,200	71,000	3	**31,000**

Svasatori en HSS

Svasatori 90°

Catalogo n° 72356



DIN 335 | D | HSS | luci-do | 90° | R | MK

P	M	K	N	S	H
●	○	●	●	●	

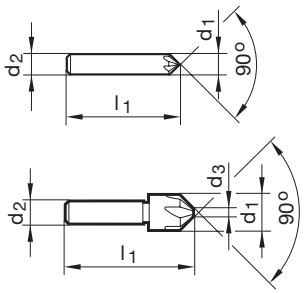
- sbavatore e svasatore universale, per esempio per fori
- spogliati radialmente
- a tre taglienti

d1 mm	S	d3 mm	l1 mm	Z	Codice
15,000	MK-1	3,200	85,000	3	**15,000**
19,000	MK-2	3,500	100,000	3	**19,000**
20,500	MK-2	3,500	100,000	3	**20,500**
25,000	MK-2	3,800	106,000	3	**25,000**
30,000	MK-2	4,200	112,000	3	**30,000**
31,000	MK-2	4,200	112,000	3	**31,000**
34,000	MK-2	4,500	118,000	3	**34,000**
37,000	MK-2	4,800	118,000	3	**37,000**
40,000	MK-3	10,000	140,000	3	**40,000**
50,000	MK-3	14,000	150,000	3	**50,000**
63,000	MK-4	16,000	180,000	3	**63,000**
80,000	MK-4	22,000	190,000	3	**80,000**

Svasatori en HSS

Svasatori 90°

Catalogo n° 72345



DIN 335 | A | HSS | trattati a vapore | 90° | R | Cyl

P	M	K	N	S	H
●	○	●	●	●	

- taglienti diritti
- taglienti multipli

d1 mm	d2 mm	d3 mm	l1 mm	Z	Codice
8,000	8,000		48,000	5	**8,000**
12,500	8,000	2,000	48,000	5	**12,500**
16,000	10,000	3,200	56,000	7	**16,000**
20,000	10,000	5,000	60,000	7	**20,000**

Svasatori en HSS

Assortimenti di svasatori cilindrici a 90°

DIN 335 | C | HSS | lucido | 90° | R | Cyl

P	M	K	N	S	H
●	○	●	●	○	

- kit in cassette, composti da catalogo n° 72346 Ø 6,3 / 8,3 / 10,4 / 12,4 / 16,5 / 20,5 mm
- sbavatore e svasatore universale, per esempio per fori
- spogliati radialmente
- a tre taglienti

Catalogo n° 72399

Codice	d1 mm	Pezzi per set
8,000	**6,30-20,50**	6

Svasatori en HSS

Assortimenti di svasatori cilindrici a 90°

DIN 335 | C | HSS | TiN | 90° | R | Cyl

P	M	K	N	S	H
●	○	●	○	○	

- kit in cassette, composti da catalogo n° 62347 Ø 6,3 / 8,3 / 10,4 / 12,4 / 16,5 / 20,5 mm
- sbavatore e svasatore universale, per esempio per fori
- spogliati radialmente
- a tre taglienti

Catalogo n° 62399

Codice	d1 mm	Pezzi per set
8,000	**6,30-20,50**	6

Svasatori en HSS

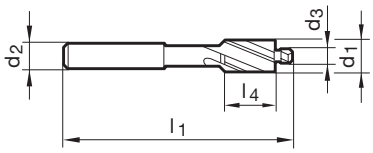
Frese per sedi viti con guide, esecuzione fine

Catalogo n° 72304

DIN 373 | HSS | luci-do | R | Cyl

P	M	K	N	S	H
●	○	●	●	○	

- con guida fissa
- elica destra



d1 mm	d2 mm	d3 mm	l1 mm	l4 mm	G	Z	**Codice**
6,000	5,000	3,200	71,000	14,000	M 3	3	**6,000**
8,000	5,000	4,300	71,000	14,000	M 4	3	**8,000**
10,000	8,000	5,300	80,000	18,000	M 5	3	**10,000**
11,000	8,000	6,400	80,000	18,000	M 6	3	**11,000**
15,000	12,500	8,400	100,000	22,000	M 8	3	**15,000**
18,000	12,500	10,500	100,000	22,000	M 10	3	**18,000**
20,000	12,500	13,000	100,000	22,000	M 12	3	**20,000**

Svasatori en HSS

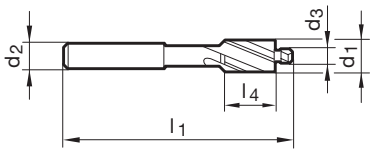
Frese per sedi viti con guide, esecuzione media

Catalogo n° 72305

DIN 373 | HSS | luci-do | R | Cyl

P	M	K	N	S	H
●	○	●	●	○	

- con guida fissa
- elica destra
- per svasature a DIN 974, parte 1



d1 **mm**	d2 mm	d3 mm	l1 mm	l6 mm	d1	Z	**Codice**
6,000	5,000	3,400	71,000	14,000	M 3	3	**6,000**
8,000	5,000	4,500	71,000	14,000	M 4	3	**8,000**
10,000	8,000	5,500	80,000	18,000	M 5	3	**10,000**
11,000	8,000	6,600	80,000	18,000	M 6	3	**11,000**
15,000	12,500	9,000	100,000	22,000	M 8	3	**15,000**
18,000	12,500	11,000	100,000	22,000	M 10	3	**18,000**

Utensili di sbavatura e smussatura

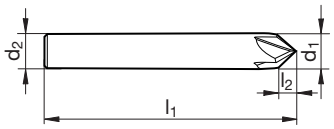
Fresa frontali a 60° per sbavatura

Catalogo n° 53393

Super AF-60 | WN | VHM | Al-TiN | 60° | js9 | R | HA

P	M	K	N	S	H
●	●	●	●	●	

- Utensile per sbavatura e smusso per la lavorazione in entrata del foro con angolo di 60°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
4,000	4,000	50,000	3,500	4	**4,000**
6,000	6,000	57,000	5,200	4	**6,000**
8,000	8,000	63,000	7,000	4	**8,000**
10,000	10,000	72,000	8,700	4	**10,000**
12,000	12,000	83,000	10,400	4	**12,000**

Utensili di sbavatura e smussatura

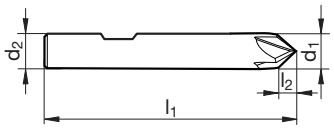
Fresa frontali a 60° per sbavatura

Catalogo n° 53394

Super AF-60 | WN | VHM | Al-TiN | 60° | js9 | R | HB

P	M	K	N	S	H
●	●	●	●	●	

- Utensile per sbavatura e smusso per la lavorazione in entrata del foro con angolo di 60°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
6,000	6,000	57,000	5,200	4	**6,000**
8,000	8,000	63,000	7,000	4	**8,000**
10,000	10,000	72,000	8,700	4	**10,000**
12,000	12,000	83,000	10,400	4	**12,000**

Utensili di sbavatura e smussatura

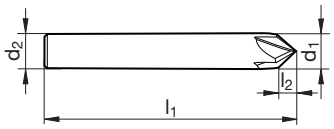
Fresa frontali a 90°per sbavatura

Catalogo n° 53395

Super AF-90 | WN | VHM | Al-TiN | 90° | js9 | R | HA

P	M	K	N	S	H
●	●	●	●	●	

- Utensile per sbavatura e smusso per la lavorazione in entrata del foro con angolo di 90°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
4,000	4,000	50,000	2,000	4	**4,000**
6,000	6,000	57,000	3,000	4	**6,000**
8,000	8,000	63,000	4,000	4	**8,000**
10,000	10,000	72,000	5,000	4	**10,000**
12,000	12,000	83,000	6,000	4	**12,000**

Utensili di sbavatura e smussatura

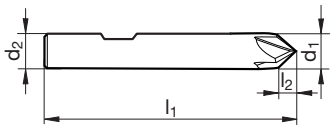
Fresa frontali a 90°per sbavatura

Catalogo n° 53396

Super AF-90 | WN | VHM | Al-TiN | 90° | js9 | R | HB

P	M	K	N	S	H
●	●	●	●	●	

- Utensile per sbavatura e smusso per la lavorazione in entrata del foro con angolo di 90°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
4,000	4,000	50,000	2,000	4	**4,000**
6,000	6,000	57,000	3,000	4	**6,000**
8,000	8,000	63,000	4,000	4	**8,000**
10,000	10,000	72,000	5,000	4	**10,000**
12,000	12,000	83,000	6,000	4	**12,000**

Utensili di sbavatura e smussatura

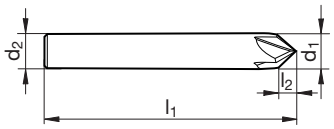
Fresa frontali a 120°per sbavatura

Catalogo n° 53397

Super AF-120 | WN | VHM | Al-TiN | 120° | js9 | R | HA

P	M	K	N	S	H
●	●	●	●	●	

- Utensile per sbavatura e smusso per la lavorazione in entrata del foro con angolo di 120°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
4,000	4,000	50,000	1,200	4	**4,000**
6,000	6,000	57,000	1,800	4	**6,000**
8,000	8,000	63,000	2,400	4	**8,000**
10,000	10,000	72,000	2,900	4	**10,000**
12,000	12,000	83,000	3,500	4	**12,000**

Utensili di sbavatura e smussatura

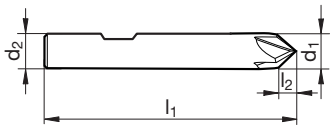
Fresa frontali a 120°per sbavatura

Catalogo n° 53398

Super AF-120	WN	VHM	Al-TiN	120°	js9	R	HB

P	M	K	N	S	H
•	•	•	•	•	

- Utensile per sbavatura e smusso per la lavorazione in entrata del foro con angolo di 120°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Codice
6,000	6,000	57,000	1,800	4	**6,000**
8,000	8,000	63,000	2,400	4	**8,000**
10,000	10,000	72,000	2,900	4	**10,000**
12,000	12,000	83,000	3,500	4	**12,000**

Utensili di sbavatura e smussatura

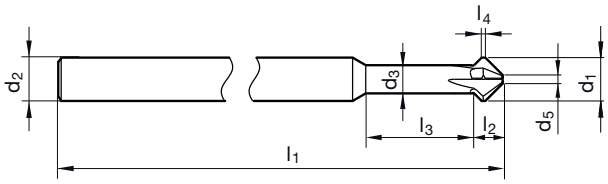
Sbavatori a 90° ad avanzamento ed estrazione

Catalogo n° 52365

Super AD-90 | WN | VHM | AlTiN nano | R | HA | 0°

P	M	K	N	S	H
●	●				

- Utensile per sbavatura e smussatura per la lavorazione in entrata e uscita dal foro con un angolo di smusso 90 °
- per impiego in mandrini ad espansione idraulica e per calettamento
- con codolo a DIN 6535



d1 mm	d2 h6 mm	d3 mm	d5 mm	l1 mm	l2 mm	l3 mm	l4 mm	Z	Codice
3,000	4,000	2,200	0,600	75,000	2,10	9,300	0,500	4	**3,000**
4,000	4,000	2,900	0,800	75,000	2,70	12,300	0,500	4	**4,000**
5,000	5,000	3,900	1,000	75,000	3,00	15,000	0,500	4	**5,000**
6,000	6,000	3,900	1,200	100,000	3,90	14,300	0,500	4	**6,000**
8,000	6,000	6,000	1,600	100,000	4,70		0,500	4	**8,000**
10,000	6,000	6,000	2,000	100,000	6,50		0,500	4	**10,000**
12,000	6,000	6,000	2,400	100,000	8,30		0,500	4	**12,000**

Utensili di sbavatura e smussatura

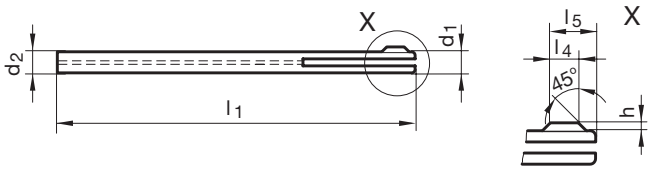
Utensili sbavatori

Catalogo n° 52360

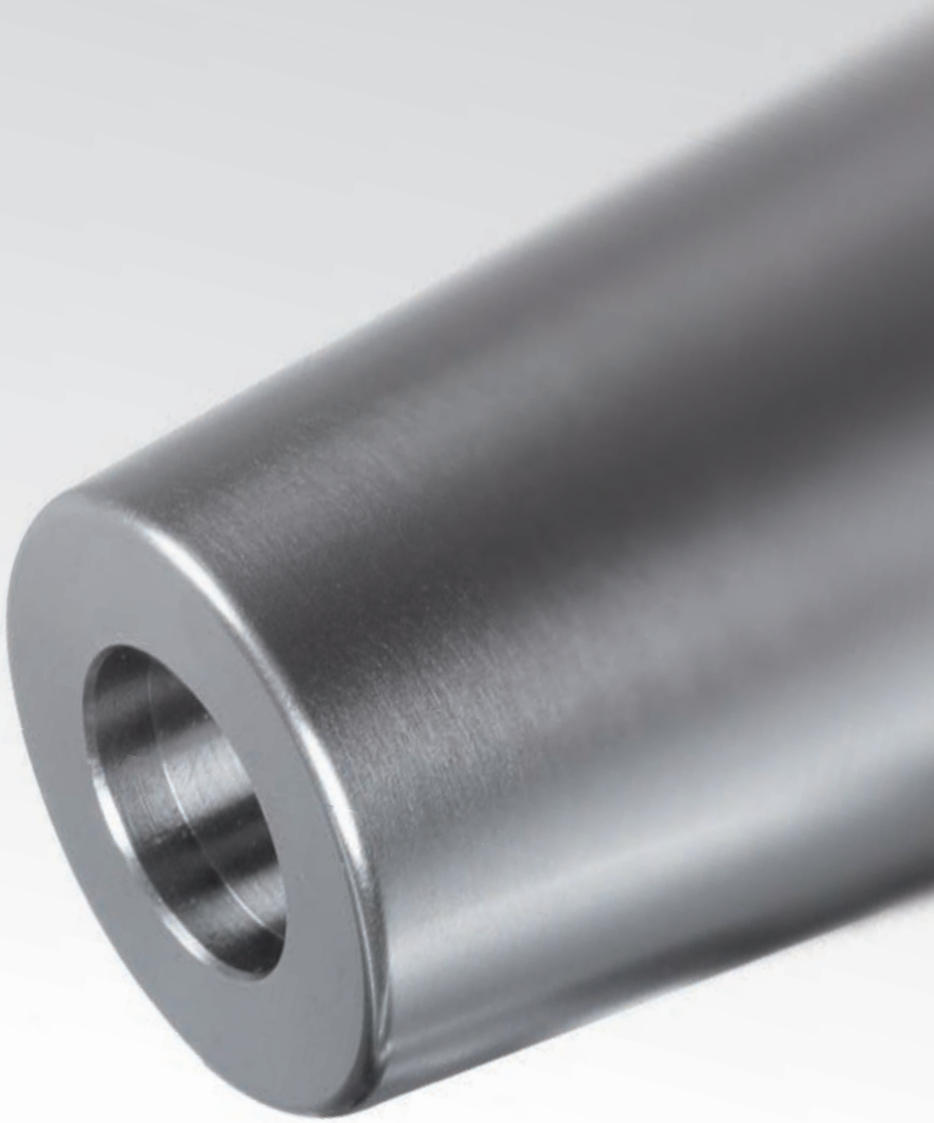
SuperE-U | WN | VHM | lucido | R | Cyl

P	M	K	N	S	H
●	●		○		

- sbavatore per la lavorazione di fori in entrata e in uscita così come fori trasversali
- con codolo a DIN 6535
- con codolo cilindrico passante per impiego con pinze di serraggio
- con refrigerazione interna
- uso universale



Codice	Campo Ø mm	d1 mm	d2 mm	l1 mm	l4 mm	l5 mm	h mm
2,000	**1,91 -2,15**	1,900	1,900	80,000	1,000	2,050	0,350
2,250	**2,16 -2,40**	2,100	2,100	80,000	1,500	2,600	0,400
2,500	**2,41 -2,70**	2,400	2,400	80,000	1,500	2,900	0,400
2,750	**2,71 -2,90**	2,600	2,600	90,000	1,500	2,950	0,450
3,000	**2,91 -3,25**	2,900	2,900	90,000	2,000	3,650	0,450
3,500	**3,26 -3,60**	3,200	3,200	90,000	2,000	3,800	0,600
4,000	**3,61 -4,25**	3,600	3,600	90,000	2,000	4,100	0,700
4,500	**4,26 -4,75**	4,200	4,200	90,000	2,500	4,600	0,700
5,000	**4,76 -5,30**	4,700	4,700	100,000	2,500	4,850	0,750
5,500	**5,31 -5,80**	5,200	5,200	100,000	2,500	4,850	0,750
6,000	**5,81 -6,20**	5,600	5,600	110,000	3,000	5,800	0,800
6,500	**6,21 -6,70**	6,000	6,000	110,000	3,000	5,900	0,900
7,000	**6,71 -7,10**	6,500	6,500	110,000	3,000	5,850	0,850
7,500	**7,11 -7,60**	6,900	6,900	110,000	3,500	6,950	0,950
8,000	**7,61 -8,05**	7,300	7,300	110,000	3,500	7,000	1,000



ATTACCHI UTENSILI

Attacchi utensili

		SK DIN 69871	MAS/BT JIS B6339	HSK-A DIN 69893
Mandrini ad espansione idraulica		**78213**, p. 749	**78221**, p. 750	**78299**, p. 748
Mandrini di calettamento		**78738**, p. 755 **78729** con refrigerazione periferica, p. 756	**78739**, p. 757	**78736**, p. 753 **78755** con refrigerazione periferica, p. 754
Attacchi con codolo cilindrico „Weldon“/ „Whistle-Notch“		**78317** Weldon, p. 760 **78322** Whistle-Notch, p. 761	**78234** Weldon, p. 763 **78233** Whistle-Notch, p. 762	**78232** Weldon, p. 758 **78334** Whistle-Notch, p. 759
Mandrini per maschiatura sincrona		* **78326** Mandrini di maschiatura sincrona cil. con raffr. interno, p. 767 * **78340** Mandrini di masch. cambio rapido no refrig. interno, p. 769	* **78326** Mandrini di maschiatura sincrona cil. con raffr. interno, p. 767 * **78340** Mandrini di masch. cambio rapido no refrig. interno, p. 769	* **78326** Mandrini di maschiatura sincrona cil. con raffr. interno, p. 767 * **78340** Mandrini di masch. cambio rapido no refrig. interno, p. 769

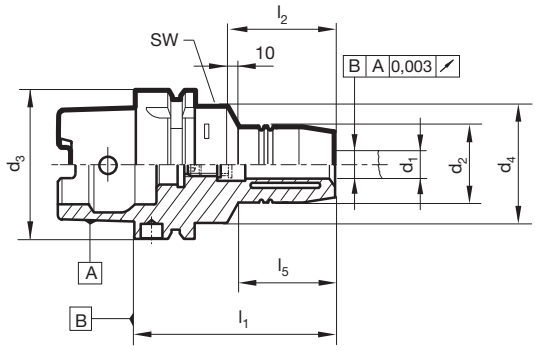
* in combinazione con il codolo corrispondente o l'attacco utensile adatto

Mandrino / portautensile gambi cilindrici	Mandrini di calettamento	Mandrini idraulici	Attacchi cilindrici „Weldon“/ „Whistle-Notch“
			
Proprietà	Massima concentricità, contorno molto sottile senza interferenze, buona rigidità; elevata forza di serraggio, vite di regolazione certificata che assicura la concentricità.	Alta regolazione con massima concentricità; facilità d‘uso, flessibilità d‘impiego riducendo le boccole con refrigerazione periferica	robusto, mandrino economico per taglio pesante Velocità e precisione
Principali applicazioni	Foratura, Lamatura, Fresatura, Alesatura, applicazioni universali e HSC	Alesatura, Foratura, Lamatura, HSC-applicazione, leggera Fresatura	sgrossatura, Fresatura, Foratura
Caratteristiche principali	preciso, sottile, alta forza di serraggio	facilità d‘uso	facilità d‘uso, massima tensione
Circolarità	< 3µm	< 3µm	< 10µm
da 5xD	< 5µm	< 5µm	< 25µm
Serraggio	molto elevato	molto elevato	molto sicuro
Rigidità	molto elevato	elevato	molto elevato
Smorzamento	basso	molto elevato	basso
Profilo di ingombro	piccolo	medio	grosso
Movimentazione	bouno	molto buono / molto flessibile	buono
Funzionamento	Riscaldamento termico	Idraulico	Tramite chiave

Mandrini ad espansione idraulica

Mandrini ad espans. idraulica HSK-A c. maggiore forza di serr.

Catalogo n° 78299



DIN 69882-7 | lucido

- qualità di bilanciamento: G 2.5 / 25.000 giri / min
- regolazione della lunghezza assiale
- adatto per utensili con refrigerazione interna
- per tolleranza codolo h6
- sovralunghezza l1= 150 mm, 160 mm (concentricità 5 µm) e 200 mm (concentricità 7 µm)
- HSK-A a ISO 12164-1 / DIN 69893-1
- Dotazione:
- compresa la vite di regolazione
- compresa la chiave di serraggio
- ordinare separatamente l'unità di adduzione refrigerante

d3	d1	d2	d4	l1	l2	l5	SW		Codice
	mm	mm	mm	mm	mm	mm	mm	kg	
HSK-A 63	6,000	26,000	50,000	70,000	37,000	24,000	5,0	1,000	**6,063**
HSK-A 63	8,000	28,000	50,000	70,000	37,000	24,000	5,0	1,056	**8,063**
HSK-A 63	10,000	30,000	50,000	80,000	41,000	35,000	5,0	1,000	**10,063**
HSK-A 63	12,000	32,000	50,000	85,000	46,000	40,000	5,0	1,100	**12,063**
HSK-A 63	14,000	34,000	50,000	85,000	46,000	40,000	5,0	1,100	**14,063**
HSK-A 63	16,000	38,000	50,000	90,000	49,000	46,000	5,0	1,200	**16,063**
HSK-A 63	18,000	40,000	50,000	90,000	49,000	47,000	5,0	1,275	**18,063**
HSK-A 63	20,000	42,000	50,000	90,000	51,000	48,000	5,0	1,200	**20,063**
HSK-A 63	25,000	57,000	63,000	120,000	57,000	59,000	6,0	2,100	**25,063**
HSK-A 63	32,000	64,000	75,000	125,000	61,000	63,000	6,0	2,400	**32,063**
HSK-A 100	6,000	26,000	50,000	75,000	37,000	26,000	5,0	2,400	**6,100**
HSK-A 100	8,000	28,000	50,000	75,000	37,000	26,000	5,0	2,400	**8,100**
HSK-A 100	10,000	30,000	50,000	90,000	41,000	42,000	5,0	2,500	**10,100**
HSK-A 100	12,000	32,000	50,000	95,000	46,000	47,000	5,0	2,500	**12,100**
HSK-A 100	14,000	34,000	50,000	95,000	46,000	47,000	5,0	2,500	**14,100**
HSK-A 100	16,000	38,000	50,000	100,000	49,000	53,000	5,0	2,755	**16,100**
HSK-A 100	18,000	40,000	50,000	100,000	49,000	53,000	5,0	2,700	**18,100**
HSK-A 100	20,000	42,000	75,000	105,000	51,000	59,000	5,0	3,200	**20,100**
HSK-A 100	25,000	57,000	75,000	110,000	57,000	62,000	6,0	3,300	**25,100**
HSK-A 100	32,000	64,000	75,000	110,000	61,000	62,000	6,0	3,800	**32,100**

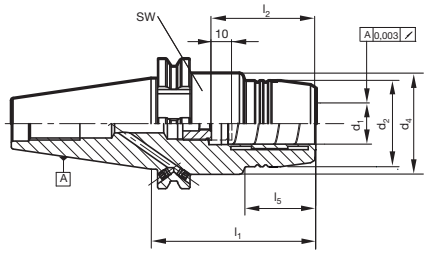
Mandrini ad espansione idraulica

Mandrini ad espan. idraulica SK, maggiore forza di serraggio

Catalogo n° 78213

WN | luci-do

- SK a DIN ISO 7388-1 Forma AD/AF
- fori per Forma B chiusi, se forniti con perni filettati
- qualità di bilanciamento: G 2.5 / 25.000 giri / min
- regolazione della lunghezza assiale
- per tolleranza codolo h6
- adatto per utensili con refrigerazione interna
- Dotazione:
- compresa la vite di regolazione
- compresa la chiave di serraggio
- ordinare separatamente i perni



d3	d1 mm	d2 mm	d4 mm	l1 mm	l2 mm	l5 mm	SW mm	kg	Codice
SK 40	6,000	26,000	49,500	80,500	37,000	29,500	5,0	1,500	**6,040**
SK 40	8,000	28,000	49,500	80,500	37,000	30,000	5,0	1,500	**8,040**
SK 40	10,000	30,000	49,500	80,500	41,000	31,000	5,0	1,396	**10,040**
SK 40	12,000	32,000	49,500	80,500	46,000	31,500	5,0	1,500	**12,040**
SK 40	14,000	34,000	49,500	80,500	46,000	31,500	5,0	1,500	**14,040**
SK 40	16,000	38,000	49,500	80,500	49,000	33,000	5,0	1,500	**16,040**
SK 40	18,000	40,000	49,500	80,500	49,000	33,000	5,0	1,500	**18,040**
SK 40	20,000	49,500	49,500	64,500	51,000		5,0	1,500	**20,040**
SK 40	20,000	42,000	49,500	80,500	51,000	34,000	5,0	1,500	**20,140**
SK 50	12,000	32,000	49,500	80,500	46,000	31,500	5,0	3,500	**12,050**
SK 50	20,000	42,000	49,500	80,500	51,000	34,000	5,0	4,000	**20,050**
SK 50	32,000	72,000	72,000	81,000	61,000		6,0	4,000	**32,050**

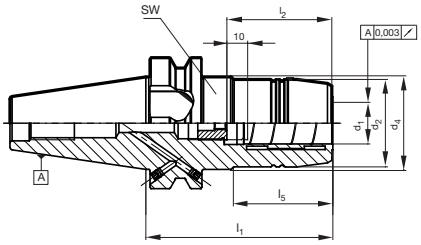
Mandrini ad espansione idraulica

Mandrini ad espan. idraulica MAS/BT, maggiore forza di serr.

Catalogo n° 78221

WN | lucido

- qualità di bilanciamento: G 2.5 / 25.000 giri / min
- regolazione della lunghezza assiale
- per tolleranza codolo h6
- adatto per utensili con refrigerazione interna
- MAS/BT a DIN ISO 7388-2 Forma JD/JF (Forma AD/B)
- Dotazione:
- compresa la vite di regolazione
- compresa la chiave di serraggio
- ordinare separatamente i perni



d3	Forma	d1 mm	d2 mm	d4 mm	l1 mm	l2 mm	l5 mm	SW mm	kg	Codice
BT 40	JD/JF	6,000	26,000	44,500	90,000	37,000	43,000	5,0	1,500	**6,040**
BT 40	JD/JF	8,000	28,000	44,500	90,000	37,000	44,500	5,0	1,500	**8,040**
BT 40	JD/JF	10,000	30,000	44,500	90,000	41,000	44,500	5,0	1,500	**10,040**
BT 40	JD/JF	12,000	32,000	44,500	90,000	46,000	44,500	5,0	1,500	**12,040**
BT 40	JD/JF	14,000	34,000	44,500	90,000	46,000	44,500	5,0	1,500	**14,040**
BT 40	JD/JF	16,000	38,000	44,500	90,000	49,000	47,500	5,0	1,500	**16,040**
BT 40	JD/JF	18,000	40,000	44,500	90,000	49,000	47,500	5,0	1,500	**18,040**
BT 40	JD/JF	20,000	49,500	49,500	72,500	51,000		5,0	1,500	**20,040**
BT 40	JD/JF	20,000	42,000	44,500	90,000	51,000	47,500	5,0	1,483	**20,140**
BT 50	JD/JF	12,000	32,000	44,500	90,000	46,000	34,000	5,0	4,000	**12,050**
BT 50	JD/JF	20,000	42,000	44,500	90,000	51,000	34,000	5,0	4,000	**20,050**
BT 50	JD/JF	32,000	72,000	72,000	90,000	61,000		6,0	4,000	**32,050**

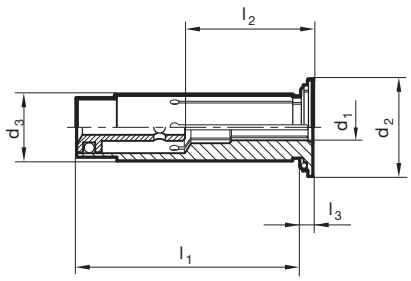
Mandrini ad espansione idraulica

Bussole rid. per mandrini ad espansione idraulica, no refr perif

Catalogo n° 78368

WN

- per serraggio di codoli con differenti Ø in un solo mandrino ad espansione idraulica
- Ø attacco per tolleranza codolo h6
- chiuse frontalmente, quindi a tenuta stagna fino a 80 bar
- precisione concentricità ≤ 2 µm
- con arresto regolabile
- utilizzando bussole di riduzione, il momento torcente trasmissibile consentito può essere aumentato di ca. il 25% rispetto ad un serraggio diretto
- Dotazione:
- incluso l'elemento di arresto

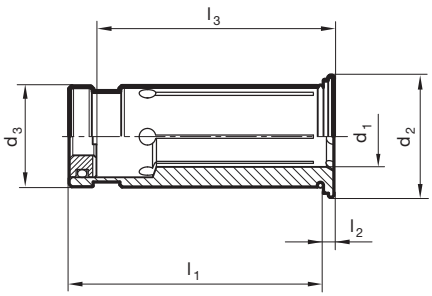


d3 mm	d1 mm	d2 mm	l1 mm	l3 mm	l2 mm	**Codice**
12,000	3,000	16,500	45,000	2,000	26,500	**3,012**
12,000	4,000	16,500	45,000	2,000	26,500	**4,012**
12,000	6,000	16,500	45,000	2,000	34,500	**6,012**
12,000	8,000	16,500	45,000	2,000	34,500	**8,012**
20,000	3,000	24,100	50,500	2,000	28,500	**3,020**
20,000	4,000	24,100	50,500	2,000	28,500	**4,020**
20,000	6,000	24,100	50,500	2,000	37,500	**6,020**
20,000	8,000	24,100	50,500	2,000	37,500	**8,020**
20,000	10,000	24,100	50,500	2,000	42,500	**10,020**
20,000	12,000	24,100	50,500	2,000	47,500	**12,020**
20,000	14,000	24,100	50,500	2,000	47,500	**14,020**
20,000	16,000	24,100	50,500	2,000	47,500	**16,020**
32,000	6,000	35,500	60,500	3,000	35,500	**6,032**
32,000	8,000	35,500	60,500	3,000	35,500	**8,032**
32,000	10,000	35,500	60,500	3,000	40,500	**10,032**
32,000	12,000	35,500	60,500	3,000	42,500	**12,032**
32,000	14,000	35,500	60,500	3,000	42,500	**14,032**
32,000	16,000	35,500	60,500	3,000	50,500	**16,032**
32,000	18,000	35,500	60,500	3,000	50,500	**18,032**
32,000	20,000	35,500	60,500	3,000	50,500	**20,032**
32,000	25,000	35,500	60,500	3,000	58,500	**25,032**

Mandrini ad espansione idraulica

Bussole di riduzione per mandrini ad esp. Idraul.

Catalogo n° 78369



WN

- per serraggio di codoli con differenti Ø in un solo mandrino ad espansione idraulica
- Ø attacco per tolleranza codolo h6
- con intagli frontali per il raffreddamento periferico, migliorando così la lubrificazione
- precisione concentricità ≤ 2 µm
- con arresto regolabile
- utilizzando bussole di riduzione, il momento torcente trasmissibile consentito può essere aumentato di ca. il 25% rispetto ad un serraggio diretto
- Dotazione:
- incluso l'elemento di arresto

d3 mm	d1 mm	d2 mm	l1 mm	l3 mm	l2 mm	**Codice**
12,000	3,000	16,500	45,000	2,000	26,500	**3,012**
12,000	4,000	16,500	45,000	2,000	26,500	**4,012**
12,000	6,000	16,500	45,000	2,000	34,500	**6,012**
12,000	8,000	16,500	45,000	2,000	34,500	**8,012**
20,000	3,000	24,100	50,500	2,000	28,500	**3,020**
20,000	4,000	24,100	50,500	2,000	28,500	**4,020**
20,000	6,000	24,100	50,500	2,000	37,500	**6,020**
20,000	8,000	24,100	50,500	2,000	37,500	**8,020**
20,000	10,000	24,100	50,500	2,000	42,500	**10,020**
20,000	12,000	24,100	50,500	2,000	47,500	**12,020**
20,000	14,000	24,100	50,500	2,000	47,500	**14,020**
20,000	16,000	24,100	50,500	2,000	47,500	**16,020**
32,000	6,000	35,500	60,500	3,000	35,500	**6,032**
32,000	8,000	35,500	60,500	3,000	35,500	**8,032**
32,000	10,000	35,500	60,500	3,000	40,500	**10,032**
32,000	12,000	35,500	60,500	3,000	42,500	**12,032**
32,000	14,000	35,500	60,500	3,000	42,500	**14,032**
32,000	16,000	35,500	60,500	3,000	50,500	**16,032**
32,000	18,000	35,500	60,500	3,000	50,500	**18,032**
32,000	20,000	35,500	60,500	3,000	50,500	**20,032**
32,000	25,000	35,500	60,500	3,000	58,500	**25,032**

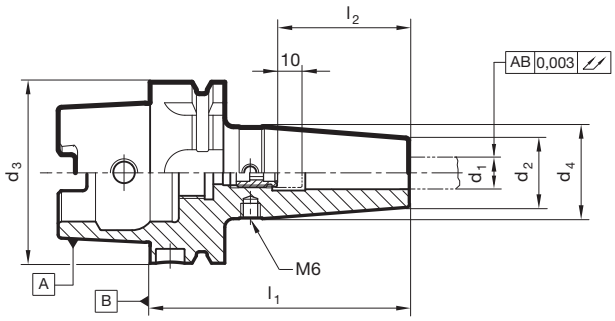
Mandrini di calettamento

Mandrini di calettamento HSK-A

Catalogo n° 78736

DIN 69882-8 | lucido

- qualità bilanciamento: G 2.5 / 25.000 giri / min o giri.. ; 1 GMM
- comprese filettature di bilanciamento 4xM6/6xM6
- per tolleranza codolo h6
- sovralunghezze l1 = 120 mm, 160 mm (concentricità 5 µm) e 200 mm (concentricità 7 µm)
- HSK-A a ISO 12164-1 / DIN 69893-1
- adatto per utensili con refrigerazione interna
- Dotazione:
- compresa la vite di regolazione
- per refrigerazione tradizionale, ordinare separatamente l'unità di adduzione refrigerante

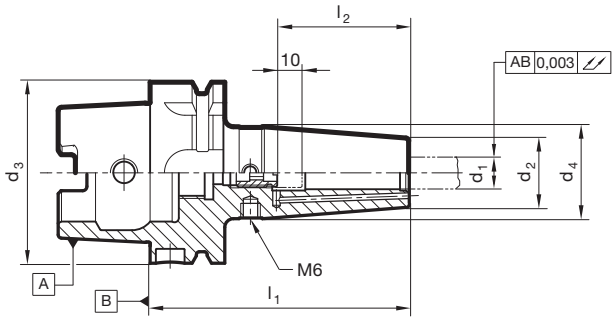


d3	d1 mm	d2 mm	d4 mm	l1 mm	l2 ± mm	kg	**Codice**
HSK-A 63	3,000	10,000	18,000	80,000	30,000	0,700	**3,063**
HSK-A 63	4,000	10,000	18,000	80,000	35,000	0,700	**4,063**
HSK-A 63	6,000	21,000	27,000	80,000	36,000	0,800	**6,063**
HSK-A 63	8,000	21,000	27,000	80,000	36,000	0,800	**8,063**
HSK-A 63	10,000	24,000	32,000	85,000	41,000	0,900	**10,063**
HSK-A 63	12,000	24,000	32,000	90,000	46,000	0,945	**12,063**
HSK-A 63	14,000	27,000	34,000	90,000	46,000	1,000	**14,063**
HSK-A 63	16,000	27,000	34,000	95,000	49,000	1,000	**16,063**
HSK-A 63	18,000	33,000	42,000	95,000	49,000	1,200	**18,063**
HSK-A 63	20,000	33,000	42,000	100,000	51,000	1,200	**20,063**
HSK-A 63	25,000	44,000	53,000	115,000	57,000	1,800	**25,063**
HSK-A 63	32,000	44,000	53,000	120,000	61,000	1,700	**32,063**
HSK-A 100	6,000	21,000	27,000	85,000	36,000	2,200	**6,100**
HSK-A 100	8,000	21,000	27,000	85,000	36,000	2,200	**8,100**
HSK-A 100	10,000	24,000	32,000	90,000	41,000	2,300	**10,100**
HSK-A 100	12,000	24,000	32,000	95,000	46,000	2,300	**12,100**
HSK-A 100	14,000	27,000	34,000	95,000	46,000	2,300	**14,100**
HSK-A 100	16,000	27,000	34,000	100,000	49,000	2,300	**16,100**
HSK-A 100	18,000	33,000	42,000	100,000	49,000	2,500	**18,100**
HSK-A 100	20,000	33,000	42,000	105,000	51,000	2,500	**20,100**
HSK-A 100	25,000	44,000	53,000	115,000	57,000	3,000	**25,100**
HSK-A 100	32,000	44,000	53,000	120,000	61,000	3,000	**32,100**

Mandrini di calettamento

Mandrini a calettamento HSK-A con raffreddamento periferico

Catalogo n° 78755



WN | luci-do

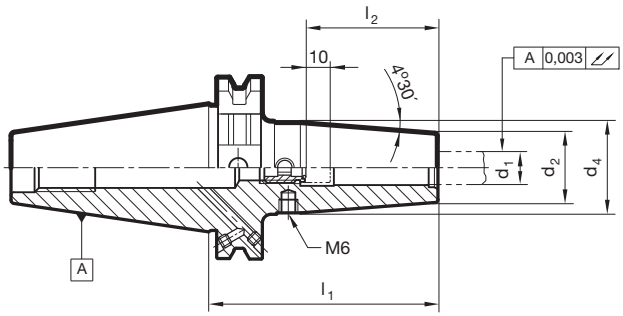
- qualità bilanciamento: G 2.5 / 25.000 giri / min o giri.. ; 1 GMM
- comprese filettature di bilanciamento 4xM6/6xM6
- per tolleranza codolo h6
- canali refrigeranti: d1 = 6 - 14 mm con due canali refrigeranti, d1 = 16 - 40 mm con quattro canali refrigeranti
- HSK-A a ISO 12164-1 / DIN 69893-1
- adatto anche per utensili con refrigerazione interna
- Dotazione:
- compresa la vite di regolazione
- per refrigerazione tradizionale, ordinare separatamente l'unità di adduzione refrigerante

d3	d1	d2	d4	l1	l2		**Codice**
	mm	mm	mm	mm	± mm	kg	
HSK-A 63	6,000	21,000	27,000	80,000	36,000	0,859	**6,063**
HSK-A 63	8,000	21,000	27,000	80,000	36,000	0,800	**8,063**
HSK-A 63	10,000	24,000	32,000	85,000	41,000	0,927	**10,063**
HSK-A 63	12,000	24,000	32,000	90,000	46,000	0,938	**12,063**
HSK-A 63	14,000	27,000	34,000	90,000	46,000	0,985	**14,063**
HSK-A 63	16,000	27,000	34,000	95,000	49,000	0,999	**16,063**
HSK-A 63	18,000	33,000	42,000	95,000	49,000	1,167	**18,063**
HSK-A 63	20,000	33,000	42,000	100,000	51,000	1,191	**20,063**
HSK-A 100	6,000	21,000	27,000	85,000	36,000	2,200	**6,100**
HSK-A 100	8,000	21,000	27,000	85,000	36,000	2,200	**8,100**
HSK-A 100	10,000	24,000	32,000	90,000	41,000	2,300	**10,100**
HSK-A 100	12,000	24,000	32,000	95,000	46,000	2,300	**12,100**
HSK-A 100	14,000	27,000	34,000	95,000	46,000	2,300	**14,100**
HSK-A 100	16,000	27,000	34,000	100,000	49,000	2,300	**16,100**
HSK-A 100	18,000	33,000	42,000	100,000	49,000	2,500	**18,100**
HSK-A 100	20,000	33,000	42,000	105,000	51,000	2,500	**20,100**
HSK-A 100	25,000	44,000	53,000	115,000	57,000	3,000	**25,100**
HSK-A 100	32,000	44,000	53,000	120,000	61,000	3,000	**32,100**

Mandrini di calettamento

Mandrini di calettamento SK

Catalogo n° 78738



WN | luci-do

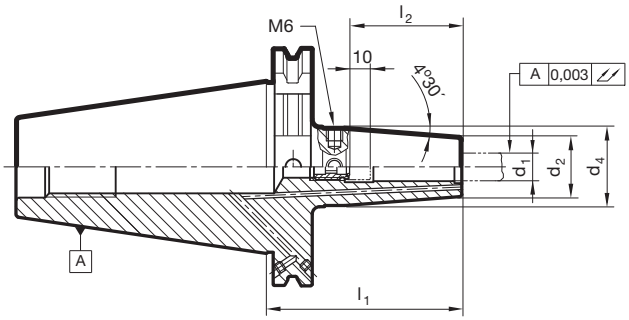
- qualità bilanciamento: G 2.5 / 25.000 giri / min o giri.. ; 1 GMM
- comprese filettature di bilanciamento 4xM6/6xM6
- SK a DIN ISO 7388-1 Forma AD/AF
- per tolleranza codolo h6
- sovralunghezze l1 = 120 mm, 160 mm (concentricità 5 µm) e 200 mm (concentricità 7 µm)
- adatto per utensili con refrigerazione interna
- Dotazione:
- compresa la vite di regolazione
- ordinare separatamente i perni

d3	d1 mm	d2 mm	d4 mm	l1 mm	l2 ± mm	kg	**Codice**
SK 40	3,000	10,000	18,000	80,000	30,000	0,900	**3,040**
SK 40	4,000	10,000	18,000	80,000	35,000	0,900	**4,040**
SK 40	6,000	21,000	27,000	80,000	36,000	1,000	**6,040**
SK 40	8,000	21,000	27,000	80,000	36,000	1,000	**8,040**
SK 40	10,000	24,000	32,000	80,000	41,000	1,100	**10,040**
SK 40	12,000	24,000	32,000	81,600	46,000	1,000	**12,040**
SK 40	14,000	27,000	34,000	81,800	46,000	1,100	**14,040**
SK 40	16,000	27,000	34,000	82,000	49,000	1,100	**16,040**
SK 40	18,000	33,000	42,000	82,300	49,000	1,200	**18,040**
SK 40	20,000	33,000	42,000	82,600	51,000	1,500	**20,040**
SK 40	25,000	44,000	53,000	103,100	57,000	1,500	**25,040**
SK 40	32,000	44,000	53,000	100,000	61,000	1,500	**32,040**
SK 50	3,000	10,000	18,000	80,000	30,000	2,600	**3,050**
SK 50	4,000	10,000	18,000	80,000	35,000	2,600	**4,050**
SK 50	6,000	21,000	27,000	80,000	36,000	2,900	**6,050**
SK 50	8,000	21,000	27,000	80,000	36,000	2,900	**8,050**
SK 50	10,000	24,000	32,000	80,000	41,000	2,900	**10,050**
SK 50	12,000	24,000	32,000	81,600	46,000	2,900	**12,050**
SK 50	14,000	27,000	34,000	81,800	46,000	3,000	**14,050**
SK 50	16,000	27,000	34,000	82,000	49,000	3,000	**16,050**
SK 50	18,000	33,000	42,000	82,300	49,000	3,000	**18,050**
SK 50	20,000	33,000	42,000	82,600	51,000	3,000	**20,050**
SK 50	25,000	44,000	53,000	103,100	57,000	3,600	**25,050**
SK 50	32,000	44,000	53,000	100,000	61,000	3,500	**32,050**

Mandrini di calettamento

Mandrini di calettamento ISO

Catalogo n° 78729



WN | luci-do

- qualità bilanciamento: G 2.5 / 25.000 giri / min o giri.. ; 1 GMM
- comprese filettature di bilanciamento 4xM6/6xM6
- SK a DIN ISO 7388-1 Forma AD/AF
- per tolleranza codolo h6
- canali refrigeranti: d1 = 6 - 14 mm con due canali refrigeranti, d1 = 16 - 40 mm con quattro canali refrigeranti
- adatto anche per utensili con refrigerazione interna
- Dotazione:
- compresa la vite di regolazione
- ordinare separatamente i perni

d3	d1 mm	d2 mm	d4 mm	l1 mm	l2 ± mm	 kg	**Codice**
SK 40	6,000	21,000	27,000	80,000	36,000	1,000	**6,040**
SK 40	8,000	21,000	27,000	80,000	36,000	1,019	**8,040**
SK 40	10,000	24,000	32,000	80,000	41,000	1,100	**10,040**
SK 40	12,000	24,000	32,000	80,000	46,000	1,000	**12,040**
SK 40	14,000	27,000	34,000	80,000	46,000	1,100	**14,040**
SK 40	16,000	27,000	34,000	80,000	49,000	1,100	**16,040**
SK 40	18,000	33,000	42,000	80,000	49,000	1,234	**18,040**
SK 40	20,000	33,000	42,000	80,000	51,000	1,500	**20,040**
SK 50	6,000	21,000	27,000	80,000	36,000	2,800	**6,050**
SK 50	8,000	21,000	27,000	80,000	36,000	2,800	**8,050**
SK 50	10,000	24,000	32,000	80,000	41,000	2,800	**10,050**
SK 50	12,000	24,000	32,000	80,000	46,000	2,800	**12,050**
SK 50	14,000	27,000	34,000	80,000	46,000	2,800	**14,050**
SK 50	16,000	27,000	34,000	80,000	49,000	2,800	**16,050**
SK 50	18,000	33,000	42,000	80,000	49,000	3,000	**18,050**
SK 50	20,000	33,000	42,000	80,000	51,000	3,000	**20,050**
SK 50	25,000	44,000	53,000	100,000	57,000	3,500	**25,050**
SK 50	32,000	44,000	53,000	100,000	61,000	3,300	**32,050**

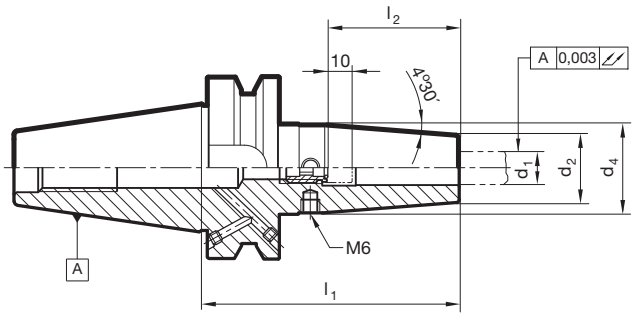
Mandrini di calettamento

Mandrini di calettamento MAS/BT

Catalogo n° 78739

WN | luci-do

- qualità bilanciamento: G 2.5 / 25.000 giri / min o giri.. ; 1 GMM
- comprese filettature di bilanciamento 4xM6/6xM6
- MAS/BT a DIN ISO 7388-2 Forma JD/JF (Forma AD/B)
- per tolleranza codolo h6
- adatto per utensili con refrigerazione interna
- Dotazione:
- compresa la vite di regolazione
- ordinare separatamente i perni



d3	Forma	d1 mm	d2 mm	d4 mm	l1 ± mm	l2 mm	 kg	**Codice**
BT 40	JD/JF	3,000	10,000	18,000	85,000	30,000	1,000	**3,040**
BT 40	JD/JF	4,000	10,000	18,000	85,000	35,000	1,000	**4,040**
BT 40	JD/JF	6,000	21,000	27,000	90,000	36,000	1,200	**6,040**
BT 40	JD/JF	8,000	21,000	27,000	90,000	36,000	1,200	**8,040**
BT 40	JD/JF	10,000	24,000	32,000	90,000	41,000	1,300	**10,040**
BT 40	JD/JF	12,000	24,000	32,000	90,000	46,000	1,300	**12,040**
BT 40	JD/JF	14,000	27,000	34,000	90,000	46,000	1,400	**14,040**
BT 40	JD/JF	16,000	27,000	34,000	90,000	49,000	1,400	**16,040**
BT 40	JD/JF	18,000	33,000	42,000	90,000	49,000	1,400	**18,040**
BT 40	JD/JF	20,000	33,000	42,000	90,000	51,000	1,700	**20,040**
BT 40	JD/JF	25,000	44,000	53,000	100,000	57,000	1,800	**25,040**
BT 40	JD/JF	32,000	44,000	53,000	100,000	61,000	1,700	**32,040**
BT 50	JD/JF	6,000	21,000	27,000	100,000	36,000	2,900	**6,050**
BT 50	JD/JF	8,000	21,000	27,000	100,000	36,000	2,900	**8,050**
BT 50	JD/JF	10,000	24,000	32,000	100,000	41,000	2,900	**10,050**
BT 50	JD/JF	12,000	24,000	32,000	100,000	46,000	2,900	**12,050**
BT 50	JD/JF	14,000	27,000	34,000	100,000	46,000	3,000	**14,050**
BT 50	JD/JF	16,000	27,000	34,000	100,000	49,000	3,000	**16,050**
BT 50	JD/JF	18,000	33,000	42,000	100,000	49,000	1,900	**18,050**
BT 50	JD/JF	20,000	33,000	42,000	100,000	51,000	1,900	**20,050**
BT 50	JD/JF	25,000	44,000	53,000	110,000	57,000	2,200	**25,050**
BT 50	JD/JF	32,000	44,000	53,000	110,000	61,000	2,200	**32,050**

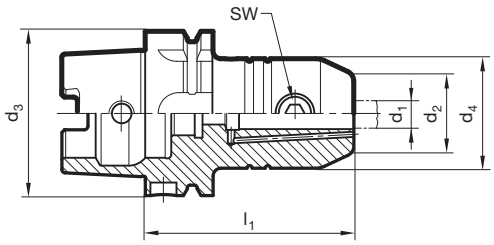
Attacchi utensili

Attacchi cilindrici Weldon HSK-A

Catalogo n° 78232

DIN 69882-4 | lucido

- equilibratura: G 6,3 / 15.000 giri/min
- per tolleranza codolo h6
- con foro di attacco DIN 1835-2 Forma B „Weldon“
- da supporto d1 = 25 con due viti di serraggio
- con canali refrigeranti per il raffreddamento periferico, migliorando così la lubrificazione
- canali refrigeranti: d1 = 6 - 14 mm con due canali refrigeranti, d1 = 16 - 40 mm con quattro canali refrigeranti
- HSK-A a ISO 12164-1 / DIN 69893-1
- adatto per utensili con refrigerazione interna
- Dotazione:
- compresa la vite di serraggio
- ordinare separatamente l'unità di adduzione refrigerante



d3	d1 mm	d2 mm	d4 mm	l1 mm	SW ± mm	kg	**Codice**
HSK-A 63	6,000	15,000	25,000	65,000	3,0	0,800	**6,063**
HSK-A 63	8,000	20,000	28,000	65,000	4,0	0,800	**8,063**
HSK-A 63	10,000	25,000	35,000	65,000	5,0	0,900	**10,063**
HSK-A 63	12,000	30,000	42,000	80,000	6,0	1,200	**12,063**
HSK-A 63	14,000	32,000	44,000	80,000	6,0	1,200	**14,063**
HSK-A 63	16,000	36,000	48,000	80,000	6,0	1,300	**16,063**
HSK-A 63	18,000	38,000	50,000	80,000	6,0	1,400	**18,063**
HSK-A 63	20,000	40,000	52,000	80,000	8,0	1,400	**20,063**
HSK-A 63	25,000	45,000	65,000	110,000	10,0	2,400	**25,063**
HSK-A 63	32,000	56,000	72,000	110,000	10,0	2,700	**32,063**
HSK-A 100	6,000	15,000	25,000	80,000	3,0	3,000	**6,100**
HSK-A 100	8,000	20,000	28,000	80,000	4,0	3,200	**8,100**
HSK-A 100	10,000	25,000	35,000	80,000	5,0	3,400	**10,100**
HSK-A 100	12,000	30,000	42,000	80,000	6,0	3,400	**12,100**
HSK-A 100	14,000	32,000	44,000	80,000	6,0	3,500	**14,100**
HSK-A 100	16,000	36,000	48,000	100,000	6,0	3,800	**16,100**
HSK-A 100	18,000	38,000	50,000	100,000	6,0	3,800	**18,100**
HSK-A 100	20,000	40,000	52,000	100,000	8,0	3,900	**20,100**
HSK-A 100	25,000	45,000	65,000	100,000	10,0	3,900	**25,100**
HSK-A 100	32,000	56,000	72,000	100,000	10,0	4,200	**32,100**
HSK-A 100	40,000	60,000	80,000	110,000	10,0	4,600	**40,100**

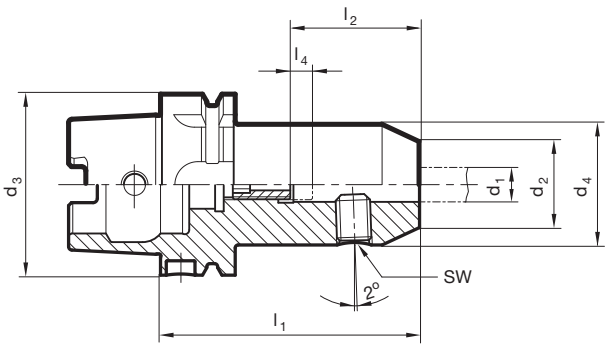
Attacchi utensili

Attacchi per codolo cilindrico Whistle Notch HSK-A

Catalogo n° 78334

DIN 69882-5 | lucido

- equilibratura: G 6,3 / 15.000 giri/min
- per tolleranza codolo h6
- con foro di attacco DIN 1835-2 Forma E „Whistle Notch“ con scanalatura frontale per identificazione
- da supporto d1 = 25 con due viti di serraggio
- HSK-A a ISO 12164-1 / DIN 69893-1
- adatto per utensili con refrigerazione interna
- Dotazione:
- compresa la vite di serraggio e la vite di regolazione
- ordinare separatamente l’unità di adduzione refrigerante



d3	d1	d2	d4	l1	l2	l4	SW		Codice
	mm	mm	mm	mm	mm	mm	mm	kg	
HSK-A 63	6,000	15,000	25,000	80,000	36,000	10,000	3,0	0,860	**6,063**
HSK-A 63	8,000	20,000	28,000	80,000	36,000	10,000	4,0	0,900	**8,063**
HSK-A 63	10,000	25,000	35,000	80,000	40,000	10,000	5,0	1,000	**10,063**
HSK-A 63	12,000	30,000	42,000	90,000	45,000	10,000	6,0	1,240	**12,063**
HSK-A 63	14,000	32,000	44,000	90,000	45,000	10,000	6,0	1,280	**14,063**
HSK-A 63	16,000	36,000	48,000	100,000	48,000	10,000	6,0	1,530	**16,063**
HSK-A 63	18,000	38,000	50,000	100,000	48,000	10,000	6,0	1,600	**18,063**
HSK-A 63	20,000	40,000	52,000	100,000	50,000	10,000	8,0	1,650	**20,063**
HSK-A 63	25,000	45,000	65,000	110,000	56,000	10,000	10,0	2,340	**25,063**
HSK-A 63	32,000	56,000	72,000	110,000	60,000	10,000	10,0	2,540	**32,063**
HSK-A 100	6,000	15,000	25,000	90,000	36,000	10,000	3,0	2,600	**6,100**
HSK-A 100	8,000	20,000	28,000	90,000	36,000	10,000	4,0	2,600	**8,100**
HSK-A 100	10,000	25,000	35,000	90,000	40,000	10,000	5,0	2,600	**10,100**
HSK-A 100	12,000	30,000	42,000	100,000	45,000	10,000	6,0	2,800	**12,100**
HSK-A 100	14,000	32,000	44,000	100,000	45,000	10,000	6,0	2,850	**14,100**
HSK-A 100	16,000	36,000	48,000	100,000	48,000	10,000	6,0	2,970	**16,100**
HSK-A 100	18,000	38,000	50,000	100,000	48,000	10,000	6,0	3,100	**18,100**
HSK-A 100	20,000	40,000	52,000	110,000	50,000	10,000	8,0	3,230	**20,100**
HSK-A 100	25,000	45,000	65,000	120,000	56,000	10,000	10,0	4,060	**25,100**
HSK-A 100	32,000	56,000	72,000	120,000	60,000	10,000	10,0	4,400	**32,100**

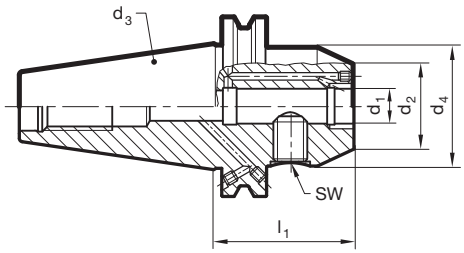
Attacchi utensili

Attacchi cilindrici Weldon SK

Catalogo n° 78317

WN | bru-nito

- equilibratura: G 6,3 / 15.000 giri/min
- per tolleranza codolo h6
- con foro di attacco DIN 1835-2 Forma B „Weldon“
- SK a DIN ISO 7388-1 Forma AD/AF
- fori per Forma B chiusi, se forniti con perni filettati
- con canali refrigeranti nel foro di serraggio per raffreddamento periferico, migliorando così la lubrificazione
- da supporto d1 = 25 con due viti di serraggio
- condotti del liquido di raffreddamento: d1 = 6-14 mm con due condotti di raffreddamento, d1 = 16 - 32 mm con quattro condotti di raffreddamento
- adatto per utensili con refrigerazione interna
- Dotazione:
- compresa la vite di serraggio
- ordinare separatamente i perni

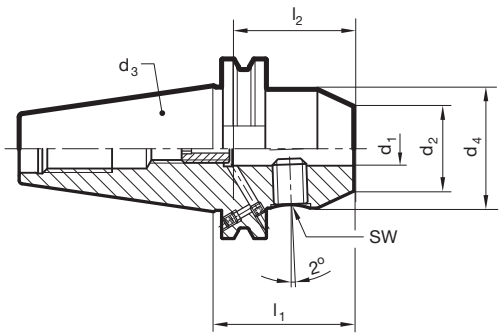


d3	Forma	d1 mm	d2 mm	d4 mm	l1 ± mm	SW mm	 kg	**Codice**
SK 40	AD/AF	6,000	15,000	25,000	50,000	3,0	0,900	**6,040**
SK 40	AD/AF	8,000	20,000	28,000	50,000	4,0	0,900	**8,040**
SK 40	AD/AF	10,000	25,000	35,000	50,000	5,0	1,000	**10,040**
SK 40	AD/AF	12,000	30,000	42,000	50,000	6,0	1,200	**12,040**
SK 40	AD/AF	14,000	32,000	44,000	50,000	6,0	1,200	**14,040**
SK 40	AD/AF	16,000	36,000	48,000	63,000	6,0	1,200	**16,040**
SK 40	AD/AF	18,000	38,000	50,000	63,000	6,0	1,400	**18,040**
SK 40	AD/AF	20,000	40,000	52,000	63,000	8,0	1,500	**20,040**
SK 40	AD/AF	25,000	45,000	65,000	100,000	10,0	2,300	**25,040**
SK 40	AD/AF	32,000	56,000	72,000	100,000	10,0	2,500	**32,040**
SK 50	AD/AF	6,000	15,000	25,000	63,000	3,0	2,700	**6,050**
SK 50	AD/AF	8,000	20,000	28,000	63,000	4,0	2,700	**8,050**
SK 50	AD/AF	10,000	25,000	35,000	63,000	5,0	2,900	**10,050**
SK 50	AD/AF	12,000	30,000	42,000	63,000	6,0	3,000	**12,050**
SK 50	AD/AF	14,000	32,000	44,000	63,000	6,0	3,000	**14,050**
SK 50	AD/AF	16,000	36,000	48,000	63,000	6,0	3,000	**16,050**
SK 50	AD/AF	18,000	38,000	50,000	63,000	6,0	3,000	**18,050**
SK 50	AD/AF	20,000	40,000	52,000	63,000	8,0	3,100	**20,050**
SK 50	AD/AF	25,000	45,000	65,000	80,000	10,0	3,700	**25,050**
SK 50	AD/AF	32,000	56,000	72,000	100,000	10,0	4,500	**32,050**

Attacchi utensili

Attacchi per codolo cilindrico Whistle Notch SK

Catalogo n° 78322



WN | bru-nito

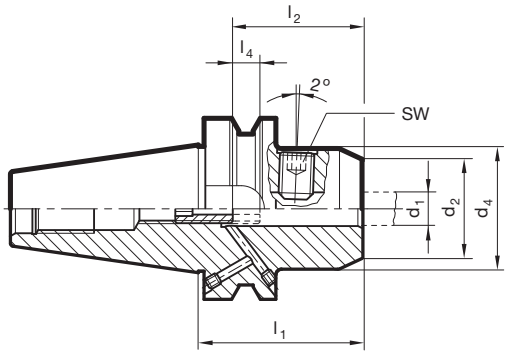
- equilibratura: G 6,3 / 15.000 giri/min
- per tolleranza codolo h6
- con foro di attacco DIN 1835-2 Forma E „Whistle Notch“
- SK a DIN ISO 7388-1 Forma AD/AF
- da supporto d1 = 25 con due viti di serraggio
- adatto per utensili con refrigerazione interna
- Dotazione:
- compresa la vite di serraggio e la vite di regolazione
- ordinare separatamente i perni

d3	d1 mm	d2 mm	d4 mm	l1 mm	l2 ± mm	SW mm	kg	**Codice**
SK 40	6,000	15,000	25,000	50,000	36,000	3,0	0,900	**6,040**
SK 40	8,000	20,000	28,000	50,000	36,000	4,0	0,900	**8,040**
SK 40	10,000	25,000	35,000	50,000	40,000	5,0	1,000	**10,040**
SK 40	12,000	30,000	42,000	50,000	45,000	6,0	1,200	**12,040**
SK 40	14,000	32,000	44,000	50,000	45,000	6,0	1,200	**14,040**
SK 40	16,000	36,000	48,000	63,000	48,000	6,0	1,200	**16,040**
SK 40	18,000	38,000	50,000	63,000	48,000	6,0	1,400	**18,040**
SK 40	20,000	40,000	52,000	63,000	50,000	8,0	1,500	**20,040**
SK 40	25,000	45,000	65,000	100,000	56,000	10,0	2,300	**25,040**
SK 40	32,000	56,000	72,000	100,000	60,000	10,0	2,500	**32,040**
SK 50	6,000	15,000	25,000	63,000	36,000	3,0	2,700	**6,050**
SK 50	8,000	20,000	28,000	63,000	36,000	4,0	2,700	**8,050**
SK 50	10,000	25,000	35,000	63,000	40,000	5,0	2,900	**10,050**
SK 50	12,000	30,000	42,000	63,000	45,000	6,0	3,000	**12,050**
SK 50	14,000	32,000	44,000	63,000	45,000	6,0	3,000	**14,050**
SK 50	16,000	36,000	48,000	63,000	48,000	6,0	3,000	**16,050**
SK 50	18,000	38,000	50,000	63,000	48,000	6,0	3,000	**18,050**
SK 50	20,000	40,000	52,000	63,000	50,000	8,0	3,100	**20,050**
SK 50	25,000	45,000	65,000	80,000	56,000	10,0	3,700	**25,050**
SK 50	32,000	56,000	72,000	100,000	60,000	10,0	4,500	**32,050**

Attacchi utensili

Attacchi per codolo cilindrico WhistleNotch MAS/BT

Catalogo n° 78233



WN | brunito

- equilibratura: G 6,3 / 15.000 giri/min
- per tolleranza codolo h6
- MAS/BT a DIN ISO 7388-2 Forma JD/JF
- con foro di attacco DIN 1835-2 Forma E „Whistle Notch“
- da supporto d1 = 25 con due viti di serraggio
- alimentazione di refrigerante Forma JD/JF (* BT50 forma JD senza alimentazione di refrigerante attraverso il collarino)
- adatto per utensili con refrigerazione interna
- Dotazione:
- compresa la vite di serraggio e la vite di regolazione
- ordinare separatamente i perni

d3	Forma	d1 mm	d2 mm	d4 mm	l1 mm	l2 mm	l4 mm	SW mm	kg	Codice
BT 40	JD/JF	6,000	15,000	25,000	50,000	36,000	10,000	3,0	5,882	**6,040**
BT 40	JD/JF	8,000	20,000	28,000	50,000	36,000	10,000	4,0	5,890	**8,040**
BT 40	JD/JF	10,000	25,000	35,000	63,000	40,000	10,000	5,0	6,024	**10,040**
BT 40	JD/JF	12,000	30,000	42,000	63,000	45,000	10,000	6,0	6,160	**12,040**
BT 40	JD/JF	14,000	32,000	44,000	63,000	45,000	10,000	6,0	6,175	**14,040**
BT 40	JD/JF	16,000	36,000	48,000	116,400	48,000	10,000	6,0	6,050	**16,040**
BT 40	JD/JF	18,000	38,000	50,000	63,000	48,000	10,000	6,0	6,280	**18,040**
BT 40	JD/JF	20,000	40,000	52,000	63,000	50,000	10,000	8,0	6,110	**20,040**
BT 40	JD/JF	25,000	45,000	63,000	90,000	56,000	10,000	10,0	6,750	**25,040**
BT 40	JD/JF	32,000	56,000	72,000	100,000	60,000	10,000	10,0	7,180	**32,040**
BT 50	JD	6,000	15,000	25,000	62,600	36,000	10,000	3,0	8,090	**6,050**
BT 50	JD	8,000	20,000	28,000	62,600	36,000	10,000	4,0	8,430	**8,050**
BT 50	JD	10,000	25,000	35,000	62,600	40,000	10,000	5,0	8,490	**10,050**
BT 50	JD	12,000	30,000	42,000	80,000	45,000	10,000	6,0	8,600	**12,050**
BT 50	JD	14,000	32,000	44,000	80,000	45,000	10,000	6,0	8,370	**14,050**
BT 50	JD	16,000	36,000	48,000	80,000	48,000	10,000	6,0	8,370	**16,050**
BT 50	JD	18,000	38,000	50,000	80,000	48,000	10,000	6,0	8,430	**18,050**
BT 50	JD	20,000	40,000	52,000	80,000	50,000	10,000	8,0	8,685	**20,050**
BT 50	JD	25,000	45,000	65,000	100,000	56,000	10,000	10,0	9,240	**25,050**
BT 50	JD	32,000	56,000	72,000	105,000	60,000	10,000	10,0	9,480	**32,050**

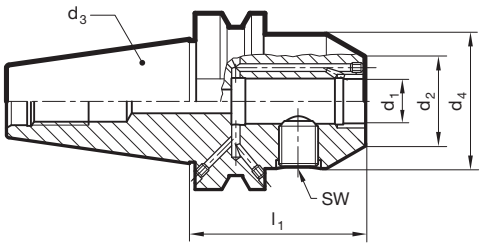
Attacchi utensili

Attacchi cilindrici Weldon MAS/BT

Catalogo n° 78234

WN | bru-nito

- equilibratura: G 6,3 / 15.000 giri/min
- per tolleranza codolo h6
- con foro di attacco DIN 1835-2 Forma B „Weldon“
- da supporto d1 = 25 con due viti di serraggio
- con canali refrigeranti per il raffreddamento periferico, migliorando così la lubrificazione
- alimentazione di refrigerante Forma JD/JF
- adatto anche per utensili con refrigerazione interna
- Dotazione:
- compresa la vite di serraggio
- ordinare separatamente i perni



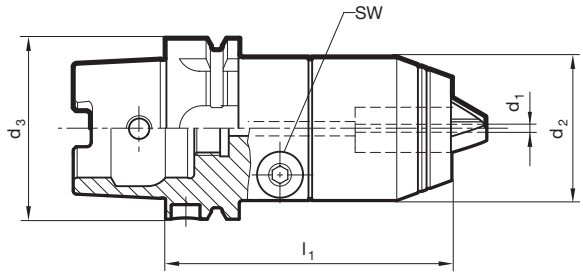
d3	Forma	d1 mm	d2 mm	d4 mm	l1 ± mm	SW mm	 kg	**Codice**
BT 40	JD/JF	6,000	15,000	25,000	50,000	3,0	5,810	**6,040**
BT 40	JD/JF	8,000	20,000	28,000	50,000	4,0	5,800	**8,040**
BT 40	JD/JF	10,000	25,000	35,000	63,000	5,0	6,050	**10,040**
BT 40	JD/JF	12,000	30,000	42,000	63,000	6,0	6,000	**12,040**
BT 40	JD/JF	14,000	32,000	44,000	63,000	6,0	5,930	**14,040**
BT 40	JD/JF	16,000	36,000	48,000	63,000	6,0	5,980	**16,040**
BT 40	JD/JF	18,000	38,000	50,000	63,000	6,0	6,170	**18,040**
BT 40	JD/JF	20,000	40,000	52,000	63,000	8,0	6,150	**20,040**
BT 40	JD/JF	25,000	45,000	63,000	90,000	10,0	6,700	**25,040**
BT 40	JD/JF	32,000	56,000	72,000	100,000	10,0	7,170	**32,040**

Mandrini portapunte CN HSK-A con raffreddamento interno

Catalogo n° 78346

WN

- per il serraggio di tutti i codoli cilindrici
- HSK-A a ISO 12164-1 / DIN 69893-1
- gamma di serraggio Ø continua
- alta forza di serraggio attraverso ingranaggio a vite robusto
- pressione refrigerante max. 50 bar
- i mandrini NC sono adatti per giri fino a 7.000 giri/min. Per equilibratura fine ottimale fino ad un max. di 18.000 giri/min
- adatto anche per utensili con refrigerazione interna
- Dotazione:
- compresa la chiave di serraggio
- ordinare separatamente l'unità di adduzione refrigerante



d3	d1	d2	l1	SW		Codice
		mm	mm	mm	kg	
HSK-A 63	1,0-16	50,000	98,000	4,0	1,900	**16,063**
HSK-A 100	1,0-16	50,000	104,000	4,0	3,300	**16,100**

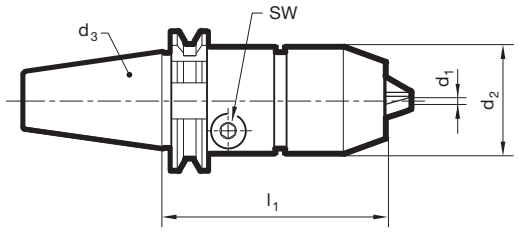
Attacchi utensili

Mandrini portapunte CN ISO DIN 96871 raffreddamento interno

Catalogo n° 78242

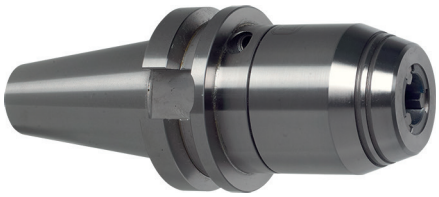
WN

- per il serraggio di tutti i codoli cilindrici
- SK a DIN ISO 7388-1 Forma AD
- gamma di serraggio Ø continua
- alta forza di serraggio attraverso ingranaggio a vite robusto
- pressione refrigerante max. 50 bar
- i mandrini NC sono adatti per giri fino a 7.000 giri/min. Per equilibratura fine ottimale fino ad un max. di 18.000 giri/min
- adatto anche per utensili con refrigerazione interna
- Dotazione:
- compresa la chiave di serraggio
- ordinare separatamente i perni



d3	d1	d2 mm	l1 mm	SW mm	 kg	**Codice**
SK 40	1,0-16	50,000	80,000	4,0	1,557	**16,040**
SK 50	1,0-16	50,000	80,000	4,0	3,500	**16,050**

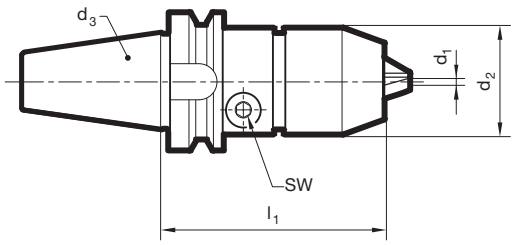
Mandrini portapunte CN MAS/BT con raffreddamento interno



Catalogo n° 78240

WN

- per il serraggio di tutti i codoli cilindrici
- MAS/BT a DIN ISO 7388-2 Forma JD
- gamma di serraggio Ø continua
- alta forza di serraggio attraverso ingranaggio a vite robusto
- pressione refrigerante max. 50 bar
- i mandrini NC sono adatti per giri fino a 7.000 giri/min. Per equilibratura fine ottimale fino ad un max. di 18.000 giri/min
- adatto anche per utensili con refrigerazione interna
- Dotazione:
- compresa la chiave di serraggio
- ordinare separatamente i perni



d3	d1	d2 mm	l1 mm	SW mm	 kg	**Codice**
BT 40	1,0-16	50,000	88,000	4,0	1,500	**16,040**
BT 50	1,0-16	50,000	99,000	4,0	3,500	**16,050**

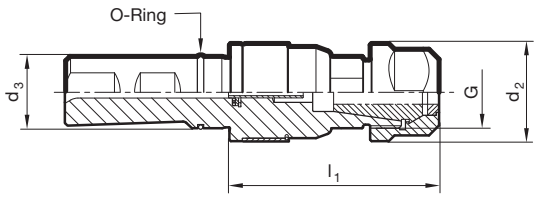
Mandrini per maschiatura sincrona

Mandrini di maschiatura sincrona cil. con raffr. interno

Catalogo n° 78326

WN

- compensazione degli errori di sincronizzazione
- la minima lunghezza di compensazione in spinta e trazione bilancia le piccole differenze tra mandrini synchro e maschi e aumenta la qualità della filettatura e la vita utensile
- la vite di regolazione consente 2-3 mm di regolazione
- adatto per refrigerazione interna
- pressione refrigerante max. 50 bar
- Dotazione:
- compreso manicotto IC/ER chiuso a tenuta stagna
- compresa chiave di regolazione per viti di regolazione
- viti di regolazione „plan“ catalogo-Nr. 78364, pinza a filettare catalogo-Nr. 78308, mole catalogo-Nr. 78335 e chiavi di serraggio da ordinare separatamente



d3 mm	Grandezza nom.	d2 mm	G	l1 mm	± mm	Momento torc. Nm	kg	**Codice**
25,000	ER20	34,000	M25 X1,5	73,000	0,150	40	0,591	**20,025**
25,000	ER32	50,000	M40 X1,5	87,500	0,150	170	1,300	**32,025**

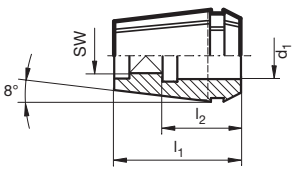
Mandrini per maschiatura sincrona

Pinza di serraggio

Catalogo n° 78308

WN

- per il serraggio di utensili a filettare con codolo quadro in mandrini Synchro o pinze



Grandezza nom.	d1 mm	SW mm	l1 mm	l2 mm	**Codice**
ER20	4,000	3,2	31,500	18,000	**4,020**
ER20	4,500	3,4	31,500	18,000	**4,520**
ER20	5,500	4,3	31,500	18,000	**5,520**
ER20	6,000	4,9	31,500	18,000	**6,020**
ER20	7,000	5,5	31,500	18,000	**7,020**
ER20	8,000	6,2	31,500	22,000	**8,020**
ER20	9,000	7,0	31,500	22,000	**9,020**
ER20	10,000	8,0	31,500	25,000	**10,020**
ER20	11,000	9,0	31,500	25,000	**11,020**
ER32	4,000	3,2	40,000	18,000	**4,032**
ER32	4,500	3,4	40,000	18,000	**4,532**
ER32	5,500	4,3	40,000	18,000	**5,532**
ER32	6,000	4,9	40,000	18,000	**6,032**
ER32	7,000	5,5	40,000	18,000	**7,032**
ER32	8,000	6,2	40,000	22,000	**8,032**
ER32	9,000	7,0	40,000	22,000	**9,032**
ER32	10,000	8,0	40,000	25,000	**10,032**
ER32	11,000	9,0	40,000	25,000	**11,032**
ER32	12,000	9,0	40,000	25,000	**12,032**
ER32	14,000	11,0	40,000	25,000	**14,032**
ER32	16,000	12,0	40,000	25,000	**16,032**
ER32	18,000	14,5	40,000	25,000	**18,032**
ER32	20,000	16,0	40,000	28,000	**20,032**

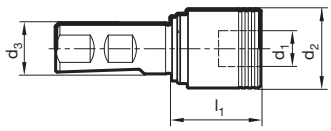
Mandrini per maschiatura sincrona

Mandrini di masch. cambio rapido no refrig. interno

WN

- i mandrini a cambio rapido di filettatura sono equipaggiati con bussole a compensazione assiale, guidate su sfere, che pareggiano la differenza tra avanzamento del mandrino e passo del filetto

Catalogo n° 78340



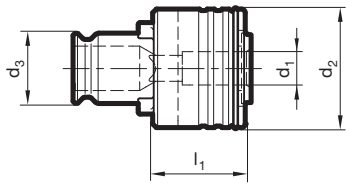
Grandezza nom.	d1 mm	d2 mm	d3 mm	l1 mm	 ± mm	 kg	**Codice**
M3-M12	19,000	36,000	25,000	39,000	7,500	0,431	**19,025**
M8-M20	31,000	53,000	25,000	63,000	10,000	0,900	**31,025**

Mandrini per maschiatura sincrona

Attacchi intercambiabili per mandrini

Catalogo n° 78206

- con giunto di sicurezza
- adatto per utensili a filettare in HSS
- per utensili a filettare in MD è necessaria una scanalatura sul codolo per garantire un arresto aggiuntivo dell'utensile
- adatto per refrigerazione interna
- pressione refrigerante max. 50 bar



Grandezza nom.	d1 mm	SW mm	d3 mm	d2 mm	l1 mm	**Codice**
M3-M12	2,200		19,000	32,000	25,000	**19,022**
M3-M12	2,500	2,1	19,000	32,000	25,000	**19,025**
M3-M12	2,800	2,1	19,000	32,000	25,000	**19,028**
M3-M12	3,500	2,7	19,000	32,000	25,000	**19,035**
M3-M12	4,000	3,0	19,000	32,000	25,000	**19,040**
M3-M12	4,500	3,4	19,000	32,000	25,000	**19,045**
M3-M12	5,500	4,5	19,000	32,000	25,000	**19,055**
M3-M12	6,000	4,9	19,000	32,000	25,000	**19,060**
M3-M12	7,000	5,5	19,000	32,000	25,000	**19,070**
M3-M12	8,000	6,2	19,000	32,000	25,000	**19,080**
M3-M12	9,000	7,0	19,000	32,000	25,000	**19,090**
M3-M12	10,000	8,0	19,000	32,000	25,000	**19,100**
M8-M20	6,000	4,9	31,000	50,000	34,000	**31,060**
M8-M20	7,000	5,5	31,000	50,000	34,000	**31,070**
M8-M20	8,000	6,2	31,000	50,000	34,000	**31,080**
M8-M20	9,000	7,0	31,000	50,000	34,000	**31,090**
M8-M20	10,000	8,0	31,000	50,000	34,000	**31,100**
M8-M20	11,000	9,0	31,000	50,000	34,000	**31,110**
M8-M20	12,000	9,0	31,000	50,000	34,000	**31,120**
M8-M20	14,000	11,0	31,000	50,000	34,000	**31,140**
M8-M20	16,000	12,0	31,000	50,000	34,000	**31,160**

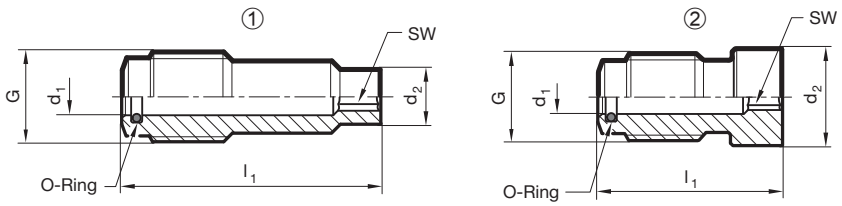
Mandrini per maschiatura sincrona

Viti di regolazione „plan“ per masch. sincro con raffr. interno

Catalogo n° 78364

WN

- per mandrini Synchro con codolo cilindrico catalogo-Nr. 78326
- per refrigerazione interna convenzionale
- con arresto piatto per normali estremità del codolo
- posizionare la vite di regolazione sul codolo del maschio
- la vite di regolazione della lunghezza consente 3 mm di registrazione
- Dotazione:
- con anelli a tenuta stagna sicura



Grandezza nom.	□ mm	G	d1 mm	d2 mm	l1 mm	SW mm	Tipo	**Codice**
ER20	4,900	M 8X1	3,600	4,800	26,000	2,5	1	**6,020**
ER20	5,500	M 8X1	3,600	5,400	25,800	2,5	1	**7,020**
ER20	6,200	M 8X1	3,600	6,100	20,900	2,5	1	**8,020**
ER20	7,000	M 8X1	3,600	6,900	20,250	2,5	1	**9,020**
ER20	8,000	M 8X1	3,600	7,800	15,800	2,5	2	**10,020**
ER20	9,000	M 8X1	3,600	8,800	14,800	2,5	2	**11,020**
ER32	4,900	M10X1	4,100	4,800	34,000	3,0	1	**6,032**
ER32	5,500	M10X1	4,100	5,400	33,800	3,0	1	**7,032**
ER32	6,200	M10X1	4,100	6,100	28,800	3,0	1	**8,032**
ER32	7,000	M10X1	4,100	6,900	28,250	3,0	1	**9,032**
ER32	8,000	M10X1	4,100	7,800	23,800	3,0	1	**10,032**
ER32	9,000	M10X1	4,100	8,800	22,900	3,0	1	**11,032**
ER32	11,000	M10X1	4,100	10,800	20,650	3,0	2	**14,032**
ER32	12,000	M10X1	4,100	11,800	19,650	3,0	2	**16,032**
ER32	14,500	M10X1	4,100	14,300	18,000	3,0	2	**18,032**

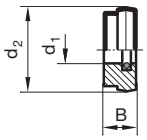
Mandrini per maschiatura sincrona

Dischi di tenuta

Catalogo n° 78335

WN

- Il campo di applicazione del disco di tenuta catalogo.Nr. 78335 va da un Ø nominale d1 fino alla misura successiva minore, cioè per un Ø di 6,3 mm (grandezza nominale ER20) deve essere ordinato un disco di tenuta mit d1 = 6,5 mm (codice 06,520).



Grandezza nom.	d1 mm	d2 mm	l1 mm	**Codice**
ER 16	3,000	13,000	4,000	**3,016**
ER 16	3,500	13,000	4,000	**3,516**
ER 16	4,000	13,000	4,000	**4,016**
ER 16	4,500	13,000	4,000	**4,516**
ER 16	5,000	13,000	4,000	**5,016**
ER 16	5,500	13,000	4,000	**5,516**
ER 16	6,000	13,000	4,000	**6,016**
ER 16	6,500	13,000	4,000	**6,516**
ER 16	7,000	13,000	4,000	**7,016**
ER 16	7,500	13,000	4,000	**7,516**
ER 16	8,000	13,000	4,000	**8,016**
ER 16	8,500	13,000	4,000	**8,516**
ER 16	9,000	13,000	4,000	**9,016**
ER 16	9,500	13,000	4,000	**9,516**
ER 16	10,000	13,000	4,000	**10,016**
ER 20	3,000	16,000	4,000	**3,020**
ER 20	3,500	16,000	4,000	**3,520**
ER 20	4,000	16,000	4,000	**4,020**
ER 20	4,500	16,000	4,000	**4,520**
ER 20	5,000	16,000	4,000	**5,020**
ER 20	5,500	16,000	4,000	**5,520**
ER 20	6,000	16,000	4,000	**6,020**
ER 20	6,500	16,000	4,000	**6,520**
ER 20	7,000	16,000	4,000	**7,020**
ER 20	7,500	16,000	4,000	**7,520**
ER 20	8,000	16,000	4,000	**8,020**
ER 20	8,500	16,000	4,000	**8,520**
ER 20	9,000	16,000	4,000	**9,020**
ER 20	9,500	16,000	4,000	**9,520**
ER 20	10,000	16,000	4,000	**10,020**
ER 20	10,500	16,000	4,000	**10,520**
ER 20	11,000	16,000	4,000	**11,020**
ER 20	11,500	16,000	4,000	**11,520**
ER 20	12,000	16,000	4,000	**12,020**
ER 20	12,500	16,000	4,000	**12,520**
ER 20	13,000	16,000	4,000	**13,020**
ER 25	3,000	21,000	4,000	**3,025**
ER 25	3,500	21,000	4,000	**3,525**
ER 25	4,000	21,000	4,000	**4,025**
ER 25	4,500	21,000	4,000	**4,525**
ER 25	5,000	21,000	4,000	**5,025**
ER 25	5,500	21,000	4,000	**5,525**

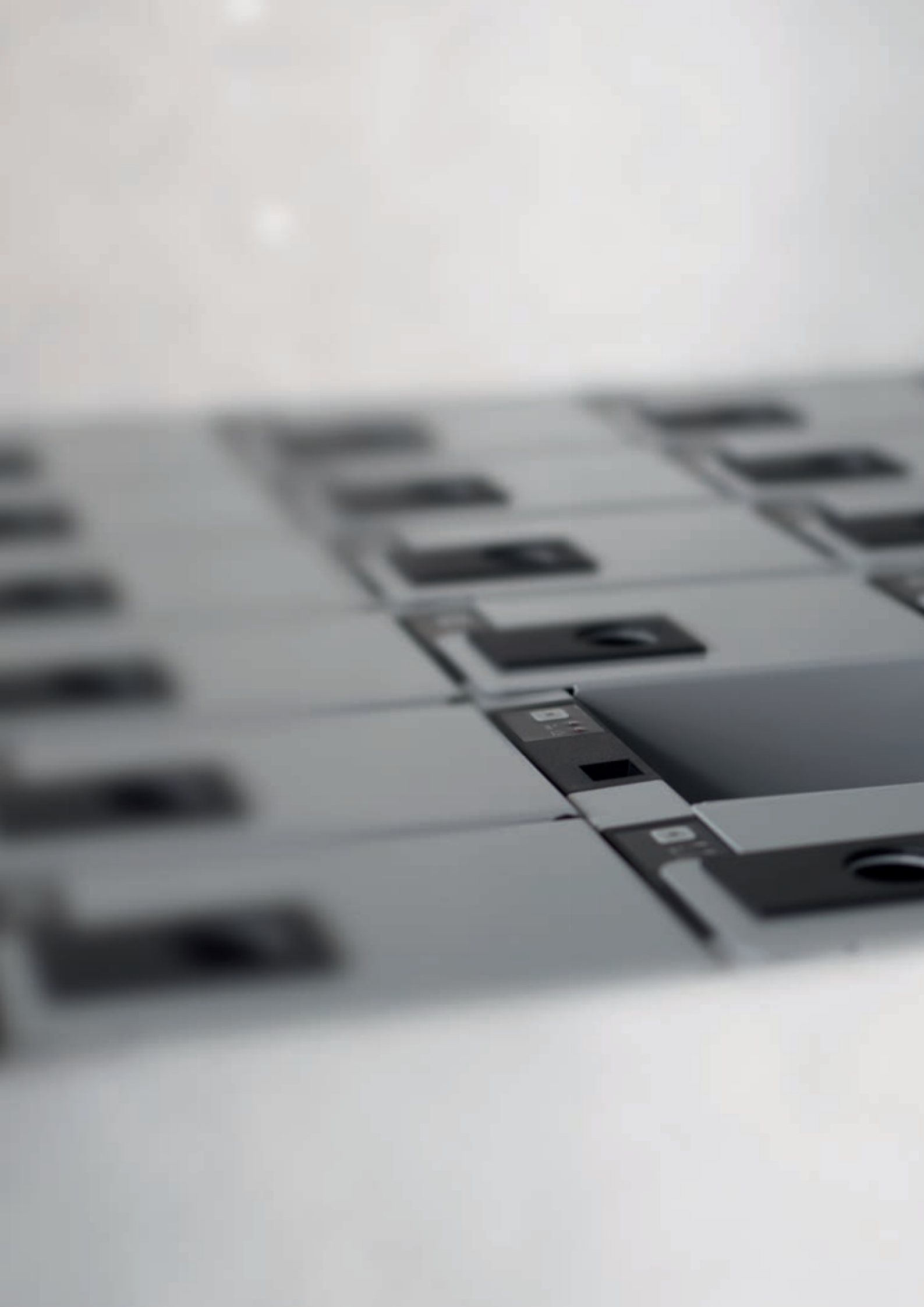
Grandezza nom.	d1 mm	d2 mm	l1 mm	**Codice**
ER 25	6,000	21,000	4,000	**6,025**
ER 25	6,500	21,000	4,000	**6,525**
ER 25	7,000	21,000	4,000	**7,025**
ER 25	7,500	21,000	4,000	**7,525**
ER 25	8,000	21,000	4,000	**8,025**
ER 25	8,500	21,000	4,000	**8,525**
ER 25	9,000	21,000	4,000	**9,025**
ER 25	9,500	21,000	4,000	**9,525**
ER 25	10,000	21,000	4,000	**10,025**
ER 25	10,500	21,000	4,000	**10,525**
ER 25	11,000	21,000	4,000	**11,025**
ER 25	11,500	21,000	4,000	**11,525**
ER 25	12,000	21,000	4,000	**12,025**
ER 25	12,500	21,000	4,000	**12,525**
ER 25	13,000	21,000	4,000	**13,025**
ER 25	13,500	21,000	4,000	**13,525**
ER 25	14,000	21,000	4,000	**14,025**
ER 25	14,500	21,000	4,000	**14,525**
ER 25	15,000	21,000	4,000	**15,025**
ER 25	15,500	21,000	4,000	**15,525**
ER 25	16,000	21,000	4,000	**16,025**
ER 32	3,000	27,000	4,000	**3,032**
ER 32	3,500	27,000	4,000	**3,532**
ER 32	4,000	27,000	4,000	**4,032**
ER 32	4,500	27,000	4,000	**4,532**
ER 32	5,000	27,000	4,000	**5,032**
ER 32	5,500	27,000	4,000	**5,532**
ER 32	6,000	27,000	4,000	**6,032**
ER 32	6,500	27,000	4,000	**6,532**
ER 32	7,000	27,000	4,000	**7,032**
ER 32	7,500	27,000	4,000	**7,532**
ER 32	8,000	27,000	4,000	**8,032**
ER 32	8,500	27,000	4,000	**8,532**
ER 32	9,000	27,000	4,000	**9,032**
ER 32	9,500	27,000	4,000	**9,532**
ER 32	10,000	27,000	4,000	**10,032**
ER 32	10,500	27,000	4,000	**10,532**
ER 32	11,000	27,000	4,000	**11,032**
ER 32	11,500	27,000	4,000	**11,532**
ER 32	12,000	27,000	4,000	**12,032**
ER 32	12,500	27,000	4,000	**12,532**
ER 32	13,000	27,000	4,000	**13,032**
ER 32	13,500	27,000	4,000	**13,532**
ER 32	14,000	27,000	4,000	**14,032**
ER 32	14,500	27,000	4,000	**14,532**
ER 32	15,000	27,000	4,000	**15,032**
ER 32	15,500	27,000	4,000	**15,532**
ER 32	16,000	27,000	4,000	**16,032**
ER 32	16,500	27,000	4,000	**16,532**
ER 32	17,000	27,000	4,000	**17,032**
ER 32	17,500	27,000	4,000	**17,532**
ER 32	18,000	27,000	4,000	**18,032**
ER 32	18,500	27,000	4,000	**18,532**
ER 32	19,000	27,000	4,000	**19,032**
ER 32	19,500	27,000	4,000	**19,532**
ER 32	20,000	27,000	4,000	**20,032**
ER 40	3,500	33,500	4,000	**3,540**
ER 40	4,000	33,500	4,000	**4,040**
ER 40	4,500	33,500	4,000	**4,540**
ER 40	5,000	33,500	4,000	**5,040**
ER 40	5,500	33,500	4,000	**5,540**
ER 40	6,000	33,500	4,000	**6,040**
ER 40	6,500	33,500	4,000	**6,540**
ER 40	7,000	33,500	4,000	**7,040**
ER 40	7,500	33,500	4,000	**7,540**
ER 40	8,000	33,500	4,000	**8,040**
ER 40	8,500	33,500	4,000	**8,540**
ER 40	9,000	33,500	4,000	**9,040**
ER 40	9,500	33,500	4,000	**9,540**
ER 40	10,000	33,500	4,000	**10,040**
ER 40	10,500	33,500	4,000	**10,540**
ER 40	11,000	33,500	4,000	**11,040**

Grandezza nom.	d1 mm	d2 mm	l1 mm	**Codice**
ER 40	11,500	33,500	4,000	**11,540**
ER 40	12,000	33,500	4,000	**12,040**
ER 40	12,500	33,500	4,000	**12,540**
ER 40	13,000	33,500	4,000	**13,040**
ER 40	13,500	33,500	4,000	**13,540**
ER 40	14,000	33,500	4,000	**14,040**
ER 40	14,500	33,500	4,000	**14,540**
ER 40	15,000	33,500	4,000	**15,040**
ER 40	15,500	33,500	4,000	**15,540**
ER 40	16,000	33,500	4,000	**16,040**
ER 40	16,500	33,500	4,000	**16,540**
ER 40	17,000	33,500	4,000	**17,040**
ER 40	17,500	33,500	4,000	**17,540**
ER 40	18,000	33,500	4,000	**18,040**
ER 40	18,500	33,500	4,000	**18,540**
ER 40	19,000	33,500	4,000	**19,040**
ER 40	19,500	33,500	4,000	**19,540**
ER 40	20,000	33,500	4,000	**20,040**
ER 40	20,500	33,500	4,000	**20,540**
ER 40	21,000	33,500	4,000	**21,040**
ER 40	21,500	33,500	4,000	**21,540**
ER 40	22,000	33,500	4,000	**22,040**
ER 40	22,500	33,500	4,000	**22,540**
ER 40	23,000	33,500	4,000	**23,040**
ER 40	23,500	33,500	4,000	**23,540**
ER 40	24,000	33,500	4,000	**24,040**
ER 40	24,500	33,500	4,000	**24,540**
ER 40	25,000	33,500	4,000	**25,040**
ER 40	25,500	33,500	4,000	**25,540**
ER 40	26,000	33,500	4,000	**26,040**

STOCK UTENSILI SPECIALI

Soluzioni speciali per richieste individuali

Moduli di richiesta a pagina 816.



DISTRIBUTORE AUTOMATICO

TSC mini

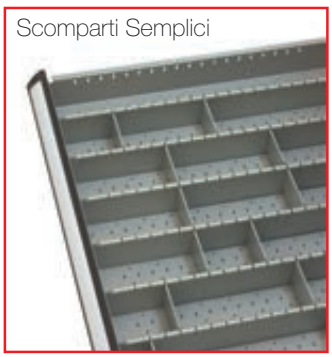
Il TSC mini è un sistema controllato elettronicamente a moduli estendibili con tutte le funzionalità del software TSC.
I cassetti elettronicamente bloccabili permettono il prelievo degli utensili in modo controllato. L‘ altezza degli scomparti e dei cassetti possono essere adattati alle esigenze del cliente.

Sistema per Portautensili

Scomparti elettronici

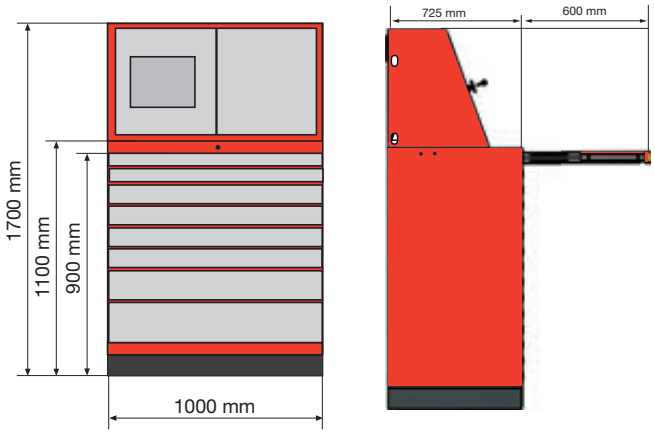
Scomparti per Inserti

Scomparti Regolabili



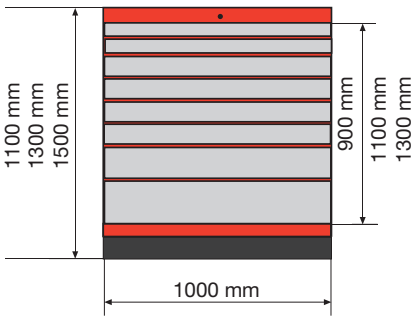
Scomparti Semplici

TSC mini - Opzioni e Dimensioni



Unità Base

- Sistema di distribuzione elettronicamente controllato in accaio
- Cassetti estraibili manualmente e completamente estraibili (portata max. 200 Kg per cassetto)
- Differenti altezze dei cassetti
- Divisori per ogni tipologia di cassetto
- Software TSC
- PC con sistema operativo MS Windows
- Scanner di codici a barre
- Sistema aperto (possono esistere più fornitori)
- E‘ possibile controllare dall‘ unità base estensioni anche di altri sistemi (TSC maxi, TSC midi)
- Trasportabile con muletto
- Voltaggio : 230 V / 50 Hz
- Personalizzabile, su richiesta, con colori in base allo standard RAL



Unità Aggiuntiva

- Sistema di distribuzione utensili elettronicamente controllato in acciaio
- Cassetti estraibili manualmente e completamente estraibili (portata max. 200 Kg per cassetto)
- Differenti altezze dei cassetti
- Divisori per ogni tipologia di cassetto
- Disponibile in tre differenti altezze:
  1100 mm / 1300 mm / 1500 mm

- **Cassetti Standard**
  Dimensioni interne: 600 x 900 mm
  Altezze: 75 mm / 100 mm / 125 mm / 150 mm
  200 mm / 250 mm / 300 mm / 400 mm

  Tipologie Cassetti Disponibili
  - Tappetino Anti-Scivolo
  - Scomparti Regolabili
  - Scomparti per Inserti
  - Scomparti Semplici
  - Sistema per Portautensilii

- **Cassetti con Spirali**
  Altezza cassetto: 150 mm
  Numero massimo di spirall: 10

  Il cassetto di ritiro presenta 3 scomparti con serratura manuale
  Altezza Cassetto : 150 mm

- **Cassetti con scomparti elettronicamente bloccati**

  Altezze disponibili: 75 / 100 / 150 / 200 / 250 mm

Scomparti per Cassetto	Dim. Int. Scomparto Largh. x Profon.	Disposizione Scomparti Largh. x Profon.
4	440 mm x 259 mm	2 x 2
8	440 mm x 125 mm	2 x 4
12	440 mm x 75 mm	2 x 6
12	225 mm x 200 mm	3 x 4
16	220 mm x 125 mm	4 x 4
18	146 mm x 175 mm	6 x 3
20	220 mm x 95 mm	4 x 5
24	146 mm x 125 mm	6 x 4
24	220 mm x 75 mm	4 x 6
32	109 mm x 125 mm	8 x 4
36	146 mm x 75 mm	6 x 6
40	109 mm x 95 mm	8 x 5
48	109 mm x 75 mm	8 x 6

TSC midi

Il TSC midi fornisce il pieno controllo del prelievo degli utensili in quanto i cassetti si aprono solo in base alla quantità del prodotto selezionato in precedenza. Associando ai prelievi un centro di costo si ottiene la massima trasparenza.

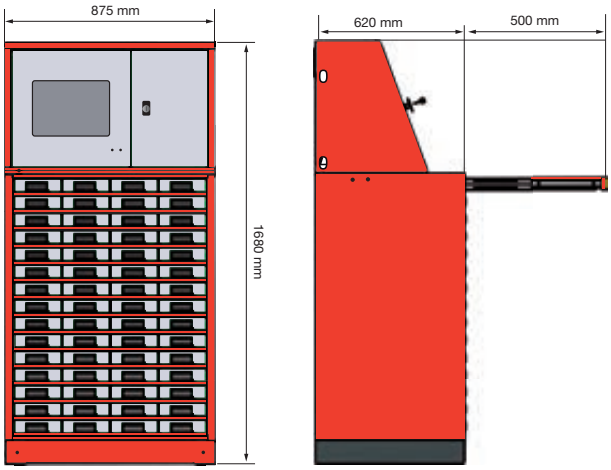
Tipologia di Cassetti

La configurazione dei cassetti è variabile e quindi può essere adattata alle esigenze del cliente.

Altezze Effettive Possibili: 42 / 60 / 113 / 186 / 258 mm

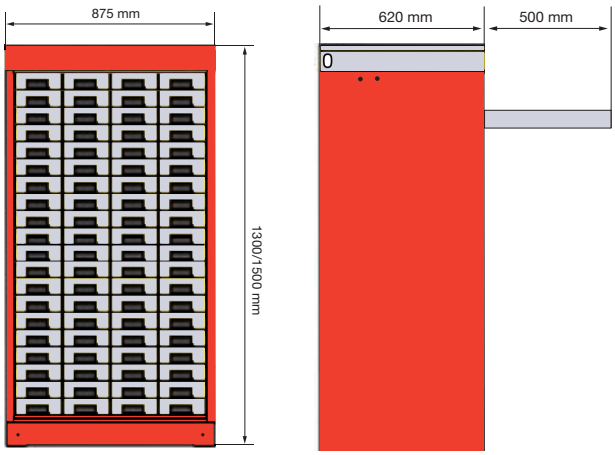
Altezze Effettive Possibili: 50 mm / 8 Schubladen cassetti per livello
110 mm / 5 Schubladen cassetti per livello
150 mm / 4 Schubladen cassetti per livello
215 mm / 3 Schubladen cassetti per livello
350 mm / 2 Schubladen cassetti per livello

TSC midi - Opzioni e dimensioni



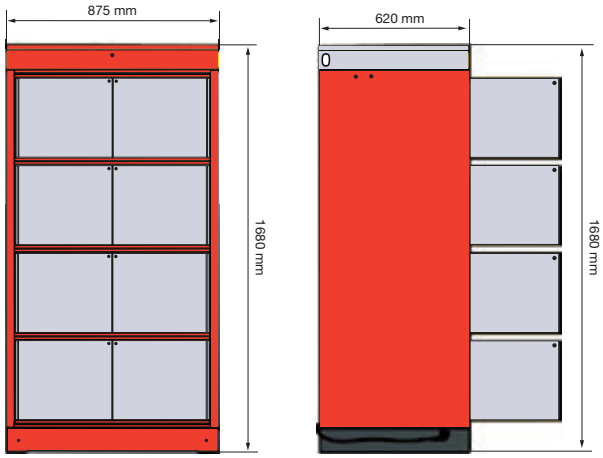
Unità Base

- Sistema di distribuzione elettronicamente controllato in accaio
- Cassetti estraibili manualmente e completamente estraibili (portata max. 200 Kg per cassetto)
- Differenti altezze dei cassetti
- Software TSC
- PC con sistema operativo MS Windows
- Scanner di codici a barre
- Sistema aperto (possono esistere più fornitori)
- E‘ possibile controllare dall‘ unità base estensioni anche di altri sistemi (TSC maxi, TSC midi)
- Trasportabile con muletto
- Voltaggio : 230 V / 50 Hz
- Personalizzabile, su richiesta, con colori in base allo standard RAL



Unità Aggiuntiva con cassetti

- due differenti configurazioni (1300 mm / 1500 mm)
- Sistema di distribuzione elettronicamente controllato in accaio
- Cassetti estraibili manualmente con estrazione elettronicamente limitata (portata max. 20 Kg per cassetto)
- Altezza e larghezza cassetti standard



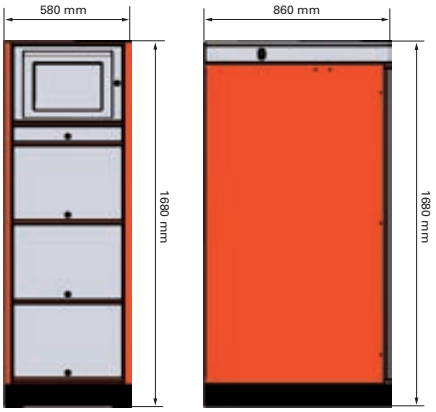
Unità Aggiuntiva con cassetti elettronicamente bloccati

- 8 o 16 scomparti elettronicamente bloccati
  8 Scomparti 360 x 340 x 590 mm (BxHxT)
  16 Scomparti 360 x 150 x 590 mm (BxHxT)

TSC maxi

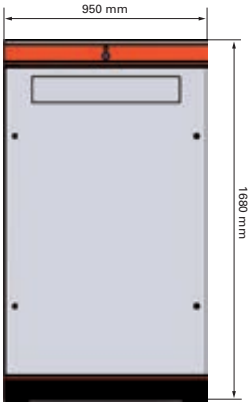
Il TSC maxi è la soluzione perfetta per immagazzinare grosse quantità di utensili in uno spazio ridotto. Nel sistema a spirale del TSC maxi, gli utensili sono immagazzinati in modo da occupare il minor spazio possibile, mantenendo però l‘ assoluta sicurezza. Durante il prelievo gli utensili vengono rilasciati attreverso un sistema di sollevamento.

TSC maxi - Opzioni e dimensioni



Unità di Controllo

- 3 Cassetti manuali
- Software TSC
- PC con sistema operativo MS Windows
- Scanner di codici a barre
- Sistema aperto (possono esistere più fornitori)
- E‘ possibile controllare dall‘ unità base estensioni anche di altri sistemi (TSC maxi, TSC midi)
- Trasportabile con muletto
- Voltaggio : 230 V / 50 Hz
- Personalizzabile, su richiesta, con colori in base allo standard RAL



Unità di Erogazione/ Stoccaggio

- Principio di prelievo: FIFO
- Portata per ogni livello di spirale: 90 Kg
- Cassetto di ritiro situato nella parte alta dell‘ unità
- Sistema di sollevamento adattato per la distrbuzione di utensili

- **Livelli di Spirale**

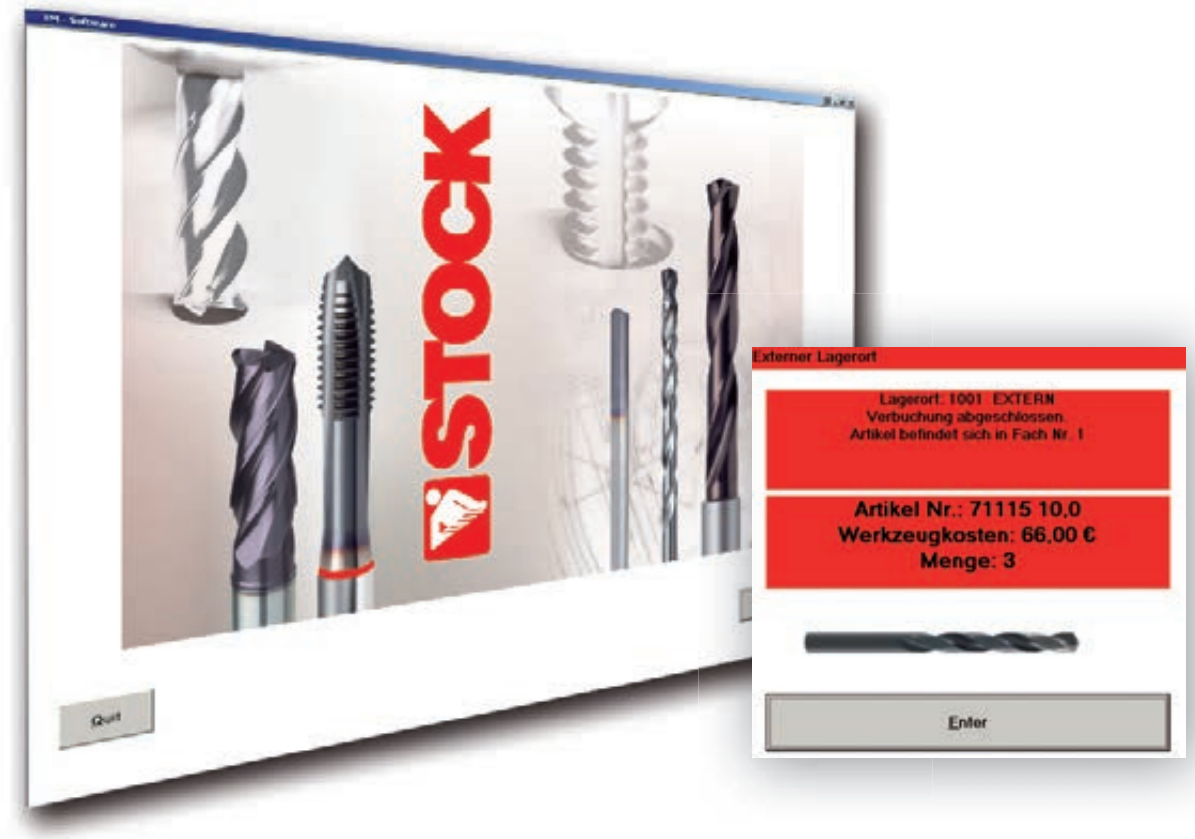
  6 / 7 / 8 fino a 10 spirali per livello

- **Partizioni a Spirale**

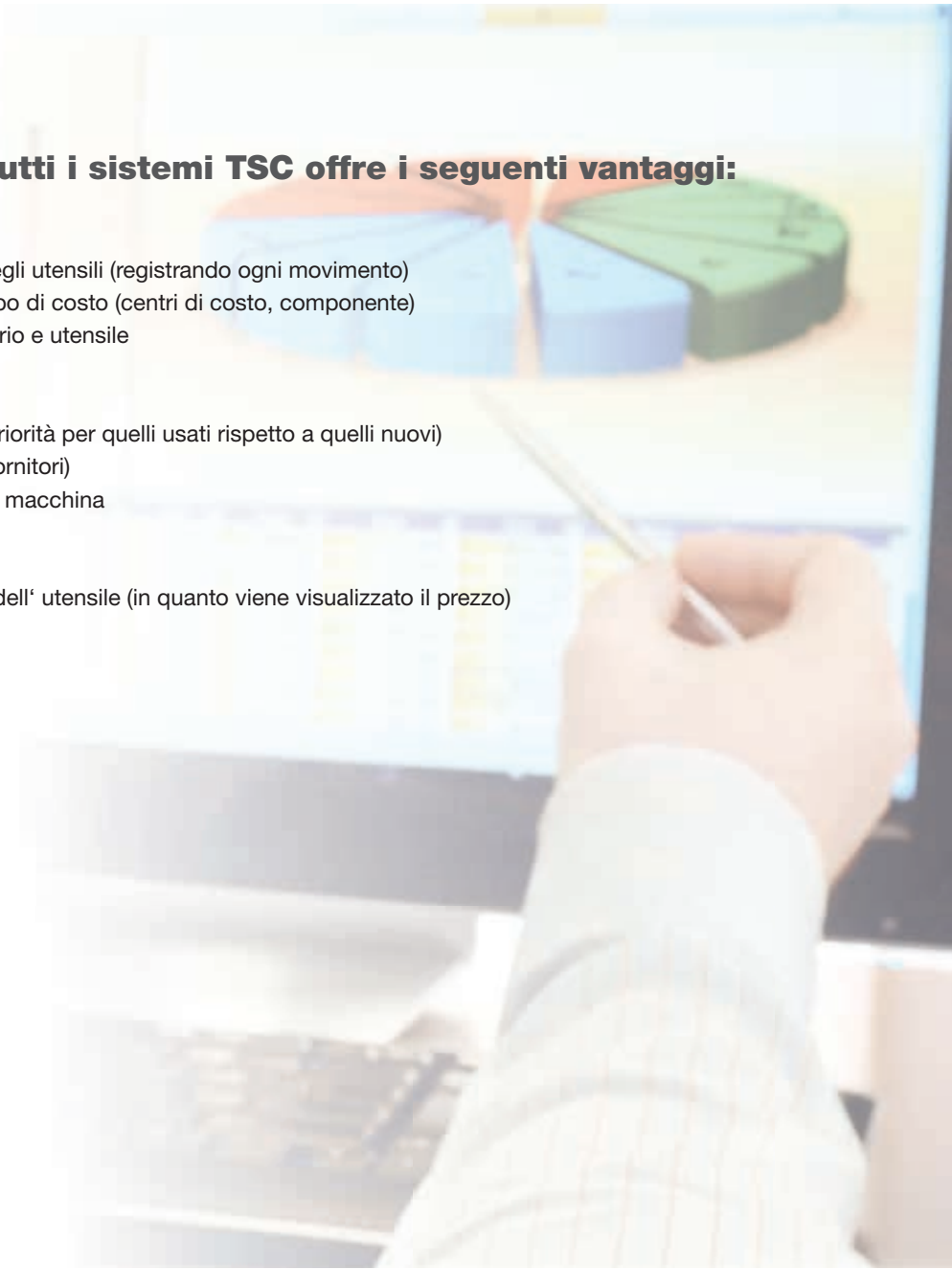
  9 / 13 / 15 / 21 / 24 / 31 ubicazioni

Materiale di separazione, per una gestione ottimale dei prodotti, su richiesta.

TSC Software

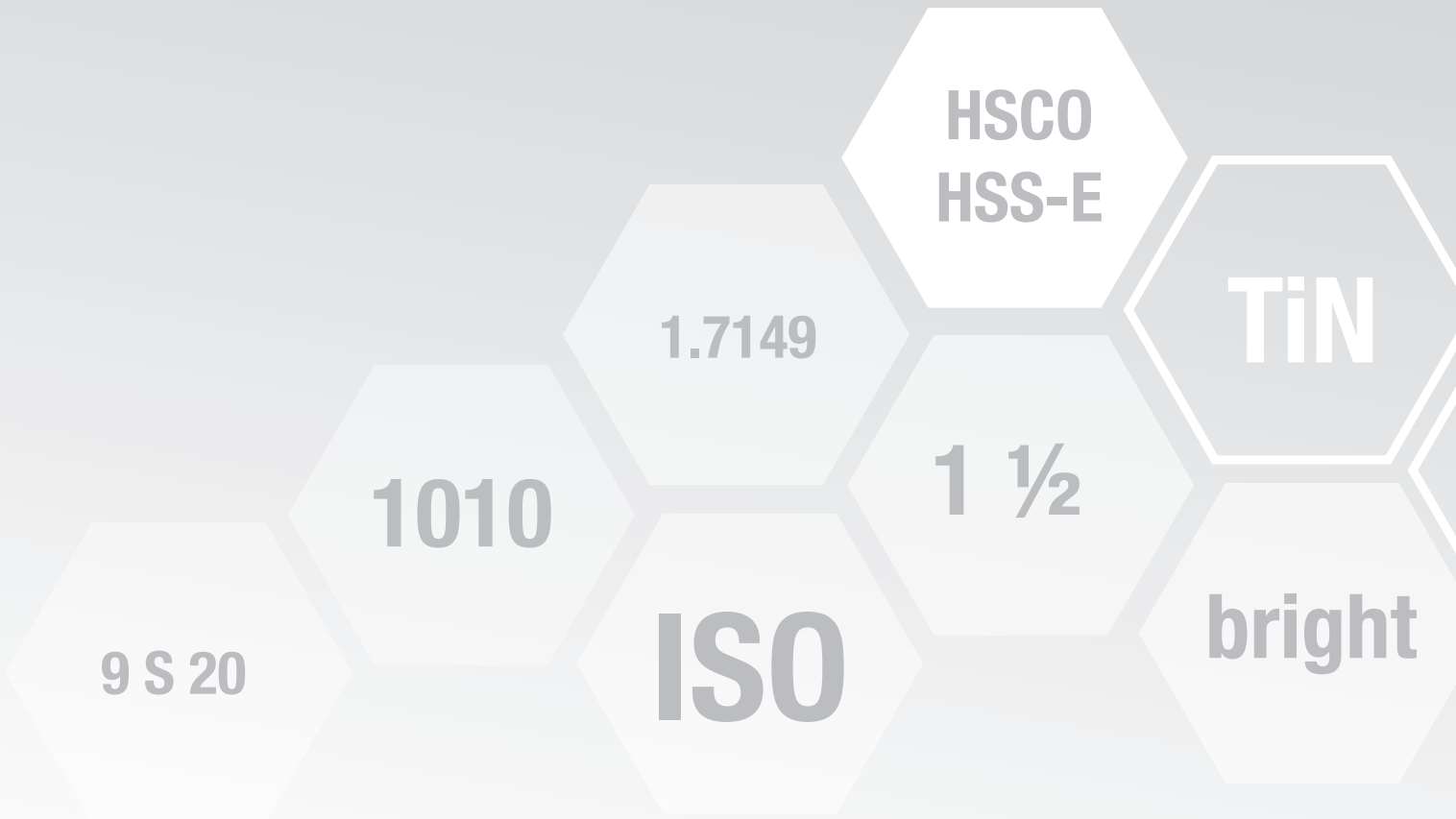


Il software può essere collegato con tutti i sistemi gestionali ERP. Inoltre, c'è la possibilità di controllare e gestire il sistema tramite una terza parte come un paternoster o magazzini verticali. E' possibile anche integrare il software con una struttura già esistente, anche dopo una prima installazione.



Il Software standard per tutti i sistemi TSC offre i seguenti vantaggi:

- Semplice e intuitivo
- Monitoraggio continuo del consumo degli utensili (registrando ogni movimento)
- Attribuzione dei costi utensile per gruppo di costo (centri di costo, componente)
- Analisi ABC, centri di costo/costo unitario e utensile
- Interfaccia con sistemi gestionali ERP
- Connessione via internet con i fornitori
- Gestione degli utensili ri-lavorati (con priorità per quelli usati rispetto a quelli nuovi)
- Sistema aperto (possono esistere più fornitori)
- Gestione degli utensili non ubicati nella macchina
- Gestione della riaffilatura
- Calibrazione
- Consapevolezza dell‘ utente sul costo dell‘ utensile (in quanto viene visualizzato il prezzo)


HSCO
HSS-E
TiN
1.7149
1010
1 ½
9 S 20
ISO
bright


K20-K40
+34
H11
CO content
[M-%]
pitch
P
X 53
CrMnNiN
21 9
BT (min)
SCR 415 (H)
<700°
9,3*10-6
N7

TABELLE

I più importanti gruppi di metallo duro

Tipo	Contenuto di Co [M-%]	Grandezza grana WC [µm]	Durezza [HV]	Classificazione ISO [ISO 513]	Caratteristiche
DK460UF	10	0,5	1620	K20-K40 ricoperto: P, M20-M40, H, S, N25	Tipo per impiego molto vasto, che, prevalentemente ricoperto, si impiega per lavorare acciai, leghe tenere di Al, ghise, ma anche superleghe come inconel 718. Questo tipo rappresenta la colonna vertebrale della nostra produzione.
DK500UF	12	0,5	1680	K25 ricoperto: P, M, H, S, N25	Questo tipo è stato sviluppato specificatamente per la lavorazione di materiali temprati. Si distingue, rispetto al Dk 460 UF, per durezza superiore e grosse tolleranze di deformazione. Per l'elevato contenuto di Co si consiglia assolutamente di impiegarlo ricoperto.
DK255F	8	0,7	1720	K20 ricoperto: P, M, H, S, N20	Questo tipo è consigliato per lavorare materiali temprati, tipi di ghise molto dure e leghe dure di Al-Si. E' possibile la lavorazione a secco. E' preferibile impiegarlo ricoperto.
DK120	6	1,3	1620	K15 ricoperto: N15	Questo tipo è adatto specialmente per l'impiego con ricopertura diamantata.
DK120UF	7	0,5	1850	K05	Tipo a grana ultra fine con massima resistenza all'usura, adatto per macchine assolutamente stabili, preferito per alesatori.
K55SF	9	0,2 -0,5	1920	K10-K30	Per l'impiego con materiali molto resistenti all'usura, acciai inossidabili, materiali compositi, come kevlar o fibre di vetro rinforzate, lavorazione ad alta velocità e lavorazione a secco.
DK400N	10	0,7	1580	K35M ricoperto: P, M, S, N35M	Tipo molto plastico per la lavorazione di metalli resistenti alle alte temperature.

Acciai super rapidi

Produciamo utensili HSS solo con materiali taglienti di alto valore.
Con la scelta mirata degli elementi di lega, i nostri utensili acquistano le proprietà ottimali per i singoli lavori.
Wolframio: aumenta la rinvenibilità e la resistenza all'usura.
Molibdeno: migliora la plasticità. Vanadio: aumenta la resistenza all'usura per utensili di finitura.
Cobalto: consente superiori temperature nella tempera ed aumenta quindi la resistenza al calore.

Designazione	Designazione acciaio	Nr. materiali (chiave x acciai)	Campo di impiego, proprietà	Acciai esteri corrispondenti					
				USA	Francia	Italia	Gran Bretagna	China	Japan
HSS	HS 6-5-2 (DMo5)	1.3343	Materiale tagliente standard per impiego universale	M 2	Z 90 WDCV 06-05-04-02	HS 6-5-2	BM 2	W6Mo5 Cr4V2	SKH51
HSCO HSS-E	HS 6-5-2-5 (EMo5Co5)	1.3243	Alta resistenza al calore, adatti soprattutto per sgrossare o con refrigerazione insufficiente	M 35	Z 90 WDKCV 06-05-05-04-02	HS 6-5-2-5	BM 35	W6Mo5 Cr4V2Co5	SKH55
HSS-E	HS 6-5-3 (EMo5V3)	1.3344	Alta stabilità degli spigoli taglienti, importante in alesatura	M 3	Z 120 WDCV 06-05-04-03	HS 6-5-3	–	W6Mo5 Cr4V3	SKH52
M42 HSS-E	HS 2-9-1-8	1.3247	Elevata resistenza al calore e durezza, adatti per lavorare in materiali di difficile truciolabilità	M 42	Z 110 DKCWV 09-08-04-02-01	HS 2-9-1-8	BM 42	W2Mo9Cr4 VCo8	SKH59
HSS-E-PM	10-2-5-8 PM52 HS 6-5-3-8 PM30	1.3253 1.3294	Alta durezza, resistenza al calore e stabilità degli spigoli taglienti, struttura molto spessa e costante	–					

Indice base stesso codolo

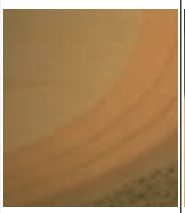
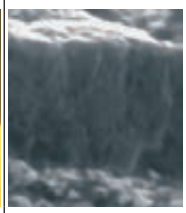
lucido
Utensili di acciaio super rapido o in metallo duro offrono anche senza trattamenti superficiali e rivestimenti già in generale buone prestazioni. In ogni caso gli utensili lucidi del programma standard offrono la possibilità di un rivestimento economico a scelta del cliente tra tutti i rivestimenti.

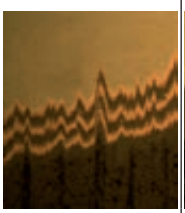
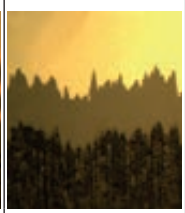
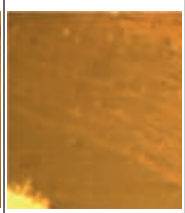
vaporizzati-nitrurati
nitrurati sulle fasi
Valori consigliati per la lavorazione di materiali come ghisa grigia e alluminio con alto contenuto di silicio materie plastiche acciai con alti contenuti di perlite. I nitrurati seguono diversi orientamenti di impiego.

Superfici trattamento di raffinazione
Per casi specifici si consiglia una finitura superficiale che elevi la resistenza alla fessurazione e la scorrevolezza e che diminuisca gli attriti. Qui rivestimenti duri perdono ogni significato di finitura superficiale, mentre rivestimenti teneri forniscono risultati molto migliori.

trattati a vapore
Utensili trattati al vapore o saldati come per la lavorazione di acciai a basso contenuto di carbonio possono essere esentati da rivestimenti. Questi sono in ogni caso esclusivamente impiegati per la lavorazione di materiali ferrosi.

I rivestimenti

	AlTiN	AlTiN + AlTiN nano	TiSiN	TiCN	DLC	Diamant
						
colore	violetto	grigiovioletto	ramato	grigiovioletto	nero	antracite
durezza	3200 HV	3400 HV	4000 HV	3000 HV	> 6000 HV	> 8000 HV
coefficiente di attrito	0,55	0,6	0,5	0,4	< 0,1	< 0,1
max. temperatura di impiego	< 800°	< 900°	< 800°	< 400°	< 700°	< 700°
descrizione breve	durezza rivestimento per applicazioni abrasive HPC e MMS	durezza rivestimento per truciolatura difficile HPC come anche MMS	rivestimento molto duro e resistente alle fessurazioni	rivestimento durezza tenace	rivestimento estremamente duro	rivestimento diamantato estremamente duro

	TiAlN/ TiAlN nano	AlCrN	TiN	TiAlSiN	AlTiZrN	CrN
						
colore	violetto	grigio-blu	orogiallo	rossobronzo	oro pallido	grigio metallizzato
durezza	3300 - HV	3200 HV	2300 - HV	5500 - HV	3400 HV	3500 HV
coefficiente di attrito	0,6	0,35	0,5	0,55	0,5	0,6
max. temperatura di impiego	< 800°	< 1100°	< 600°	< 800°	< 800°	< 1000°
descrizione breve	rivestimento multistrato anti fessurazione anche per lavorazioni con lubrificazione minimale	rivestimento resistente alle fessurazioni alle ossidazioni e al calore	rivestimento standard economico	rivestimento multistrato duro e resistente al calore	rivestimento duro e resistente alle fessurazioni	rivestimento duro resistente al calore

Informazioni basilari della filetattura

Imbocco, scelta ed impiego

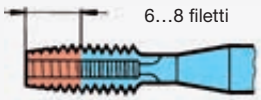
Nel filettare internamente, l'intero lavoro di truciolatura grava sui denti dell'imbocco. Di conseguenza la scelta della forma di imbocco più adatta deve essere molto accurata, poichè da essa dipende non solo la durata del maschio, ma anche la qualità della filettatura.

La forma e la lunghezza dell'imbocco dipendono principalmente dal tipo di preforo, se passante o cieco. Il foro passante non richiede ulteriori definizioni. Al contrario con il termine foro cieco sono indicate tutte le forature nelle quali lo scarico del truciolo è in direzione contraria a quella dell'avanzamento ed esso deve quindi essere tagliato nel ritorno del maschio. Fori ciechi possono anche essere forature passanti.

Anche la lunghezza dell'imbocco deve essere ben ponderata. Per evitare sovraccarichi, blocchi e filettature troppo grosse, non si deve tenere troppo basso il numero dei denti del filetto. D'altra parte un imbocco troppo lungo aumenta il momento di torsione e quindi fa insorgere pericolo di rottura. L'imbocco corretto forma B permette che lo scarico del truciolo avvenga nella direzione dell'avanzamento.

Forme di imbocco a DIN 2197

Forma A

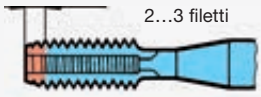


lunga, 6 - 8 filetti
per fori passanti corti

Forma B

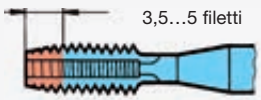
media, 3,5 - 5,5 filetti,
con imbocco corretto,
per tutti i fori passanti e
grosse profondità di filettatura in materiali
a truciolo medio e lungo

Forma C



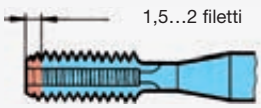
corta, 2 - 3 filetti
per fori ciechi ed
in generale per alu,
ghisa grigia ed ottone

Forma D



media, 3,5 - 5 filetti
per fori passanti corti

Forma E



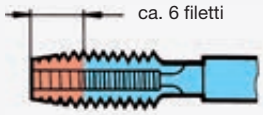
molto corta, 1,5-2 filetti,
per fori ciechi con sbocco
del filetto molto corto.

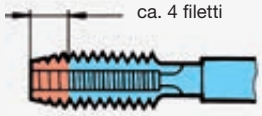
Forma F

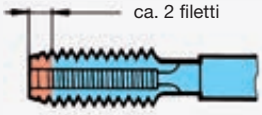
molto corta, 1,5-2 filetti,
per fori ciechi con sbocco
del filetto molto corto.
Da evitare se possibile.

Imbocco, scelta ed impiego

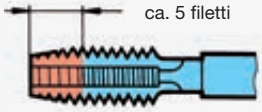
Lunghezza di imbocco per serie di maschi, 3 pezzi

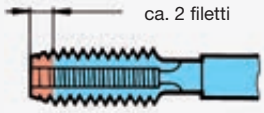
Forma A
per sbozzatore


Forma D
per intermedio


Forma C
per finitore


Lunghezza di imbocco per serie di maschi, 2 pezzi

Forma D
per sbozzatore


Forma C
per finitore


Consigli per l'impiego

Mentre il tipo di preforo determina in primo luogo l'imbocco, il resto della geometria del maschio, come forma, numero e direzione dei taglienti, angolo di taglio, ecc., dipendono anche dal materiale da lavorare e dal tipo di lavoro. Perciò i maschi per filettatura metrica ISO od in generale per lavo-razione di acciaio hanno, di norma, 3 taglienti fino a M 16, per misure superiori, 4 o più taglienti.

Maschi con taglienti elicoidali sinistri come pure maschi con imbocco corretto spingono i trucioli nella direzione di taglio e di avanzamento e sono quindi molto indicati per la lavorazione di fori passanti. Anche taglienti diritti ed imbocco lungo (forma D) danno in questo caso buoni risultati.

Per fori ciechi consigliamo maschi con taglienti elicoidali destri o diritti con imbocco corto. Gli utensili con taglienti destri portano i trucioli verso la parte posteriore in direzione del gambo. L'imbocco è concepito in modo tale che, nell'uscire, il truciolo non incolli, bensì sia facilmente asportato.

Per la lavorazione di alluminio, ghisa grigia ed ottone, sono necessari maschi speciali, generalmente con imbocco corto, sia che si tratti di fori passanti che di fori ciechi. Un imbocco lungo in questi materiali allargherebbe solo il preforo sul diametro nominale di filettatura invece di eseguire il filetto.

Maschi a taglienti diritti senza imbocco corretto sono utensili non specifici con lo svantaggio di non dare risultati ottimali nei singoli materiali. Vale la pena di fare lo sforzo di scegliere l'utensile più adatto per i vari tipi di lavorazione.

foro passante


maschi a taglienti diritti con imbocco corretto


maschi con taglienti elicoidali sinistri


maschi a taglienti diritti con imbocco lungo

foro cieco


maschi con taglienti elicoidali destri


maschi a taglienti diritti con imbocco corto

Diametri dei fori di filettatura p. la maschiatura

Filettatura metrica ISO DIN 13

Ø nom.	passo P mm	Ø preforo (foro) Ø DIN 336 mm	Ø preforo madrevite 6H* min. mm	Ø preforo madrevite 6H* max. mm
M 1	0,25	**0,75**	0,729	0,785
M 1,1	0,25	**0,85**	0,829	0,885
M 1,2	0,25	**0,95**	0,929	0,985
M 1,4	0,30	**1,10**	1,075	1,142
M 1,6	0,35	**1,25**	1,221	1,321
M 1,8	0,35	**1,45**	1,421	1,521
M 2	0,40	**1,60**	1,567	1,679
M 2,2	0,45	**1,75**	1,713	1,838
M 2,5	0,45	**2,05**	2,013	2,138
M 3	0,50	**2,50**	2,459	2,599
M 3,5	0,60	**2,90**	2,850	3,010
M 4	0,70	**3,30**	3,242	3,422
M 4,5	0,75	**3,70**	3,688	3,878
M 5	0,80	**4,20**	4,134	4,334
M 6	1,00	**5,00**	4,917	5,153
M 7	1,00	**6,00**	5,917	6,153
M 8	1,25	**6,80**	6,647	6,912
M 9	1,25	**7,80**	7,647	7,912
M 10	1,50	**8,50**	8,376	8,676
M 11	1,50	**9,50**	9,376	9,676
M 12	1,75	**10,20**	10,106	10,441
M 14	2,00	**12,00**	11,835	12,210
M 16	2,00	**14,00**	13,835	14,210
M 18	2,50	**15,50**	15,294	15,744
M 20	2,50	**17,50**	17,294	17,744
M 22	2,50	**19,50**	19,294	19,744
M 24	3,00	**21,00**	20,752	21,252
M 27	3,00	**24,00**	23,752	24,252
M 30	3,50	**26,50**	26,211	26,771
M 33	3,50	**29,50**	29,211	29,771
M 36	4,00	**32,00**	31,670	32,270
M 39	4,00	**35,00**	34,670	35,270
M 42	4,50	**37,50**	37,129	37,799
M 45	4,50	**40,50**	40,129	40,799
M 48	5,00	**43,00**	42,587	43,297
M 52	5,00	**47,00**	46,587	47,297
M 56	5,50	**50,50**	50,046	50,796

* M 1,1 fino a M 1,4 nom.-Ø madrevite 5H

Filettatura metrica ISO, passo fine DIN 13

Ø nom. x passo P mm	Ø preforo (foro) Ø DIN 336 mm	Ø preforo madrevite 6H min. mm	Ø preforo madrevite 6H max. mm
M 2,5 x 0,35	**2,15**	2,121	2,221
M 3,0 x 0,35	**2,65**	2,621	2,721
M 3,5 x 0,35	**3,15**	3,121	3,221
M 4,0 x 0,50	**3,50**	3,459	3,599
M 4,5 x 0,50	**4,00**	3,959	4,099
M 5,0 x 0,50	**4,50**	4,459	4,599
M 5,5 x 0,50	**5,00**	4,959	5,099
M 6,0 x 0,75	**5,20**	5,188	5,378
M 7,0 x 0,75	**6,20**	6,188	6,378
M 8,0 x 0,50	**7,50**	7,459	7,599
M 8,0 x 0,75	**7,20**	7,188	7,378
M 8,0 x 1,00	**7,00**	6,917	7,153
M 9,0 x 0,75	**8,20**	8,188	8,378
M 9,0 x 1,00	**8,00**	7,917	8,153
M 10 x 0,75	**9,20**	9,188	9,378
M 10 x 1,00	**9,00**	8,917	9,153
M 10 x 1,25	**8,80**	8,647	8,912
M 11 x 0,75	**10,20**	10,188	10,378
M 11 x 1,00	**10,00**	9,917	10,153
M 12 x 1,00	**11,00**	10,917	11,153
M 12 x 1,25	**10,80**	10,647	10,912
M 12 x 1,50	**10,50**	10,376	10,676
M 14 x 1,00	**13,00**	12,917	13,153
M 14 x 1,25	**12,80**	12,647	12,912
M 14 x 1,50	**12,50**	12,376	12,676
M 15 x 1,00	**14,00**	13,917	14,153
M 15 x 1,50	**13,50**	13,376	13,676
M 16 x 1,00	**15,00**	14,917	15,153
M 16 x 1,25	**14,80**	14,647	14,912
M 16 x 1,50	**14,50**	14,376	14,676
M 17 x 1,00	**16,00**	15,917	16,153
M 17 x 1,50	**15,50**	15,376	15,676
M 18 x 1,00	**17,00**	16,917	17,153
M 18 x 1,50	**16,50**	16,376	16,676
M 20 x 1,00	**19,00**	18,917	19,153
M 20 x 1,50	**18,50**	18,376	18,676
M 20 x 2,00	**18,00**	17,835	18,210
M 22 x 1,00	**21,00**	20,917	21,153

Ø nom. x passo P mm	Ø preforo (foro) Ø DIN 336 mm	Ø preforo madrevite 6H min. mm	Ø preforo madrevite 6H max. mm
M 22 x 1,50	**20,50**	20,376	20,676
M 22 x 2,00	**20,00**	19,835	20,210
M 24 x 1,00	**23,00**	22,917	23,153
M 24 x 1,50	**22,50**	22,376	22,676
M 24 x 2,00	**22,00**	21,835	22,210
M 25 x 1,00	**24,00**	23,917	24,153
M 25 x 1,50	**23,50**	23,376	23,676
M 25 x 2,00	**23,00**	22,835	23,210
M 27 x 1,00	**26,00**	25,917	26,153
M 27 x 1,50	**25,50**	25,376	25,676
M 27 x 2,00	**25,00**	24,835	25,210
M 28 x 1,00	**27,00**	26,917	27,153
M 28 x 1,50	**26,50**	26,376	26,676
M 28 x 2,00	**26,00**	25,835	26,210
M 30 x 1,00	**29,00**	28,917	29,153
M 30 x 1,50	**28,50**	28,376	28,676
M 30 x 2,00	**28,00**	27,835	28,210
M 30 x 3,00	**27,00**	26,752	27,252
M 32 x 1,50	**30,50**	30,376	30,676
M 32 x 2,00	**30,00**	29,835	30,210
M 33 x 1,50	**31,50**	31,376	31,676
M 33 x 2,00	**31,00**	30,835	31,210
M 33 x 3,00	**30,00**	29,752	30,252
M 35 x 1,50	**33,50**	33,376	33,676
M 36 x 1,50	**34,50**	34,376	34,676

Filettatura UNC ASME B1.1

Ø nom.	filetti per pollici	Ø preforo (foro) Ø DIN 336 mm	Ø preforo madrevite 2B min. mm	Ø preforo madrevite 2B max. mm
Nr. 1	64	**1,55**	1,425	1,580
Nr. 2	56	**1,85**	1,694	1,872
Nr. 3	48	**2,10**	1,941	2,146
Nr. 4	40	**2,35**	2,157	2,385
Nr. 5	40	**2,65**	2,487	2,698
Nr. 6	32	**2,85**	2,642	2,896
Nr. 8	32	**3,50**	3,302	3,531
Nr. 10	24	**3,90**	3,683	3,937
Nr. 12	24	**4,50**	4,343	4,597
1/4	20	**5,10**	4,978	5,258
5/16	18	**6,60**	6,401	6,731
3/8	16	**8,00**	7,798	8,153
7/16	14	**9,40**	9,144	9,550
1/2	13	**10,80**	10,592	11,024
9/16	12	**12,20**	11,989	12,446
5/8	11	**13,50**	13,386	13,868
3/4	10	**16,50**	16,307	16,840
7/8	9	**19,50**	19,177	19,761
1	8	**22,25**	21,971	22,606
1 1/8	7	**25,00**	24,638	25,349
1 1/4	7	**28,00**	27,813	28,524
1 3/8	6	**30,75**	30,353	31,115
1 1/2	6	**34,00**	33,528	34,290
1 3/4	5	**39,50**	38,938	39,802
2	4,5	**45,00**	44,679	45,593

Filettatura MJ DIN ISO 5855

Ø nom. x passo P mm	Ø preforo (foro) Ø DIN 336 mm	Ø preforo madrevite 5H* min. mm	Ø preforo madrevite 5H* max. mm
MJ 3 x 0,50	**2,60**	2,513	2,653
MJ 4 x 0,70	**3,40**	3,318	3,498
MJ 5 x 0,80	**4,30**	4,221	4,421
MJ 6 x 0,50	**5,55**	5,513	5,625
MJ 6 x 0,75	**5,35**	5,269	5,419
MJ 6 x 1,00	**5,10**	5,026	5,216
MJ 8 x 0,50	**7,55**	7,513	7,625
MJ 8 x 0,75	**7,35**	7,269	7,419
MJ 8 x 1,00	**7,10**	7,026	7,216
MJ 8 x 1,25	**6,90**	6,782	6,994
MJ 10 x 1,00	**9,10**	9,026	9,216
MJ 10 x 1,25	**8,90**	8,782	8,994
MJ 10 x 1,50	**8,60**	8,539	8,775
MJ 12 x 1,75	**10,40**	10,295	10,560
MJ 16 x 2,00	**14,20**	14,051	14,351

Filettatura UNC ISO 3161

Ø nom.	filetti per pollici	Ø preforo (foro) Ø DIN 336 mm	Ø preforo madrevite 3B min. mm	Ø preforo madrevite 3B max. mm
Nr. 6	32	**2,85**	2,733	2,939
Nr. 8	32	**3,55**	3,393	3,599
Nr. 10	24	**4,00**	3,795	4,064
Nr. 12	24	**4,60**	4,455	4,704
1/4	20	**5,30**	5,113	5,387
5/16	18	**6,75**	6,563	6,833
3/8	16	**8,20**	7,978	8,255
7/16	14	**9,60**	9,346	9,639
1/2	13	**11,00**	10,798	11,095
9/16	12	**12,40**	12,228	12,482
5/8	11	**13,80**	13,627	13,904

* MJ3 x 0,50 fino a MJ 5 x 0,80 nom.-Ø madrevite 6H

Filettatura UNF ISO 3161

Ø nom.	filetti per pollici	Ø preforo (foro) Ø DIN 336 mm	Ø preforo madrevite 3B min. mm	Ø preforo madrevite 3B max. mm
Nr. 6	40	**3,00**	2,888	3,053
Nr. 8	36	**3,60**	3,480	3,663
Nr. 10	32	**4,20**	4,054	4,255
Nr. 12	28	**4,75**	4,602	4,816
1/4	28	**5,60**	5,466	5,662
5/16	24	**7,00**	6,906	7,109
3/8	24	**8,60**	8,494	8,679
7/16	20	**10,00**	9,876	10,084
1/2	20	**11,60**	11,463	11,661
9/16	18	**13,00**	12,913	13,122
5/8	18	**14,60**	14,501	14,702

Diametri dei fori di filettatura p. la maschiatura

Filettatura UNF ASME B1.1

Ø nom.	filetti per pollici	Ø preforo (foro) Ø DIN 336 mm	Ø preforo madrevite 2B min. mm	Ø preforo madrevite 2B max. mm
Nr. 1	72	**1,55**	1,473	1,610
Nr. 2	64	**1,85**	1,755	1,910
Nr. 3	56	**2,15**	2,024	2,197
Nr. 4	48	**2,40**	2,271	2,459
Nr. 5	44	**2,70**	2,550	2,741
Nr. 6	40	**2,95**	2,819	3,023
Nr. 8	36	**3,50**	3,404	3,607
Nr. 10	32	**4,10**	3,962	4,166
Nr. 12	28	**4,60**	4,496	4,724
1/4	28	**5,50**	5,359	5,588
5/16	24	**6,90**	6,782	7,036
3/8	24	**8,50**	8,382	8,636
7/16	20	**9,90**	9,728	10,033
1/2	20	**11,50**	11,328	11,608
9/16	18	**12,90**	12,751	13,081
5/8	18	**14,50**	14,351	14,681
3/4	16	**17,50**	17,323	17,678
7/8	14	**20,40**	20,269	20,650
1	12	**23,25**	23,114	23,571
1 1/8	12	**26,50**	26,289	26,746
1 1/4	12	**29,50**	29,464	29,921
1 3/8	12	**32,75**	32,639	33,096
1 1/2	12	**36,00**	35,814	36,271

Filettatura BSW-(Whitworth) BS84

Ø nom. pollici	filetti per pollici	Ø preforo (foro) Ø DIN 336 mm	Ø preforo madrevite min. mm	Ø preforo madrevite max. mm
W 1/16	60	**1,20**	1,045	1,230
W 3/32	48	**1,80**	1,704	1,912
W 1/8	40	**2,50**	2,362	2,591
W 5/32	32	**3,20**	2,952	3,214
W 3/16	24	**3,60**	3,407	3,745
W 7/32	24	**4,50**	4,201	4,539
W 1/4	20	**5,10**	4,724	5,156
W 5/16	18	**6,50**	6,130	6,590
W 3/8	16	**7,90**	7,492	7,987
W 7/16	14	**9,20**	8,789	9,330
W 1/2	12	**10,50**	9,989	10,591
W 9/16	12	**12,00**	11,577	12,179
W 5/8	11	**13,50**	12,918	13,558
W 3/4	10	**16,25**	15,797	16,483
W 7/8	9	**19,25**	18,611	19,353
W 1	8	**22,00**	21,334	22,147
W 1 1/8	7	**24,50**	23,928	24,832
W 1 1/4	7	**27,75**	27,103	28,007
W 1 3/8	6	**30,50**	29,504	30,528
W 1 1/2	6	**33,50**	32,679	33,703
W 1 5/8	5	**35,50**	34,769	35,963
W 1 3/4	5	**39,00**	37,944	39,138
W 2	4,5	**44,50**	43,571	44,877

Filettatura (Whitworth-) (a DIN-ISO 228-1)

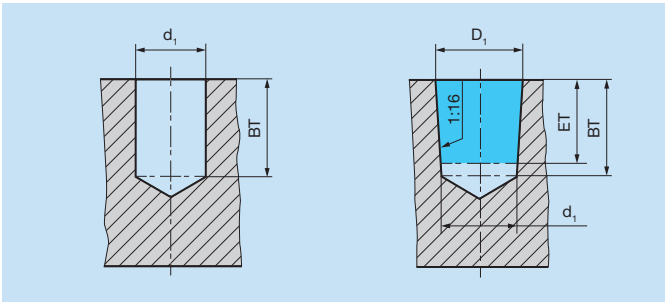
Ø nom. pollici	filetti per pollici	Ø preforo (foro) Ø DIN 336 mm	Ø preforo madrevite min. mm	Ø preforo madrevite max. mm
G 1/16	28	**6,80**	6,561	6,843
G 1/8	28	**8,80**	8,566	8,848
G 1/4	19	**11,80**	11,445	11,890
G 3/8	19	**15,25**	14,950	15,395
G 1/2	14	**19,00**	18,631	19,172
G 5/8	14	**21,00**	20,587	21,128
G 3/4	14	**24,50**	24,117	24,658
G 7/8	14	**28,25**	27,877	28,418
G 1	11	**30,75**	30,291	30,931
G 1 1/8	11	**35,50**	34,939	35,579
G 1 1/4	11	**39,50**	38,952	39,592
G 1 1/2	11	**45,25**	44,845	45,485
G 1 3/4	11	**51,00**	50,788	51,428
G 2	11	**57,00**	56,656	57,296

Filettatura PG a DIN 40430

Ø nom. pollici	filetti per pollici	Ø preforo (foro) Ø DIN 336 mm	Ø preforo madrevite min. mm	Ø preforo madrevite max. mm
Pg 7	20	**11,40**	11,280	11,430
Pg 9	18	**14,00**	13,860	14,010
Pg 11	18	**17,30**	17,260	17,410
Pg 13,5	18	**19,00**	19,060	19,210
Pg 16	18	**21,30**	21,160	21,310
Pg 21	16	**26,90**	26,780	27,030
Pg 29	16	**35,50**	35,480	35,730
Pg 36	16	**45,50**	45,480	45,730
Pg 42	16	**52,50**	52,480	52,730
Pg 48	16	**57,80**	57,780	58,030

Filettatura NPT ANSI B 2.1 filettatura conica americana, conicità 1:16

versione A (da evitare se possibile) — versione B



Ø nom.	filetti per pollici	Ø preforo cilindr. (A) d_1	Ø preforo conico (B) D_1	prof. t. p. ET mm	prof. fil. BT (min) mm
1/16	27	**6,15**	6,39	9,29	10,7
1/8	27	**8,40**	8,74	9,32	10,8
1/4	18	**11,10**	**11,36**	13,52	15,6
3/8	18	**14,30**	**14,80**	13,83	16,0
1/2	14	**17,90**	**18,32**	18,07	20,8
3/4	14	**23,30**	**23,67**	18,55	21,3
1	11,5	**29,00**	**29,69**	22,29	25,6
1 1/4	11,5	**37,70**	**38,45**	22,80	26,1
1 1/2	11,5	**43,70**	**44,52**	22,80	26,1
2	11,5	**55,60**	**56,56**	23,20	26,5
2 1/2	8	**66,30**	**67,62**	31,75	36,3
3	8	**82,30**	**83,52**	33,74	38,5

Filett. EG metr./metr. passo fine (EG M 14 x 1,25) per impiego di helicoil DIN 8140

Ø nom.	x passo P mm	Ø preforo (foro) Ø DIN 336 mm	Ø preforo madrevite min. mm	Ø preforo madrevite max. mm
EG M 4	0,70	**4,20**	4,152	4,292
EG M 5	0,80	**5,25**	5,174	5,334
EG M 6	1,00	**6,30**	6,217	6,407
EG M 8	1,25	**8,40**	8,271	8,483
EG M10	1,50	**10,50**	10,324	10,560
EG M12	1,75	**12,50**	12,379	12,644
EG M14 x	1,25	**14,40**	14,271	14,483
EG M16	2,00	**16,50**	16,433	16,733

Filettatura EG UNC (UNC-STI) per impiego di helicoil ASME B18.29.1

Ø nom.	filetti per pollici	Ø preforo (foro) Ø DIN 336 mm	Ø preforo madrevite min. mm	Ø preforo madrevite max. mm
EG Nr. 6	32	**3,80**	3,678	3,879
EG Nr. 8	32	**4,40**	4,338	4,524
EG Nr. 10	24	**5,20**	5,055	5,283
EG Nr. 12	24	**5,80**	5,715	5,944
EG 1/4	20	**6,70**	6,624	6,868
EG 5/16	18	**8,40**	8,242	8,489
EG 3/8	16	**10,00**	9,868	10,127
EG 7/16	14	**11,60**	11,506	11,783
EG 1/2	13	**13,30**	13,122	13,393
EG 9/16	12	**14,90**	14,747	15,032
EG 5/8	11	**16,50**	16,375	16,673

Filettatura EG UNF (UNF-STI) per impiego di helicoil ASME B18.29.1

Ø nom.	filetti per pollici	Ø preforo (foro) Ø DIN 336 mm	Ø preforo madrevite min. mm	Ø preforo madrevite max. mm
EG Nr. 6	40	**3,70**	3,644	3,818
EG Nr. 8	36	**4,40**	4,321	4,498
EG Nr. 10	32	**5,10**	4,999	5,184
EG Nr. 12	28	**5,70**	5,682	5,809
EG 1/4	28	**6,60**	6,546	6,721
EG 5/16	24	**8,25**	8,166	8,352
EG 3/8	24	**9,80**	9,754	9,931
EG 7/16	20	**11,50**	11,389	11,585
EG 1/2	20	**13,10**	12,974	13,172
EG 9/16	18	**14,70**	14,592	14,798
EG 5/8	18	**16,25**	16,180	16,386

Diametri dei fori consigl. p. maschiatura a rullare

Filettatura metrica ISO DIN 13

Ø nom.	passo	Ø foro	Ø foro		Ø preforo madrevite 7H*	
mm		mm	min. mm	max. mm	min. mm	max. mm
M 1	0,25	**0,75**	0,729	0,785		
M 1,1	0,25	**0,85**	0,829	0,885		
M 1,2	0,25	**0,95**	0,929	0,985		
M 1,4	0,30	**1,10**	1,075	1,142		
M 1,6	0,35	**1,25**	1,221	1,321		
M 1,8	0,35	**1,45**	1,421	1,521		
M 2	0,40	**1,85**	1,84	1,88	1,567	1,679
M 2,2	0,45	**2,00**	2,01	2,05	1,713	1,838
M 2,5	0,45	**2,30**	2,28	2,32	2,013	2,138
M 3	0,50	**2,80**	2,78	2,85	2,459	2,639
M 3,5	0,60	**3,25**	3,23	3,30	2,850	3,050
M 4	0,70	**3,70**	3,68	3,76	3,242	3,466
M 4,5	0,75	**4,20**				
M 5	0,80	**4,65**	4,62	4,71	4,134	4,384
M 6	1,00	**5,55**	5,52	5,62	4,917	5,217
M 7	1,00	**6,55**	6,52	6,62	5,917	6,217
M 8	1,25	**7,40**	7,36	7,47	6,647	6,982
M 9	1,25	**8,40**	8,36	8,47	7,647	7,982
M 10	1,50	**9,30**	9,26	9,38	8,376	8,751
M 11	1,50	**10,30**	10,26	10,38	9,376	9,751
M 12	1,75	**11,20**	11,15	11,29	10,106	10,531
M 14	2,00	**13,10**	13,05	13,20	11,835	12,310
M 16	2,00	**15,10**	15,05	15,20	13,835	14,310
M 18	2,50	**16,90**	16,83	17,02	15,294	15,854
M 20	2,50	**18,90**	18,83	19,02	17,294	17,854
M 22	2,50	**20,90**	20,83	21,02	19,294	19,854
M 24	3,00	**22,70**	22,62	22,80	20,752	21,382
M 27	3,00	**25,70**	25,62	25,80	23,752	24,382
M 30	3,50	**28,50**	28,40	28,60	26,211	26,921
M 33	3,50	**31,50**	31,40	31,60	29,211	29,921
M 36	4,00	**34,30**	34,17	34,40	31,670	32,420
M 39	4,00	**37,30**	37,17	37,40	34,670	35,420
M 42	4,50	**40,10**	39,95	40,20	37,129	37,979

* M 2 fino a M 2,5 Ø preforo madrevite 6H

Filettatura metrica ISO, passo fine DIN 13

Ø nom.	x passo	Ø foro	Ø foro		Ø preforo madrevite 7H*	
mm		mm	min. mm	max. mm	min. mm	max. mm
M 2,5	x 0,35	**2,35**	2,35	2,38	2,121	2,221
M 3	x 0,35	**2,85**	2,85	2,88	2,621	2,721
M 4	x 0,35	**3,85**	3,85	3,88	3,621	3,721
M 4	x 0,50	**3,80**	3,78	3,83	3,459	3,639
M 5	x 0,50	**4,80**	4,78	4,83	4,459	4,639
M 5,5	x 0,50	**5,30**	5,28	5,33	4,959	5,139
M 6	x 0,75	**5,65**	5,62	5,70	5,188	5,424
M 7	x 0,75	**6,65**	6,62	6,70	6,188	6,424
M 8	x 0,75	**7,65**	7,62	7,70	7,188	7,424
M 8	x 1,00	**7,55**	7,52	7,62	6,917	7,217
M 9	x 0,75	**8,65**	8,62	8,70	8,188	8,424
M 9	x 1,00	**8,55**	8,52	8,62	7,917	8,217
M 10	x 0,75	**9,65**	9,62	9,70	9,188	9,424
M 10	x 1,00	**9,55**	9,52	9,62	8,917	9,217
M 10	x 1,25	**9,40**	9,36	9,47	8,647	8,982
M 11	x 0,75	**10,65**	10,62	10,70	10,188	10,424
M 11	x 1,00	**10,55**	10,52	10,62	9,917	10,217
M 12	x 1,00	**11,55**	11,52	11,62	10,917	11,217
M 12	x 1,25	**11,40**	11,36	11,47	10,647	10,982
M 12	x 1,50	**11,30**	11,26	11,38	10,376	10,751
M 14	x 1,00	**13,55**	13,52	13,62	12,917	13,217
M 14	x 1,25	**13,40**	13,36	13,47	12,647	12,982
M 14	x 1,50	**13,30**	13,26	13,38	12,376	12,751
M 15	x 1,00	**14,55**	14,52	14,62	13,917	14,217
M 15	x 1,50	**14,30**	14,26	14,38	13,376	13,751
M 16	x 1,00	**15,55**	15,52	15,62	14,917	15,217
M 16	x 1,50	**15,30**	15,26	15,38	14,376	14,751
M 17	x 1,00	**16,55**	16,52	16,62	15,917	16,217
M 17	x 1,50	**16,30**	16,26	16,38	15,376	15,751
M 18	x 1,00	**17,55**	17,52	17,62	16,917	17,217
M 18	x 1,50	**17,30**	17,26	17,38	16,376	16,751
M 18	x 2,00	**17,10**	17,05	17,20	15,835	16,310
M 20	x 1,00	**19,55**	19,52	19,62	18,917	19,217

* M 2,5 x 0,35 fino a M 4 x 0,35 Ø preforo madrevite 6H

Ø nom.	x passo	Ø foro	Ø foro		Ø preforo madrevite 7H*	
mm		mm	min. mm	max. mm	min. mm	max. mm
M 20	x 1,50	**19,30**	19,26	19,38	18,376	19,751
M 24	x 1,00	**23,55**	23,52	23,62	22,917	23,217
M 24	x 1,50	**23,30**	23,26	23,38	22,376	22,751
M 24	x 2,00	**23,10**	23,05	23,20	21,835	22,310
M 27	x 1,50	**26,30**	26,26	26,38	25,376	25,751
M 30	x 1,50	**29,30**	29,26	29,38	28,376	28,751
M 33	x 1,50	**32,30**	32,26	32,38	31,376	31,751
M 36	x 1,50	**35,30**	35,26	35,38	34,376	34,751
M 39	x 1,50	**38,30**	38,26	38,38	37,376	37,751
M 42	x 1,50	**41,30**	41,26	41,38	42,376	42,751

Tolleranza dei diametri di fori di filettatura nei maschi a rullare (a DIN 13, parte 50)
Per ragioni di resistenza, non è necessario mantenere la tolleranza 6H per i fori di filettatura; la tolleranza 7H è sufficiente a garantire che non sia superato il rivestimento del diametro medio di 0,32 x P tra madrevite e bullone. Inoltre, la filettatura a rullare, per la corsa della fase non interrotta e la deformazione a freddo, conferisce di regola una resistenza superiore a quella della filettatura normale.

Diametri dei fori consigl. p. maschiatura a rullare

Filettatura UNC ASME B1.1

Ø nom.	filetti per pollici	Ø foro mm	Ø foro min. mm	Ø foro max. mm	Ø preforo madrevite 2B min. mm	Ø preforo madrevite 2B max. mm
Nr. 1	64	**1,68**	1,67	1,70	1,425	1,580
Nr. 2	56	**1,98**	1,97	2,01	1,694	1,872
Nr. 3	48	**2,28**	2,27	2,32	1,941	2,146
Nr. 4	40	**2,55**	2,54	2,59	2,157	2,385
Nr. 5	40	**2,90**	2,89	2,94	2,487	2,698
Nr. 6	32	**3,15**	3,14	3,19	2,642	2,896
Nr. 8	32	**3,80**	3,78	3,82	3,302	3,531
Nr. 10	24	**4,35**	4,33	4,39	3,683	3,937
Nr. 12	24	**5,00**	4,97	5,03	4,343	4,597
1/4	20	**5,75**	5,72	5,80	4,978	5,258
5/16	18	**7,30**	7,26	7,37	6,401	6,731
3/8	16	**8,80**	8,77	8,88	7,798	8,153
7/16	14	**10,30**	10,27	10,37	9,144	9,550
1/2	13	**11,80**	11,77	11,88	10,592	11,024
9/16	12	**13,30**	13,28	13,39	11,989	12,446
5/8	11	**14,80**	14,78	14,90	13,386	13,868
3/4	10	**17,90**	17,85	17,97	16,307	16,840
7/8	9	**21,00**	20,95	21,10	19,177	19,761
1	8	**24,00**	23,95	24,12	21,971	22,606

Filettatura UNF ASME B1.1

Ø nom.	filetti per pollici	Ø foro mm	Ø foro min. mm	Ø foro max. mm	Ø preforo madrevite 2B min. mm	Ø preforo madrevite 2B max. mm
Nr. 1	72	**1,70**	1,69	1,72	1,473	1,610
Nr. 2	64	**2,00**	1,99	2,03	1,755	1,910
Nr. 3	56	**2,30**	2,29	2,34	2,024	2,197
Nr. 4	48	**2,60**	2,59	2,63	2,271	2,459
Nr. 5	44	**2,90**	2,89	2,93	2,550	2,741
Nr. 6	40	**3,20**	3,19	3,24	2,819	3,023
Nr. 8	36	**3,85**	3,83	3,88	3,404	3,607
Nr. 10	32	**4,45**	3,43	4,49	3,962	4,166
Nr. 12	28	**5,10**	5,07	5,13	4,496	4,724
1/4	28	**5,95**	5,92	5,99	5,359	5,588
5/16	24	**7,45**	7,42	7,50	6,782	7,036
3/8	24	**9,05**	9,02	9,10	8,838	8,636
7/16	20	**10,55**	10,48	10,58	9,728	10,033
1/2	20	**12,10**	12,08	12,18	11,328	11,608
9/16	18	**13,65**	13,61	13,72	12,751	13,081
5/8	18	**15,25**	15,21	15,32	14,351	14,681
3/4	16	**18,35**	15,30	18,41	17,323	17,678
7/8	14	**21,40**	21,35	21,49	20,269	20,650
1	12	**24,45**	24,40	24,54	23,114	23,571

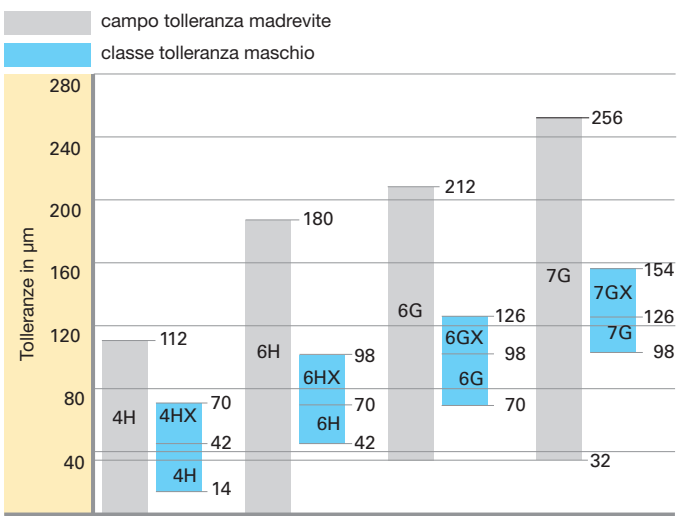
Filettatura (Whitworth-) DIN EN ISO 228-1

Ø nom.	filetti per pollici	Ø foro mm	Ø foro min. mm	Ø foro max. mm	Ø preforo madrevite min. mm	Ø preforo madrevite max. mm
G 1/16	28	**7,30**	7,28	7,35	6,561	6,843
G 1/8	28	**9,30**	9,28	9,35	8,566	8,848
G 1/4	19	**12,50**	12,48	12,55	11,445	11,890
G 3/8	19	**16,00**	15,98	16,05	14,950	15,395
G 1/2	14	**20,00**	19,98	20,12	18,631	19,172
G 5/8	14	**22,00**	21,98	22,12	20,587	21,128
G 3/4	14	**25,50**	25,48	25,62	24,117	24,658
G 7/8	14	**29,25**	29,23	29,37	27,877	28,418
G 1	11	**32,00**	31,98	32,15	30,291	30,931
G 1 1/4	11	**40,75**	40,70	40,85	38,952	39,592

I campi di tolleranze/le classi di tolleranze

La qualità e la posizione determinano la tolleranza. Essa è designata usando le rispettive cifre e lettere.
L'indicazione per la classe di tolleranza del maschio corrisponde a quella della madrevite per la quale il maschio è prevalentemente usato. Quindi essa non è identica in ciascun caso di impiego alla tolleranza della madrevite maschiata. Maschi con differenti tolleranze a DIN 802 parte 1 sono contraddistinti dall'aggiunta della lettera »X« (6 HX,6 GX).
Noi consigliamo di impiegare i maschi secondo la sottostante tabella:

Ordinamento campo/classe di tolleranza



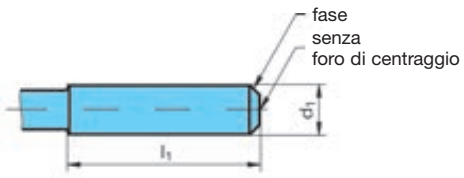
DIN EN 22857		Tolleranza della madrevite da maschiare					DIN 802 parte 1 (ritirata)
Classe di impiego del maschio indicazione*	designazione						Tolleranza del maschio
classe 1	ISO 1	4H	5H				4H
classe 2	ISO 2			6H			6H
classe 3	ISO 3				6G		6G
–	–					7G	7G

* Le tolleranze delle tre classi di impiego, in base alle indicazioni sotto-segnate, sono calcolate secondo un'unità di tolleranza t, il cui valore corrisponde alla tolleranza del diametro medio TD2 con classe di tolleranza 5 della madrevite (estrapolata fino al passo 0,2 mm):
$t = T_{D2}$ tolleranza 5 della madrevite

Esecuzione dei codoli

Codoli cilindrici per punte elicoidali e frese frontali in acciaio super rapido DIN 6535

Forma HA, liscio

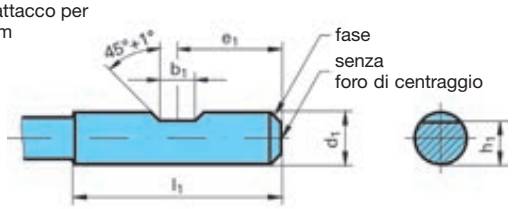


Misure in mm

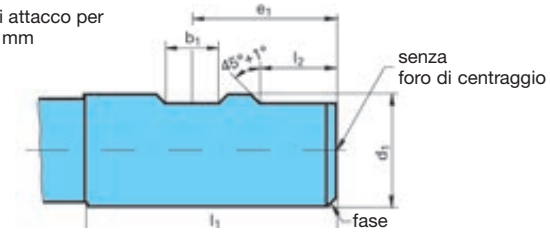
d_1 h6	l_1 +2 0	d_1 h6	l_1 +2 0
2	28	14	45
3	28	16	48
4	28	18	48
5	28	20	50
6	36	25	56
8	36	32	60
10	40		
12	45		

Forma HB, con piano di attacco laterale

con un piano di attacco per d1 = 6 und 20 mm



con due piani di attacco per d1 = 25 und 32 mm



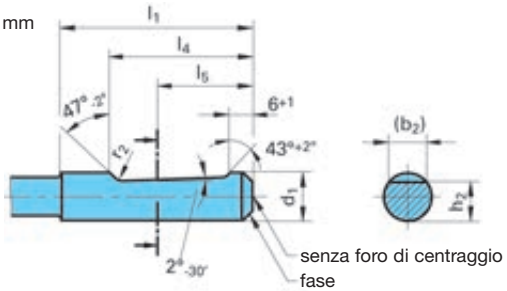
Misure in mm

d_1 h6	b_1 +0,05 0	e_1 0 -1	h_1 h11	l_1 +2 0	l_2 +1 0
6	4,2	18	5,1	36	–
8	5,5	18	6,9	36	–
10	7	20	8,5	40	–
12	8	22,5	10,4	45	–
14	8	22,5	12,7	45	–
16	10	24	14,2	48	–
18	10	24	16,2	48	–
20	11	25	18,2	50	–
25	12	32	23	56	17
32	14	36	30	60	19

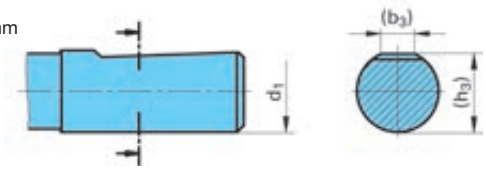
Forma HE, con piano di attacco inclinato, senza fori di refrigerazione*

* Esecuzione: codoli cilindrici a DIN 6535 sono eseguiti senza o con fori di refrigerazione. L'impiego dell'esecuzione per differenti utensili come pure indicazioni dimensionali e designazione per la posizione dei fori di refrigerazione sono contenute nelle corrispondenti norme.

per d1 = da 6 a 20 mm



per d1 = 25 e 32 mm



Misure in mm

d_1 h6	(b_2) ≈	(b_3)	h_2 h11	(h_3)	l_1 +2 0	l_4 0 -1	l_5 misura nom.	r_2 min.
6	4,3	–	5,1	–	36	25	18	1,2
8	5,5	–	6,9	–	36	25	18	1,2
10	7,1	–	8,5	–	40	28	20	1,2
12	8,2	–	10,4	–	45	33	22,5	1,2
14	8,1	–	12,7	–	45	33	22,5	1,2
16	10,1	–	14,2	–	48	36	24	1,6
18	10,8	–	16,2	–	48	36	24	1,6
20	11,4	–	18,2	–	50	38	25	1,6
25	13,6	9,3	23,0	24,1	56	44	32	1,6
32	15,5	9,9	30,0	31,2	60	48	35	1,6

Tecnica e vantaggi

• Elevata trasmissione del momento torcente e posizionamento radiale preciso

Durante il serraggio del codolo cavo, per attrito, scaturiscono forze molto alte sull'intera superficie del codolo e sulle superfici piane (figura 1). Due chiavette, che si trovano al termine del codolo dell'attacco, afferrano l'utensile e provvedono ad un posizionamento radiale preciso e non modificabile.

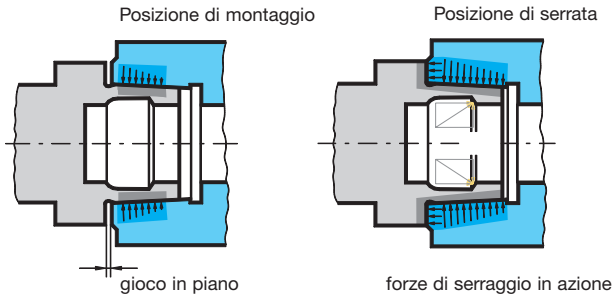
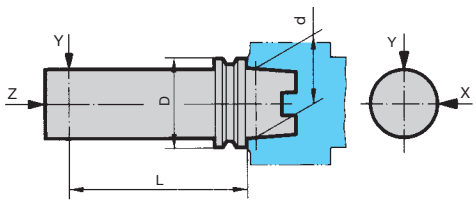


Figura 1
Forze di precarico e frizione del codolo cavo nei raccordi automatico e manuale.

• Elevata precisione di cambio e ripetibilità

La presa a forma di anello delle morse di serraggio all'interno del codolo cavo dell'utensile garantisce il collegamento assolutamente privo di gioco tra codolo e mandrino od attacco (figure 1 e 2).



HSK-Grand. D	d mm	L mm	X mm	Y mm	Z mm
32	24	50	0,002	0,002	0,002
40	30	60	0,002	0,002	0,002
50	38	75	0,002	0,002	0,002
63	48	100	0,002	0,002	0,002
100	75	150	0,002	0,002	0,002

Figura 2
Precisione ripetibilità radiale ed assiale dei raccordi automatico e manuale.

• Idoneità all'alta velocità

Ad un maggiore numero di giri, corrisponde una forza superiore di bloccaggio del meccanismo di serraggio tra codoli conici. L'iniziale precarico tra codolo cavo ed attacco del mandrino compensa l'espansione del mandrino, provocata dalla forza centrifuga, in modo che il gioco radiale sia completamente eliminato (figura 1). La superficie piana evita lo slittamento assiale.

• Brevi tempi di cambio

Razionale cambio utensili, dovuto alla ridotta lun-ghezza (ca. 1/3 del cono ISO convenzionale) ed al peso limitato (ca. 50% del cono ISO).

• Costruzione del codolo semplice e conveniente

Il corpo monolitico significa anche nessuna pezzo usurabile.

• Insensibilità allo sporco

Il piano a forma di anello non è interrotto, quindi si semplifica la pulizia del sistema. Con il cambio automatico dell'utensile è consigliabile la pulizia con aria durante il cambio.

• Codifica ovvero identificazione

Per permettere sistemi di identificazione convenzionali, è stato previsto, in prossimità del collarino, un foro con Ø 10 mm e 4,5 mm di profondità per collocazione dei dati (code-chip).

• Standardizzazione, normalizz. del raccordo autom.

corrisponde a ISO 12164-1/DIN 69893

• Alimentazione del refrigerante

Gli utensili per cambio automatico HSK-A ed E sono predisposti per alimentazione centrale del refrigerante mediante tubo di adduzione od attraverso il collarino. Anche per utensili a cambio manuale con raccordo GM 300 l'alimentazione avviene centralmente. Gli elementi di serraggio sono a completa tenuta stagna, in tal modo l'interno del mandrino non può entrare in contatto con il refrigerante.

• Montaggio unità di adduzione refrigerante

Per tutti i moduli GM 300 A è necessaria l'unità di adduzione refrigerante Il montaggio dell'unità è a carico dell'utilizzatore.

Tecnica e vantaggi

Abbiamo sensibilmente ampliato il nostro programma nell'ambito degli attacchi utensili ISO e MAS-BT. Naturalmente anche questi attacchi sono della massima qualità. Vale a dire che produciamo attacchi ISO e MAS-BT in acciaio speciale legato da cementazione, con una resistenza nel nucleo di almeno 900 N/mm^2, temprato con un procedimento a bassa deformazione a HRC 58 con una profondità di tempra da 0,8 fino a 1,0 mm. La superficie degli attacchi è protetta dalla corrosione e sabbiata per una lunga durata.

Qualità derivata da precisione

Il nostro impegno per la massima precisione si estende anche al campo degli attacchi utensili, perciò i mandrini ISO e MAS-BT sono rettificati: nel campo del cono ISO con Ra ≤ 0,2, dal lato attacco con Ra ≤ 0,4. la tolleranza del cono è superiore ad AT 3 con una sicurezza di misurazione di ≤ 1µm.
Troverete indicazione dettagliate delle tolleranze di forma e posizionamento sulle pagine del catalogo per i singoli attacchi utensili. Le tolleranze dei fori e dei perni di attacco sono max. 2/3 della tolleranza DIN.

Qualità equilibratura

Generalmente attacchi utensili adatti per alti numeri di giri sono equilibrati. A questo scopo abbiamo determinato lo squilibrio ed inserito nei disegni superficii e fori di equilibratura. In tal modo lo squilibrio è ampiamente compensato e si può evitare un'equilibratura di fine almeno sino a ca. 8000 giri/min. Con superiori numeri di giri, gli attacchi preequilibrati devono essere equilibrati di fine a G 6,3 ovvero G 2,5.

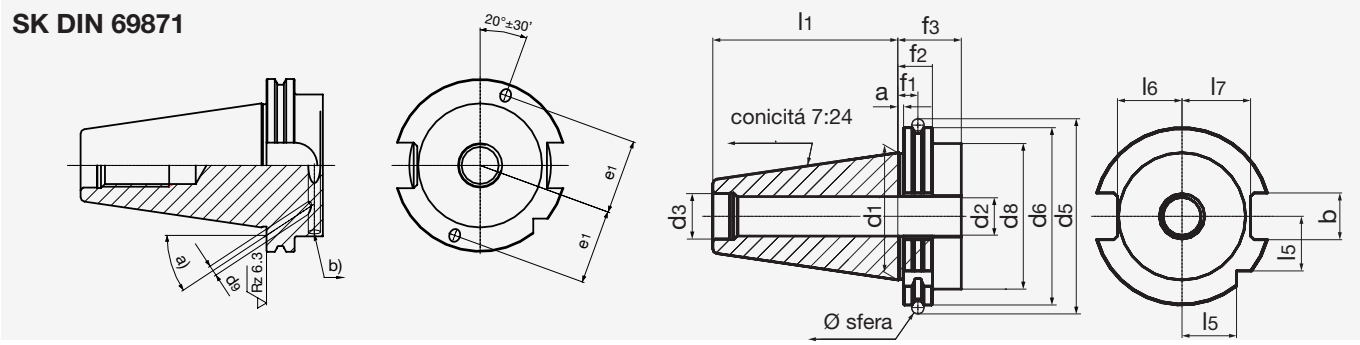
Esecuzione AD/AF

Produciamo gli attacchi utensili ISO generalmente nell'esecuzione AD/AF; se è fornita l'esecuzione AD, i fori per refrigerante sul collare sono chiusi con viti.

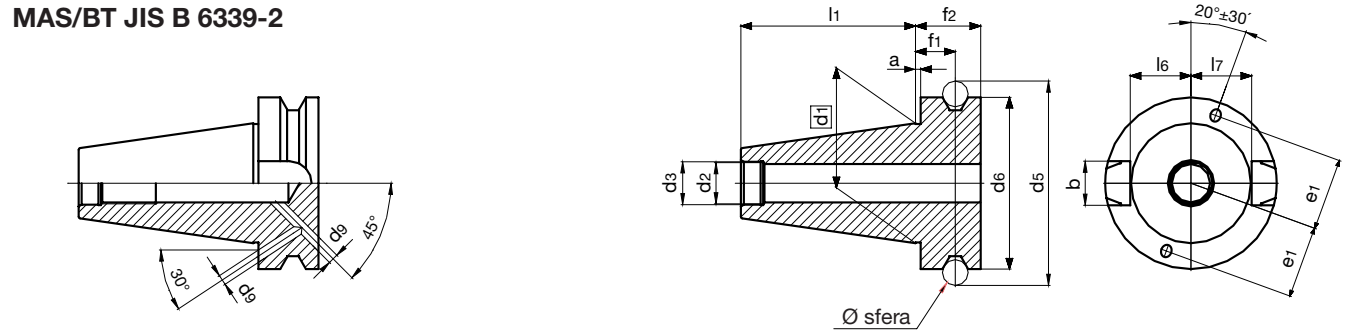
Misure e tolleranze generali

Per i nostri attacchi utensili ISO e MAS-BT valgono le seguenti misure:

SK DIN 69871



MAS/BT JIS B 6339-2



Cono ISO	a mm	Ø sfera mm	b mm	d_1 mm	d_2 mm	d_3 mm	d_5 mm	d_6 mm	d_8 mm	d_9 mm	e_1 mm	f_1 mm	f_2 mm	f_3 mm	l_1 mm	l_5 mm	l_6 mm	l_7 mm
SK30	3,2	7	16,1	31,75	M12	13	59,3	50,00	45	4	21	11,1	19,1	35	47,80	15,00	16,4	19,0
SK40	3,2	7	16,1	44,45	M16	17	72,3	63,55	50	4	27	11,1	19,1	35	68,40	18,5	22,8	25,0
SK50	3,2	7	25,7	69,85	M24	25	107,25	97,50	80	6	42	11,1	19,1	35	101,75	30,0	35,5	37,7
BT30	2,0	8	16,1	31,75	M12	12,5	56,03	46,00	–	–	–	13,6	22,0	–	48,40	–	16,3	16,3
BT40	2,0	10	16,1	44,45	M16	17	75,56	63,00	–	4	27	16,6	27,0	–	65,4	–	22,6	22,6
BT50	3,0	15	25,7	69,85	M24	25	118,89	100,00	–	5,4	42	23,2	38,0	–	101,8	–	35,4	35,4

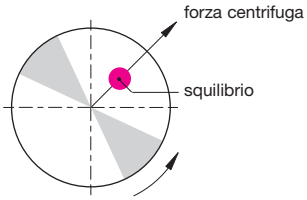
Influsso dello squilibrio su mandrini, attacchi utensili ed utensili

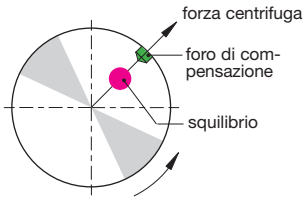
Lo squilibrio
Uno squilibrio causa nel mandrino in rotazione una forza centrifuga, che disturba la corsa tranquilla dell'utensile. Questo squilibrio influenza il processo produttivo e la durata dei cuscinetti del mandrino.
La forza centrifuga F cresce linearmente con lo squilibrio S ed al quadrato con il numero di giri secondo la formula qui sotto.

Equilibratura
Per compensare forze centrifughe indesiderate, si deve ricostruire la distribuzione simmetrica della massa, allo scopo di eliminare qualsiasi forza centrifuga che influenzi i cuscinetti del mandrino. Negli attacchi utensili sono normalmente presenti fori o superficii di compensazione, tramite i quali si tende a portare la somma di tutte le forze centrifughe, che agiscono sull'asse, verso lo zero (v. DIN ISO 1940).

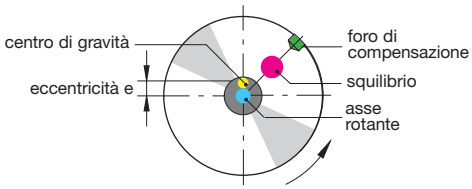
Spostamento del centro di gravità
Lo squilibrio di un albero sposterà il suo centro di gravità dall'asse baricentrale con uno scostamento in direzione dello squilibrio. Questo scostamento è anche detto eccentricità residua „e" oppure spostamento del centro di gravità. Maggiore è il peso della massa „m", superiore può risultare lo squilibrio „S" consentito.

$$F = U \cdot \omega$$

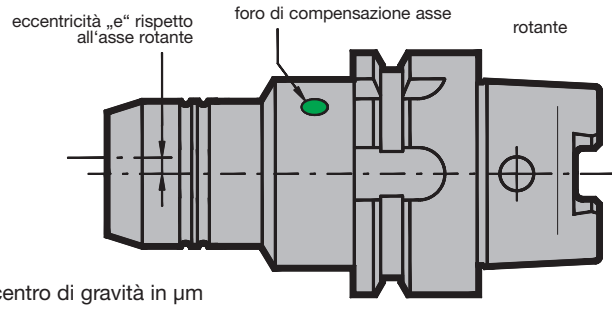




$$e = \frac{U}{m}$$



Calcolo dello squilibrio
Lo squilibrio è una misura che indica di quanto la massa distribuita in modo assimetrico si scosti radialmente dall'asse baricentrale.
Esso è indicato in gmm. La misura di scostamento „e" determina di quanto il centro di gravità di un pezzo si discosta dall'asse rotante. Lo squilibrio si ottiene come segue:



$$U = m \cdot e$$

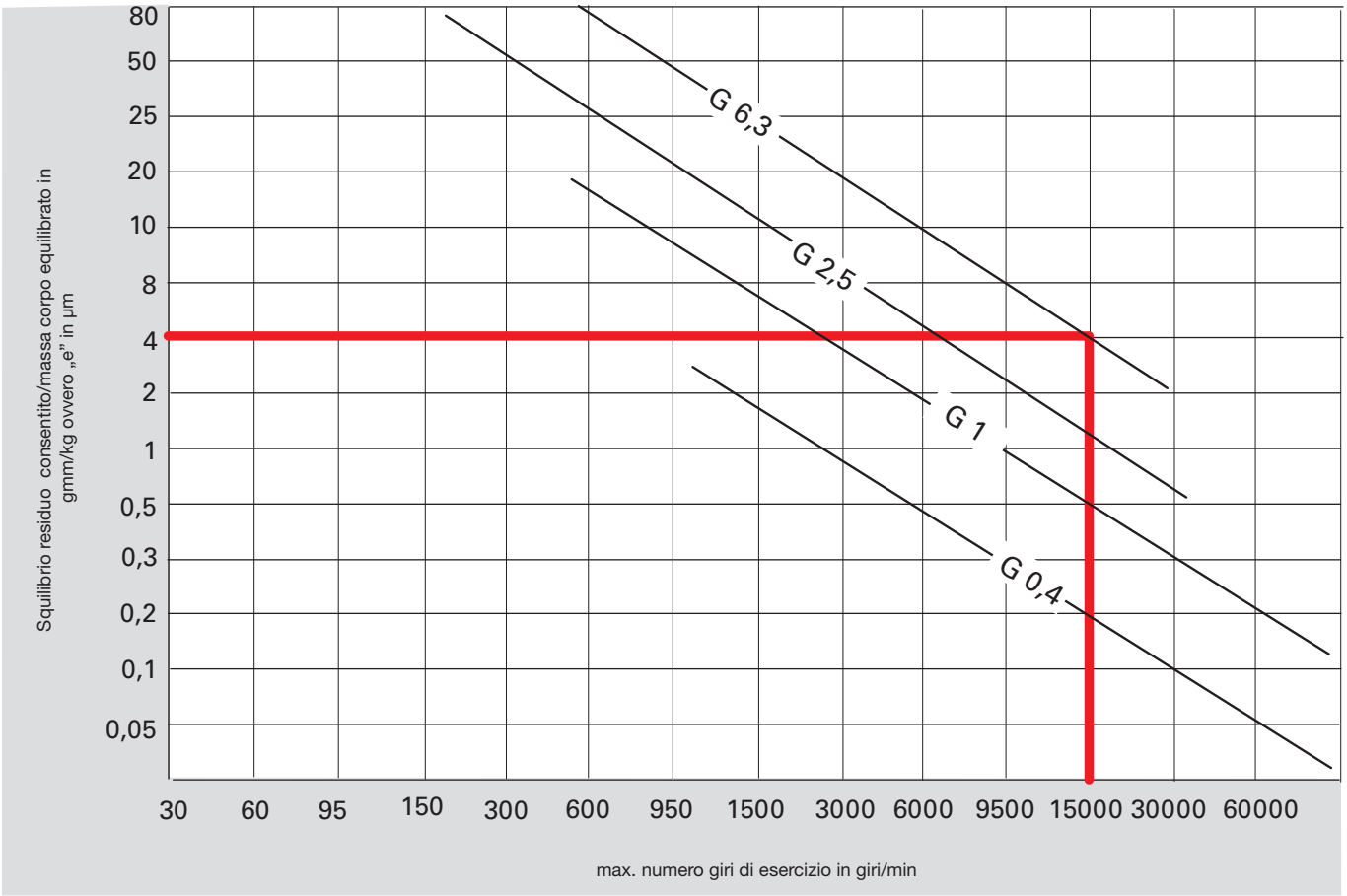
U = squilibrio in gmm
e = scostamento dal centro di gravità in µm
m = massa in kg

Limiti dell'equilibratura
In base alla DIN ISO 1940 la qualità dell'equilibratura è indicata con G nonchè dalle unità gmm/kg ovvero µm e si basa sul numero di giri. Con un numero di giri di 15.000 giri/min ed un peso 1 kg., G6,3 corrisponde ad uno scostamento consentito dal centro tra asse rotante e centro di gravità del mandrino di 4 µm.

Raddoppiando il numero di giri a 30.000 giri/min sarebbe di 2 µm. Se l'attacco utensile però pesa la metà, cioè 0,5 kg, allora la tolleranza di squilibrio consentita si dimezza. Scopo dell'equilibratura deve essere di trovare un compromesso tra fattibilità tecnica e logica economica. Dato che la precisione di cambio radiale di un attacco HSK nuovo può già essere di 2 - 3 µm e per un attacco ISO di 5 - 10 µm, significa disporre già di un limite di qualita di G2,5 ovvero G6,3 a 10.000 giri/min.

Il grafico nella pagina accanto mostra le qualità di equilibratura alla DIN ISO 1940-1, quindi gli squilibri residui consentiti, basati sulla massa del corpo equilibrato, per differenti qualità G di equilibratura, a seconda del massimo numero di giri utilizzato.

Influsso dello squilibrio su mandrini, attacchi utensili ed utensili



Gli attacchi utensili Stock sono equilibrati a G2,5/25.000 giri/min o a G6,3/15.000 giri/min. A richiesta, specialmente su prescrizione dei produttori di macchine, possiamo equilibrare di fine, con protocollo di equilibratura, sino ad avere uno squilibrio residuo di 0,3 gmm.

Tecnica e vantaggi

I mandrini di calettamento ottengono un'unione ottimale tra mandrino e codolo dell'utensile. Mentre alcuni fornitori utilizzano normale acciaio da cementazione, STOCK impiega uno speciale acciaio utensile orientato all'impiego. Il risultato è una maggiore dilatabilità ed una migliore tollerabilità al calore. Calettamento e dissaldamento si possono effettuare quante volte si voglia.

I Vantaggi:
- brevi tempi di calettamento
- massima forza di serraggio
- mandrini di calettamento per codoli dell'utensile con diam. da 3 a 32 mm
- lunga durata

Questi vantaggi sono evidenti soprattutto per: fresatura HSC, truciolatura di materiali temprati, sgrossatura, foratura, alesatura e tornitura interna, lavorazione di legno.

Principali proprietà:
- eccellente precisione di coassialità
- ottime forza di serraggio e rigidità
- superiore durata di impiego
- minimo squilibrio della simmetria di rotazione
- convenienza

Il principio di serraggio
Riscaldamento e raffreddamento sono i soli fattori determinanti nel serraggio dell'utensile nel mandrino di calettamento per ottenere una sicura tenuta. Il riscaldamento provoca la dilatazione del mandrino, che permette di serrare e disserrare un utensile. Il raffreddamento lo fa contrarre di nuovo, serrando l'utensile montato con la massima forza di bloccaggio. Poiché il riscaldamento rende il mandrino di calettamento molto caldo ed inoltre si serrano e disserrano utensili con spigoli acuminati, si devono assolutamente indossare guanti in kevlar, per proteggersi da scottature e tagli.

Prolunghe di calettamento: aumentano il rendimento
Le prolunghe di calettamento incrementano la capacità di rendimento di un utensile e ne riducono gli spigoli di disturbo. Come con il mandrino, l'utensile è serrato nella prolunga e quindi bloccato in modo ideale nel mandrino ad espansione idraulica. Naturalmente le prolunghe si possono montare anche nel mandrino di calettamento.

Il team perfetto: mandrini ed apparecchi di calettamento
Per il serraggio ed il disserragio di utensili nei nostri mandrini di calettamento, offriamo differenti apparecchi per le specifiche esigenze della Vostra produzione.

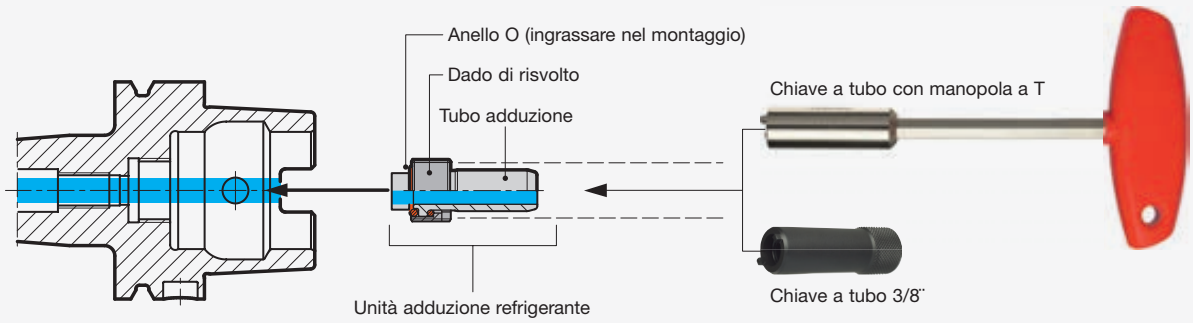
Montaggio dell‘unità di adduzione refrigerante per nebulizzazione MMS

1. L‘attacco HSK deve esssere pulito e privo di trucioli e danni.
2. Ingrassare gli anello O prima del montaggio.
3. Inserire l‘unità adduzione refrigerante (tubo di adduzione, dado di risvolto e 2 anelli O) completamente e centrarla nell’ HSK, con l‘aiuto della chiave a tubo.
   Nell‘inserire l‘unità di adduzione per nebulizzazione, prestare molta attenzione a che il tubicino di nebulizzazione sia inserito nella vite di regolazione centrato e senza danni (senza deviazioni).
4. Avvitare e stringere bene l‘unità di adduzione refrigerante (per momento torcente, vedere tabella a destra).
5. Verificare la possibilità di mobilità radiale del tubo di adduzione.

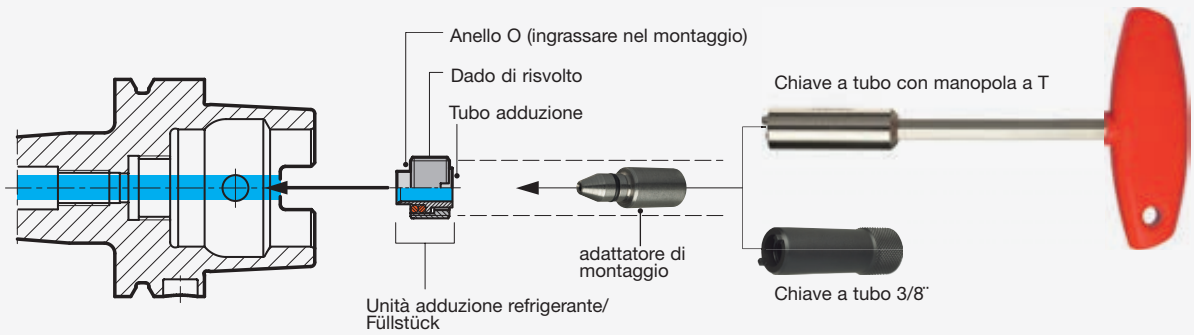
Momento torcente

per HSK	MA Nm
32	7
40	11
50	15
63	20
80	25
100	30

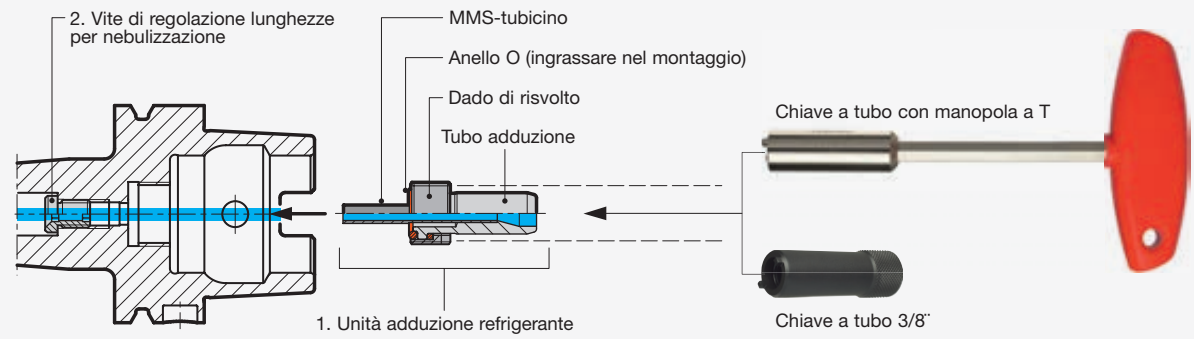
Montaggio unità adduzione refrigerante per nebulizzazione MMS



Montaggio unità adduzione refrigerante per nebulizzazione MMS monoblocco



Montaggio unita adduzione refrigerante per nebulizzazione MMS



Consigli per l'impiego di mandrini ad espansione idraulica

Tecnica e vantaggi

Serraggio di codolo utensili normalizzati a DIN 6535 in mandrini ad espansione idraulica

Codoli utensili per serraggio diretto
Circolarità ≤ 0,003 mm

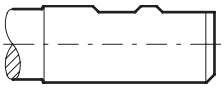
forma HA Ø 6 ... 20 mm

forma HA Ø 25 ... 32 mm

forma HB Ø 6 ... 20 mm

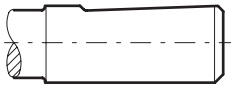
Codoli utensili per serraggio con bussola di riduzione
Circolarità ≤ 0,005 mm

forma HB Ø 25 ... 32 mm



forma HE Ø 6 ... 20 mm

forma HE Ø 25 ... 32 mm

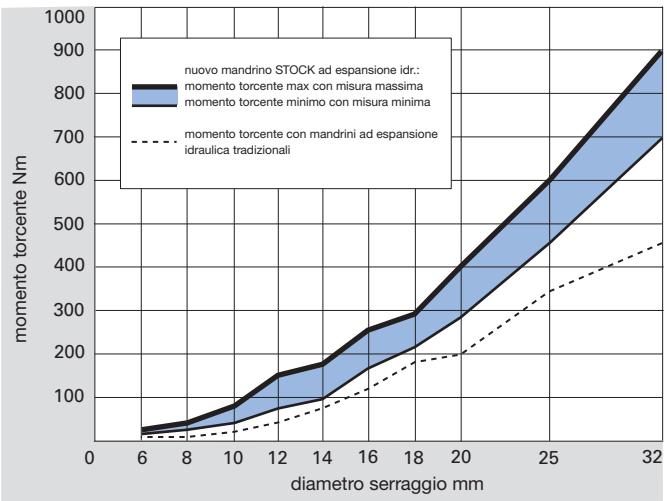


Consigli generali:
i nostri mandrini ad espansione idraulica non devono essere azionati con utensili comandati a motore (registratore di impulso o simili). La chiave esagonale non dovrebbe (sull'intera lunghezza) superare la misura della vite, in questo modo si evita ampiamente di trasferire un momento torcente eccessivo. Consigliamo l'impiego della chiave esagonale più comune, art. 4912. Non si dovrebbe superare una coppia di serraggio di 10 Nm.

Il mandrino ad espansione idraulica Stock con maggiore forza di serraggio è adatto per bloccare utensili a rotazione simmetrica o pezzi da lavorare. Con utensili con codolo, si possono serrare direttamente sia codoli cilindrici lisci fino al Ø 32 mm che codoli a DIN 6535 forme HA e HB fino al Ø 20 mm. Nell'uso non si devono superare i valori della tabella. La mancata osservanza della profondità minima di inserimento o l'impiego di codoli differenti da quelli citati porta a perdite di precisione e forza di serraggio!

Soprattutto con alti numeri di giri per „high speed cutting" insorgono specifiche esigenze per gli attacchi utensili. In questo ambito il serraggio dell'utensile nel mandrino ad espansione assume una particolare importanza. Per questo motivo ha sviluppato un mandrino ad espansione, che serra con un superiore momento torcente in modo sicuro e forte, quindi assicura una tenuta particolarmente buona dell'utensile nell'attacco.

Il nuovo mandrino ad espansione si contraddistingue, oltre che per l'esatta concentricità (errore max 3 µm), per il cambio utensile molto veloce e semplice, nonchè per l'azione di smorzamento delle vibrazioni della camera di serraggio ad espansione, anche per effettuare lavori con massime esigenze. Ne risultano ottimali durate degli utensili e migliori finiture di superficie, nonchè tenute di misura del pezzo lavorato.



Superiore:
la forza di serraggio del nuovo mandrino ad espansione idraulica HSK-A STOCK rispetto ad un mandrino ad espansione tradizionale.

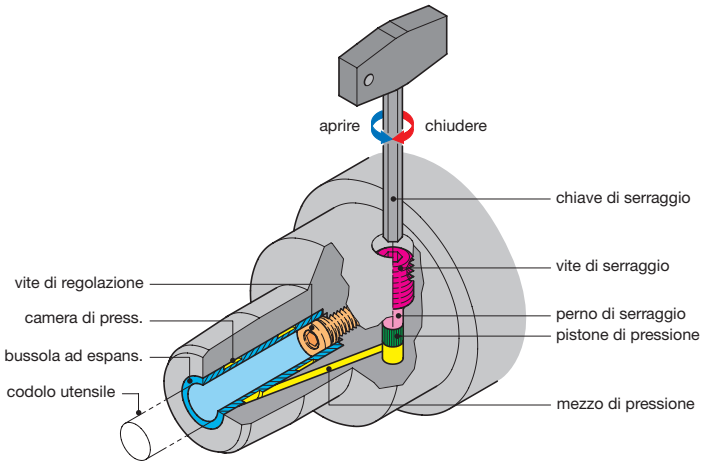
Tecnica e vantaggi

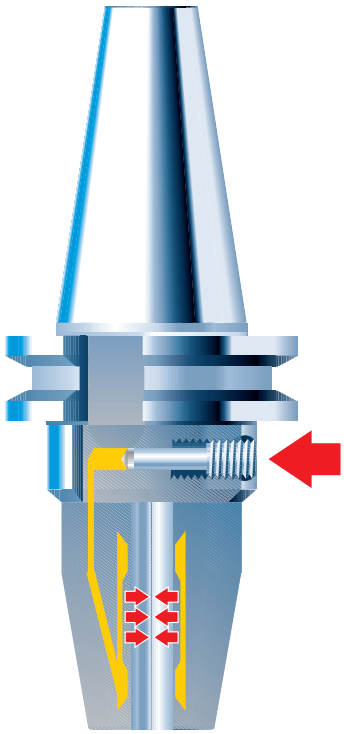
Gli attacchi utensili devono adeguarsi alle particolari esigenze dei moderni procedimenti di truciolatura. Mandrini ad espansione idraulica offrono perciò la migliore tenuta, unita ad una esatta Circolarità. Inoltre consentono un facile e veloce cambio utensili, al quale contribuisce una speciale chiave di estrazione.

Ruotando la vite a pressione si forma nella camera una pressione sufficientemente alta, che porta alla deformazione elastica della bussola di espansione, tramite la quale l'utensile è serrato con forza, con l'esatta Circolarità. Ciò permette un alloggiamento sicuro e dinamicamente accoppiato. Se si utilizzano bussole di riduzione, che possono montare utensili con differenti diametri, si amplia la gamma di utensili impiegabili. Se però non la si usa, bisogna porre la massima attenzione sulla profondità di inserimento minima!

Vantaggi:

- serraggio utensili preciso con errore di coassialità massimo di 3 µm;
- trasmissione di alti momenti torcenti con sistema di bussola ad espansione ottimizzato (massimo serraggio);
- adatti all'alta velocità (nessuna forza centrifuga attraverso i segmenti di serraggio);
- precisa Circolarità, quindi eccellente finitura di superficie e tenuta di misura nel pezzo da lavorare;
- rapido cambio utensile tramite vite di serraggio facilmente azionabile;
- ottimale durata di impiego dell'utensile;
- effetto di smorzamento vibrazioni con cuscinetti idraulici.





Di effetto sorprendente: con una vite si comprime il mezzo di pressione e si ottiene quindi un sicuro alloggiamento per l'utensile.

per Ø attacco in mm	**max. no. giri in 1/min**	momento torcente trasmissibile in Nm	minima prof. bloccaggio in mm	max. registrazione l_3 mm	forza rad. F consentita su mandrino con 50 mm sporgenza in N	temper. esercizio in °C	max. pressione refrig. in bar
6 h6	50 000	16	27	10	225	20 - 50	80
8 h6	50 000	26	27	10	370	20 - 50	80
10 h6	50 000	50	31	10	540	20 - 50	80
12 h6	50 000	82	36	10	650	20 - 50	80
14 h6	50 000	125	36	10	900	20 - 50	80
16 h6	50 000	190	39	10	1410	20 - 50	80
18 h6	50 000	275	39	10	1580	20 - 50	80
20 h6	50 000	310	41	10	1860	20 - 50	80
25 h6	25 000	520	47	10	4400	20 - 50	80
32 h6	25 000	770	51	10	6500	20 - 50	80

Confronto internazionale dei materiali

Germania		Gran Bretagna		Giappone	Stati Uniti
No. di mat.	DIN	BS	EN	JIS	AISI/SAE/ASTM
1.0711	9 S 20	220 M 07	-	SUM 21	1212
1.0715	9 SMn 28	230 M 07	-	SUM 22	1213
1.0718	9 SMnPb 28	-	-	SUM 22 L	12 L 13
1.0721	10 S 20	210 M 15	-	-	1108
1.0722	10 SPb 20	-	-	-	11 L 08
1.0723	15 S 20	210 A 15	-	SUM 32	-
1.0736	9 SMn 36	240 M 07	1B	-	1215
1.0737	9 SMnPb 36	-	-	-	12 L 14
1.0726	35 S 20	212 M 36	8M	-	1140
1.0727	45 S 20	212 M 44	-	-	1146
1.0728	60 S 20	-	-	-	-
1.0037	St 37-2	-	-	STKM 12 C	-
1.0044	St 44-2	4360-43 B	-	SM 41 B	A 570 Gr. 40
1.0116	St 37-3	4360-40 C	-	-	A 573 Gr. 58
1.0144	St 44-3	4360-43 C	-	SM 41 C	A 573 Gr. 70
1.0050	St 50-2	4360-50 B	-	SS 50	A 570 Gr. 50
1.0570	St 52-3	4360-50 B	-	SM 50 YA	-
1.0060	St 60-2	4360-SSE; SS	-	SM 58	-
1.5415	15 Mo 3	1501-240	-	-	A 204 Gr. A
1.5423	16 Mo 5	1503-245-420	-	-	4520
1.5622	14 Ni 6	-	-	-	A 350-LF 5
1.5680	12 Ni 19	-	-	-	2515
1.7335	13 CrMo 4 4	1501-620 Gr.	-	-	A 182-F11; F12
1.7337	16 CrMo 4 4	1501-620 Gr.	-	-	A 387 Gr. 12 C
1.7380	10 CrMo 9 10	1501-622 Gr.	-	-	A 182-F22
1.7709	21 CrMoV 5 7	-	-	-	-
1.7715	14 MoV 6 3	1503-660-440	-	-	-
1.7735	14 CrMoV 6 9	-	-	-	-
1.0904	55 Si 7	250 A 53	45	-	9255
1.0961	60 SiCr 7	-	-	SUP 7	9262
1.1231	CK 67	060 A 67	-	-	1070
1.1248	CK 75	060 A 78	-	-	1078; 1080
1.1274	CK 101	060 A 96	-	SUP 4	1095
1.7103	67 SiCr 5	-	-	-	-
1.7176	55 Cr 3	527 A 60	48	SUP 9 (A)	5155
1.8159	50 CrV 4	735 A 50	47	SUP 10	6150
1.0301	C 10	045 M 10	-	S 10 C	1010
1.0401	C 15	080 M 15	-	-	1015
1.1121	CK 10	045 M 10	-	S 10 C; S 9 CK	1010
1.1141	CK 15	080 M 15	32C	S 15 C; S 15 CK	1015
1.7012	13 Cr 2	-	-	-	-
1.7015	15 Cr 3	523 M 15	-	SCR 415 (H)	5015
1.5732	14 NiCr 10	-	-	SNC 415 (H)	3415
1.5752	14 NiCr 14	655 M 13	36A	SNC 815 (H)	3310; 9314
1.5860	14 NiCr 18	-	-	-	-
1.5919	15 CrNi 6	S 107	-	-	-
1.5920	18 NiCr 8	-	-	-	-
1.6523	21 NiCrMo 2	805 M 20	362	SNCM 220 (H)	8620
1.6587	17 CrNiMo 6	820 A 16	-	-	-
1.7131	16 MnCr 5	527 M 17	-	SCR 415	5115
1.7139	16 MnCrS 5	-	-	-	-
1.7147	20 MnCr 5	-	-	SMnC 420 (H)	5120
1.7149	20 MnCrS 5	-	-	-	-
1.7262	15 CrMo 5	-	-	SCM 415 (H)	-
1.7264	20 CrMo 5	-	-	SCM 421	-
1.7271	23 CrMoB 3 3	-	-	-	-
1.7311	20 CrMo 2	-	-	-	-
1.7321	20 MoCr 4	-	-	-	-
1.7323	20 MoCrS 4	-	-	-	-
1.7325	25 MoCr 4	-	-	-	-
1.7326	25 MoCrS 4	-	-	-	-
1.8504	34 CrAl 6	-	-	-	-
1.8506	34 CrAlS 5	-	-	-	-
1.8507	34 CrAlMo 5	905 M 31	-	-	A 355 Cl. D
1.0038	RSt37-2	4360 40C	1A	STKM 12A;C	A570.36

Confronto internazionale dei materiali

Germania		Gran Bretagna		Giappone	Stati Uniti
No. di mat.	DIN	BS	EN	JIS	AISI/SAE/ASTM
1.0402	C22	050 A 20	2C	-	1020
1.5026	55 Si 7	250 A 53	-	-	9255
1.8509	41 CrAlMo 7	905 M 39	41B	SACM 645	A 355 Cl. A
1.8515	31 CrMo 12	722 M 24	-	-	-
1.8519	31 CrMoV 9	-	-	-	-
1.8521	15 CrMoV 5 9	-	-	-	-
1.8523	39 CrMoV 13 9	897 M 39	40C	-	-
1.8550	34 CrAlNi 7	-	-	-	-
1.0402	C 22	050 A 20	2D	-	1020
1.0406	C 25	070 M 26	-	-	1025
1.0501	C 35	060 A 35	-	-	1035
1.0503	C 45	080 M 46	-	-	1045
1.0511	C 40	-	-	-	1040
1.0528	C 30	-	-	-	-
1.1151	Ck 22	050 A 20	-	S 20 C; S 20 CK	1023
1.1158	Ck 25	070 M 26	-	S 25 C	1025
1.1178	Ck 30	-	-	-	-
1.1181	Ck 35	080 M 36	-	S 35 C	1035
1.1186	Ck 40	080 M 40	-	S 40 C	1040
1.1191	Ck 45	080 M 46	-	S 45 C	1045
1.0535	C 55	070 M 55	-	-	1055
1.0540	C 50	-	-	-	-
1.0601	C 60	080 A 62	43D	-	1060
1.1203	Ck 55	070 M 55	-	S 55 C	1055
1.1206	Ck 50	080 M 50	-	-	1050
1.1221	Ck 60	080 A 62	43D	S 58 C	1060
1.1133	20 Mn 5	120 M 19	-	-	1022; 1518
1.3505	100 Cr 6	534 A 99	31	SUJ 2	52100
1.5120	38 MnSi 4	-	-	-	-
1.5121	46 MnSi 4	-	-	-	-
1.5141	53 MnSi 4	-	-	-	-
1.5710	36 NiCr 6	640 A 35	111A	SNC 236	3135
1.6546	40 NiCrMo	311-Type7	-	SNCM 240	8740
1.6565	40 NiCrMo	311-Type6	-	SNCM 439	4340
1.7003	38 Cr 2	-	-	-	-
1.7006	46 Cr 2	-	-	-	5045
1.7020	32 Cr 2	-	-	-	-
1.7030	28 Cr 4	530 A 30	-	-	5130
1.7033	34 Cr 4	530 A 32	18B	SCr 430 (H)	5132
1.7218	25 CrMo 4	1717 CDS 110	-	SCM 420; SCM	4130
1.7220	34 CrMo 4	708 A 37	19B	SCM 432; SCCrM	4135; 4137
1.7223	41 CrMo 4	708 M 40	19A	SCM 440	4142; 4140
1.7225	42 CrMo 4	708 M 40	19A	SCM 440	4142; 4140
1.7228	50 CrMo 4	708 A 47	-	SCM 445 (H)	4150
1.1157	40 Mn 4	150 M 36	15	-	1039
1.1165	30 Mn 5	120 M 36	-	SMn 433 H; SCMn	1330
1.1167	36 Mn 5	150 M 36	-	SMn 438 H; SCMn	1335
1.1170	28 Mn 5	150 M 28	14A	SCMn 1	1330
1.3561	44 Cr 2	-	-	-	-
1.3563	43 CrMo 4	-	-	-	-
1.3565	48 CrMo 4	817 M 40	-	SNC 836	-
1.5120	38 MnSi 4	-	-	-	-
1.5121	46 MnSi 4	-	-	-	-
1.5122	37 MnSi 4	-	-	-	-
1.5131	50 MnSi4	-	-	-	-
1.5141	53 MnSi 4	-	-	-	-
1.5223	42 MnV 7	-	-	-	-
1.5710	36 NiCr 6	640 A 35	111A	SNC 236	3135
1.5736	36 NiCr 10	-	-	SNC 631 (H)	3435
1.5755	31 NiCr 14	653 M 31	-	SNC 836	-
1.6511	36 CrNiMo	816 M 40	110	SNC 836	9840
1.6513	28 NiCrMo	-	-	-	-
1.7003	38 Cr 2	-	-	-	-
1.7006	46 Cr 2	-	-	-	5045
1.7030	28 Cr 4	530 A 30	-	-	5130

Confronto internazionale dei materiali

Germania		Gran Bretagna		Giappone	Stati Uniti
No. di mat.	DIN	BS	EN	JIS	AISI/SAE/ASTM
1.7033	34 Cr 4	530 A 32	18B	SCr 430 (H)	5132
1.7034	37 Cr 4	530 A 36	-	SCr 435 (H)	5135
1.7035	41 Cr 4	530 M 40	18	SCr 440 (H)	5140
1.7218	25 CrMo 4	1717 CDS 110	-	SCM 420; SCM 430	4130
1.7220	34 CrMo 4	708 A 37	19B	SCM 432; SCCrM 3	4135; 4137
1.7223	41 CrMo 4	708 M 40	19A	SCM 440	4142; 4140
1.7225	42 CrMo 4	708 M 40	19A	SCM 440	4142; 4140
1.7228	50 CrMo 4	708 A 47	-	SCM 445 (H)	4150
1.7561	42 CrV 6	-	-	-	-
1.7735	14 CrMoV 6 9	-	-	-	-
1.8159	50 CrV 4	735 A 50	47	SUP 10	6150
1.3563	43 CrMo 4	-	-	-	-
1.3565	48 CrMo 4	817 M 40	-	SNC 836	-
1.5120	38 MnSi 4	-	-	-	-
1.5121	46 MnSi 4	-	-	-	-
1.5122	37 MnSi 4	-	-	-	-
1.5223	42 MnV 7	-	-	-	-
1.5710	36 NiCr 6	640 A 35	111A	SNC 236	3135
1.5736	36 NiCr 10	-	-	SNC 631 (H)	3435
1.5864	35 NiCr 18	-	-	-	-
1.6511	36 CrNiMo 4	816 M 40	110	SNC 836	9840
1.6580	30 CrNiMo 8	823 M 30	-	SNCM 431	-
1.6582	34 CrNiMo 6	817 M 40	24	SNCM 447	4340
1.7033	34 Cr 4	530 A 32	18B	SCr 430 (H)	5132
1.7034	37 Cr 4	530 A 36	-	SCr 435 (H)	5135
1.7035	41 Cr 4	530 M 40	18	-	5140
1.7045	42 Cr 4	530 A 40	-	2245	5140
1.7218	25 CrMo 4	1717 CDS 110	-	2225	4130
1.7220	34 CrMo 4	708 A 37	19B	2234	4135; 4137
1.7223	41 CrMo 4	708 M 40	19A	2244	4142; 4140
1.7225	42 CrMo 4	708 M 40	19A	2244	4142; 4140
1.7228	50 CrMo 4	708 A 47	-	-	4150
1.7361	32 CrMo 12	722 M 24	40B	2240	-
1.7561	42 CrV 6	-	-	-	-
1.7707	30 CrMoV 9	-	-	-	-
1.7735	14 CrMoV 6 9	-	-	-	-
1.8159	50 CrV 4	735 A 50	47	2230	6150
1.8161	58 CrV 4	-	-	-	-
1.1520	C 70 W1	-	-	-	-
1.1525	C 80 W1	-	-	-	W 108
1.1545	C 105 W1	-	-	-	W 110
1.1620	C 70 W2	-	-	-	-
1.1625	C 80 W2	BW 1B	-	-	W 1
1.1645	C105 W2	-	-	-	-
1.1654	C 110 W	-	-	-	-
1.1663	C 125 W	-	-	-	W 112
1.1673	C 135 W	-	-	-	-
1.1730	C 45 W	-	-	-	-
1.1740	C 60 W	-	-	-	-
1.1744	C 67 W	-	-	-	-
1.1750	C 75 W	BW 1A	-	-	W 1
1.1820	C 55 W	-	-	-	-
1.1830	C 85 W	-	-	-	-
1.2067	100 Cr 6	BL 3	-	-	L 3
1.2101	62 SiMnCr 4	-	-	-	-
1.2103	58 SiCr 8	-	-	-	-
1.2108	90 CrSi 5	-	-	-	-
1.2162	21 MnCr 5	-	-	-	-
1.2210	115 CRV 3	-	-	-	L 2
1.2330	35 CrMo 4	708 A 37	-	2234	4135
1.2332	47 CrMo 4	709 M 40	-	2244	4142
1.2419	105 WCr 6	-	-	-	-
1.2510	100 MnCrW 4	BO 1	-	2140	O 1
1.2516	120 W 4	BF 1	-	-	-
1.2542	45 WCrV 7	BS 1	-	2710	S 1

Confronto internazionale dei materiali

Germania		Gran Bretagna		Giappone	Stati Uniti
No. di mat.	DIN	BS	EN	JIS	AISI/SAE/ASTM
1.2550	60 WCrV 7	-	-	-	-
1.2721	50 NiCr 13	-	-	-	-
1.2735	15 NiCr 14	-	-	SNC 22	-
1.2762	75 CrMoNiW 6 7	-	-	-	-
1.2826	60 MnSiCr 4	-	-	-	-
1.2833	100 V 1	BW 2	-	SKS 43	W 210
1.2842	90 MnCrV 8	BO 2	-	-	O 2
1.2080	X 210 Cr 12	BD 3	-	SKD 1	D 3
1.2341	X 6 CrMo 4	-	-	-	-
1.2363	X 100 CrMoV 5 1	BA 2	-	SKD 12	A 2
1.2379	X 155 CrVMo12 1	BD 2	-	SKD 11	D 2
1.2436	X 210 CrW 12	-	-	SKD 2	-
1.2601	X 165 CrMoV 12	-	-	-	-
1.2311	40 CrMnMo 7	-	-	-	-
1.2312	40 CrMnMoS 8 6	-	-	-	-
1.2711	54 NiCrMoV 6	-	-	-	-
1.2713	55 NiCrMoV 6	-	-	SKT 4	L 6
1.2738	40 CrMnNiMo 8	-	-	-	-
1.2744	57 NiCrMoV 77	-	-	-	-
1.2764	X 19 NiCrMo 4	-	-	-	-
1.2767	X 45 NiCrMo 4	-	-	-	-
1.2083	X 42 Cr 13	-	-	SUS 420 J 2	-
1.2343	X 38 CrMoV 5 1	BH 11	-	SKD 6	H 11
1.2344	X 40 CrMoV 5 1	BH 13	-	SKD 61	H 13
1.2365	X 32 CrMoV 3 3	BH 10	-	SKD 7	H 10
1.2567	X 30 WCrV 5 3	-	-	SKD 4	-
1.2581	X 30 WCrV 9 3	BH 21	-	SKD 5	H 21
1.2885	X 32 CrMoV 3 3 3	-	-	-	-
1.2316	X 36 CrMo 17	-	-	-	-
1.0420	GS-38	-	-	-	-
1.1118	GS-24 Mn 6	-	-	-	-
1.1120	GS-20 Mn 5	-	-	-	-
1.5419	GS-22 Mo 4	-	-	-	-
1.5633	GS-24 Ni 8	-	-	-	-
1.5681	GS-10 Ni 19	-	-	-	-
1.6309	GS-20 Mn MoNi 5 5	-	-	-	-
1.6582	GS-34 CrNiMo 6	-	24	-	-
1.6748	GS-40 NiCrMo 6 5 6	-	-	-	-
1.4311	X 2 CrNiN 18 10	304 S 62	-	SUS 304 LN	304 LN
1.4401	X 5 CrNiMo 18 10	316 S 16	58J	SUS 316	316
1.4404	X 2 CrNiMo 17 13 2	316 S 11	-	SUS 316 L	316 L
1.4406	X 2 CrNiMoN 17 12 2	316 S 61	58C	SUS 316 LN	316 LN
1.4429	X 2 CrNiMoN 17 13 3	316 S 62	-	SUS 316 LN	316 LN
1.4435	X 2 CrNiMo 18 14 3	317 S 12	-	SCS 16; SUS 316	316 L
1.4436	X 5 CrNiMo 17 13 3	316 S 16	-	SUS 316	316
1.4438	X 2 CrNiMo 18 16 4	317 S 12	-	SUS 317 L	317 L
1.4460	X 8 CrNiMo 27 5	-	-	SUS 329 J 1	329
1.4462	X 2 CrNiMoN 22 5	-	-	-	-
1.4541	X 6 CrNiTi 18 10	321 S 12	58B	SUS 321	321
1.4542	X 5 CrNiCuNb 17 14	-	-	SCS 124; SUS 630	630
1.4546	X 5 CrNiNb 18 10	347 S 18	-	-	348
1.4550	X 6 CrNiNb 18 10	347 S 17	58F	SUS 347	347
1.4571	X 6 CrNiMoTi 17 12 2	320 S 31	58J	-	316 Ti
1.4580	X 6 CrNiMoNb 17 12 2	318 S 17	-	-	316 Cb
1.4301	X 5 CrNi 18 9	304 S 15	58E	SUS 304	304; 304 H
1.4303	X 5 CrNi 18 12	305 S 19	-	SUS 305	308; 305
1.4305	X 10 CrNiS 18 9	303 S 21	58M	SUS 303	303
1.4306	X 2 CrNi 19 11	304 S 12	-	SCS 19	304 L
1.4310	X 12 CrNi 17 7	301 S 21	-	SUS 301	301
1.4350	X 5 CrNi18 9	304 S 31	58E	SUS 302	304
1.4573	X 10 CrNiMoTi 18 12	320 S 33	-	-	316 Ti
1.4583	X 10 CrNiMoNb 18 12	-	-	-	318
1.4000	X 6 Cr 13	403 S 17	-	SUS 403	403
1.4002	X 6 CrAl 13	405 S 17	-	SUS 405	405
1.4016	X 6 Cr 17	430 S 15	960	SUS 430	430

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Germania		Gran Bretagna		Giappone	Stati Uniti
No. di mat.	DIN	BS	EN	JIS	AISI/SAE/ASTM
1.4113	X 6 CrMo 17	434 S 17	-	SUS 434	434
1.4313	X 5 CrNi 13 4	425 C 11	-	SCS 5	CA 6-NM
1.4510	X 6 CrTi 17	-	-	SUS 430 LX	XM 8; 430 Ti
1.4512	X 5 CrTi 12	409 S 19	-	SUH 409	409
1.4005	X 12 CrS 13	416 S 21	-	SUS 416	416
1.4006	X 10 Cr 13	410 S 21	56A	SUS 410	410; CA-15
1.4021	X 20 Cr 13	420 S 37	-	SUS 420 J 1	420
1.4028	X 30 Cr 13	420 S 45	-	SUS 420 J 2	-
1.4031	X 38 Cr 13	-	-	SUS 420 J 2	-
1.4034	X 46Cr 13	420 S 45	56D	SUS 420 J 2	-
1.4057	X 20 CrNi 17 2	431 S 29	57	SUS 431	431
1.4104	X 12 CrMoS 17	-	-	SUS 430 F	430 F
1.4125	X 105 CrMo 17	-	-	SUS 440 C	440 C
1.4742	X 10 CrAl 18	430 S 15	60	SUS 430; SUH	430
1.4747	X 80 CrNiSi 20	443 S 65	59	SUH 4	HNV 6
1.4762	X 10 CrAl 24	-	-	-	446
1.4876	X 10 NiCrAlTi 33	NA 15 (H)	-	NCF 800	B 163
0.6010	GG-10	-	-	FC 10	A48-20 B
0.6015	GG-15	Grade 150	-	FC 15	A48-25 B
0.6020	GG-20	Grade 220	-	FC 20	A48-30 B
0.6025	GG-25	Grade 260	-	FC 25	A48-40 B
0.6030	GG-30	Grade 300	-	FC 30	A48-45 B
0.6035	GG-35	Grade 350	-	FC 35	A48-50 B
0.6040	GG-40	Grade 400	-	-	A48-60 B
0.6655	GGL-NiCuCr 15 6	L-NUC 15 6 2	-	-	A-436 Type 1
0.7040	GGG-40	SNG 420/12	-	FCD 40	60-40-18
0.7050	GGG-50	SNG 500/7	-	FCD 50	65-45-12
0.7060	GGG-60	SNG 600/3	-	FCD 60	80-55-06
0.7070	GGG-70	SNG 700/2	-	FCD 70	100-70-03
0.7080	GGG-80	SNG 800/2	-	-	120-90-02
0.7660	GGG-NiCr 20 2	S-NiCr 20 2	-	-	A 439 Type D-2
0.7661	GGG-NiCr 20 3	S-NiCr 20 3	-	-	A 439 Type D-2B
0.7670	GGG-Ni 22	S-Ni 22	-	-	A 439 Type D-2C
0.7673	GGG-NiMn 23 4	S-NiMn 23 4	-	-	A 439 Type D-2M
0.7676	GGG-NiCr 30 3	S-NiCr 30 3	-	-	A 439 Type D-3
0.7677	GGG-NiCr 30 1	S-NiCr 30 1	-	-	A 439 Type D-3A
0.7680	GGG-NiSiCr 30 5	S-NiSiCr 30 5 5	-	-	A 439 Type D-4
0.7683	GGG-Ni 35	S-Ni 35	-	-	A 439 Type D-5
0.7685	GGG-NiCr 35 3	S-NiCr 35 3	-	-	A 439 Type D-5B
0.8135	GTS-35	B340/12	-	-	32510
0.8145	GTS-45	P440/7	-	-	40010
0.8155	GTS-55	P510/4	-	-	50005
0.8165	GTS-65	P570/3	-	-	70003
0.8170	GTS-70	P690/2	-	-	90001
0.8035	GTW-35	W340/3	-	-	-
3.0225	Al99.5	1B	-	A1x1	-
3.0305	Al99.9	-	-	-	-
3.0505	AlMn0.5Mg0.5	N31	-	-	-
3.0515	AlMn1	N3	-	144054	-
3.0525	AlMn1Mg0.5	-	-	-	-
3.3315	AlMg1	N41	-	A2x8	-
3.3535	AlMg3	N5	-	-	-
3.1325	AlCuMg1	H14	-	-	-
3.1355	AlCuMg2	2L97	-	A3x4	-
3.2315	AlMgSi1	H30	-	-	-
3.3206	AlMgSi0.5	H9	-	A2x5	-
3.3211	AlMg1SiCu	-	-	-	-
3.4345	AlZnMgCu0.5	L86	-	-	7050
3.4365	AlZnMgCu1.5	L87	-	-	7175
-	Al1Mg1SiCrTi	-	-	-	6011
-	Al0.3Cu1Mg0.6SiCr	-	-	-	6061
-	Al1Cu1.1Mg1.4Si0.8Mn	-	-	-	6066
3.2134	G-AlSi5Cu1Mg	-	-	-	-
3.3241	G-AlMg3Si	-	-	-	-
3.3292	GD-AlMg9	-	-	-	-

Confronto internazionale dei materiali

Germania		Gran Bretagna		Giappone	Stati Uniti
No. di mat.	DIN	BS	EN	JIS	AISI/SAE/ASTM
3.3541	GD-AlMg3	-	-	-	-
3.2161	G-AlSi8Cu3	-	-	-	-
3.2373	G-AlSi9Mg	-	-	-	-
3.2381	G-AlSi10Mg	LM9	-	-	-
3.2383	G-AlSi10Mg(Cu)	LM 9	-	-	A 360.2
3.2581	G-AlSi12	LM 6	-	-	A 413.2
2.2583	G-AlSi12(Cu)	LM 20	-	-	A 413.1
2.0240	CuZn15	CZ 102	-	-	C23000
2.0265	CuZn30	CZ 106	-	-	C26000
2.0321	CuZn37	CZ 108	-	-	C27200
2.0335	CuZn36	-	-	-	-
2.0360	CuZn40	-	-	-	-
2.0401	CuZn39Pb3	-	-	-	-
2.1016	CuSn4	-	-	-	-
2.1030	CuSn8	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
2.0975	G-CuAl10Ni	-	-	-	-
2.1096.01	G-CuSn5ZnPb	-	-	-	-
2.1090.01	G-CuSn7ZnPb	-	-	-	-
2.1086.01	G-CuSn10Zn	-	-	-	-
2.4360	NiCu30Fe	NA 13	-	-	Monel 400
2.4375	NiCu30Al	NA 18	-	-	Monel K-500
2.4685	G-NiMo28	-	-	-	Hastelloy B
2.4610	NiMo16Cr16Ti	-	-	-	Hastelloy C-4
2.4810	G-NiMo30	-	-	-	Hastelloy C
2.4630, 2.4951	NiCr20Ti	HR 5	-	-	Nimonic 75
2.4631	NiCr20TiAl	HR 401; 601	-	NCF 80 A	Nimonic 80 A
2.4632	NiCr20Co18Ti	-	-	-	Nimonic 90
2.4634	NiCo20Cr15MoAlTi	-	-	-	Nimonic 105
2.4662	NiCr13Mo6Ti3	-	-	-	Nimonic 901
2.4670	-	-	-	-	Nimocast 713
2.4674	-	-	-	-	Nimocast PK 24
2.6554	-	-	-	-	Waspaloy
Hardox 400	-	-	-	-	Hardox 400
Hardox 500	-	-	-	-	Hardox 500
2.4856	NiCr22Mo9Nb	NA 21	-	-	Inconel 625
2.4668	NiCr19FeNbMo	-	-	-	Inconel 718
3.7024	Ti99.5	TA 6	-	-	-
3.7064	Ti99.2	TA 7	-	-	R50400
Ti99.9	Ti99.9	TA 9	-	-	R50700
3.7112	Ti5Al2.5Sn	TA 14/17	-	-	R54520
3.7165	TiAl6V4	TA 28	-	-	R56400
1.4718	X 45 CrSi 9 3	401 S 45	52	SUH 1	HNV 3
1.4828	X 15 CrNiSi 20 12	309 S 24	-	SUH 309	309
1.4841	X 15 CrNiSi 25 20	-	-	SUH 310	314; 310
1.4845	X 12 CrNi 25 21	310 S 24	-	SUH 310; SUS 310 S	310 S
1.4864	X 12 NiCrSi 36 16	NA 17	-	SUH 330	330
1.4871	X 53 CrMnNiN 21 9	349 S 54	-	SUH 35; SUH 36	EV 8
1.4878	X 12 CrNiTi 18 9	321 S 20	-	SUS 321	321

Comparazione durezza

Rm (N/mm²)	HRC	HB30	HV10
240		71	75
255		76	80
270		81	85
285		86	90
305		90	95
320		95	100
335		100	105
350		105	110
370		109	115
385		114	120
400		119	125
415		124	130
430		128	135
450		133	140
465		138	145
480		143	150
495		147	155
510		152	160
530		157	165
545		162	170
560		166	175
575		171	180
595		176	185
610		181	190
625		185	195
640		190	200
660		195	205
675		199	210
690		204	215
705		209	220
720		214	225
740		219	230
755		223	235
770		228	240
785		233	245
800	22	238	250
820	23	242	255
835	24	247	260
860	25	255	268
870	26	258	272
900	27	266	280
920	28	273	287
940	29	278	293
970	30	287	302
995	31	295	310
1020	32	301	317
1050	33	311	327
1080	34	319	336

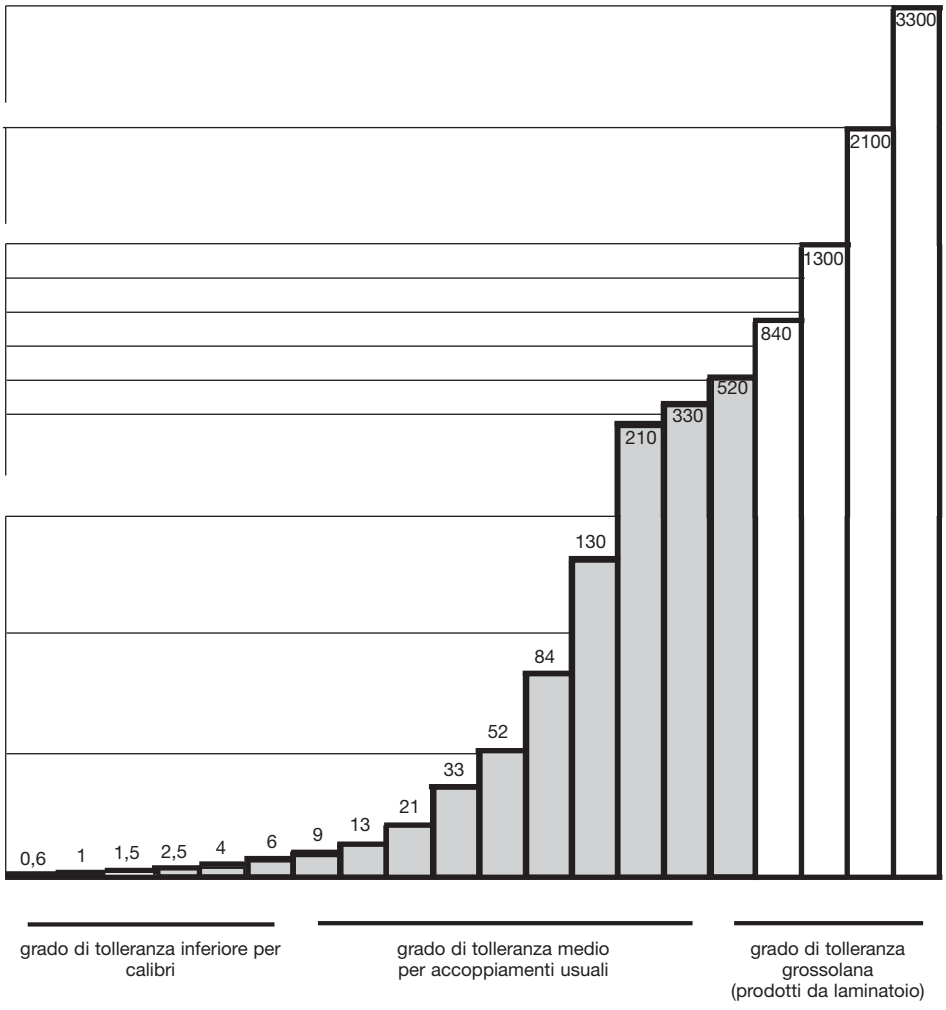
Rm (N/mm²)	HRC	HB30	HV10
1110	35	328	345
1140	36	337	355
1170	37	346	364
1200	38	354	373
1230	39	363	382
1260	40	372	392
1300	41	383	403
1330	42	393	413
1360	43	402	423
1400	44	413	434
1440	45	424	446
1480	46	435	458
1530	47	449	473
1570	48	460	484
1620	49	472	497
1680	50	488	514
1730	51	501	527
1790	52	517	544
1845	53	532	560
1910	54	549	578
1980	55	567	596
2050	56	584	615
2140	57	607	639
2180	58	622	655
	59		675
	60		698
	61		720
	62		745
	63		773
	64		800
	65		829
	66		864
	67		900
	68		940

Tolleranze di costruzione

Tolleranze base ISO p. misure di lunghezze 1 - 120 mm DIN ISO 286-1

Misure nominali mm		IT in µm											
		3	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
da fino a	1 3	2	3	4	6	10	14	25	40	60	100	140	250
oltre fino a	3 6	2.5	4	5	8	12	18	30	48	75	120	180	300
oltre fino a	6 10	2.5	4	6	9	15	22	36	58	90	150	220	360
oltre fino a	10 18	3	5	8	11	18	27	43	70	110	180	270	430
oltre fino a	18 30	4	6	9	13	21	33	52	84	130	210	330	520
oltre fino a	30 50	4	7	11	16	25	39	62	100	160	250	390	620
oltre fino a	50 80	5	8	13	19	30	46	74	120	190	300	460	740
oltre fino a	80 120	6	10	15	22	35	54	87	140	220	350	540	870

Esempio di tolleranza base ISO per misure nominali oltre 18 fino a 30 mm



Gli accoppiamenti più utilizzati in µm

Diametri nominali in mm oltre	fino a	A		B				C			
		9	11	8	9	10	11	8	9	10	11
0	3	+295 +270	+330 +270	+154 +140	+165 +140	+180 +140	+200 +140	+74 +60	+85 +60	+100 +60	+120 +60
3	6	+300 +270	+345 +270	+158 +140	+170 +140	+188 +140	+215 +140	+88 +70	+100 +70	+118 +70	+145 +70
6	10	+316 +280	+370 +280	+172 +150	+186 +150	+208 +150	+240 +150	+102 +80	+116 +80	+138 +80	+170 +80
10	18	+333 +290	+400 +290	+177 +150	+193 +150	+220 +150	+260 +150	+122 +95	+138 +95	+165 +95	+205 +95
18	30	+352 +300	+430 +300	+193 +160	+212 +160	+244 +160	+290 +160	+143 +110	+162 +110	+194 +110	+240 +110
30	40	+372 +310	+470 +310	+209 +170	+232 +170	+270 +170	+330 +170	+159 +120	+182 +120	+220 +120	+280 +120
40	50	+382 +320	+480 +320	+219 +180	+242 +180	+280 +180	+340 +180	+169 +130	+192 +130	+230 +130	+290 +130
50	65	+414 +340	+530 +340	+236 +190	+264 +190	+310 +190	+380 +190	+186 +140	+214 +140	+260 +140	+330 +140
65	80	+434 +360	+550 +360	+246 +200	+274 +200	+320 +200	+390 +200	+196 +150	+224 +150	+270 +150	+340 +150
80	100	+467 +380	+600 +380	+274 +220	+307 +220	+360 +220	+440 +220	+224 +170	+257 +170	+310 +170	+390 +170
100	120	+497 +410	+630 +410	+294 +240	+327 +240	+380 +240	+460 +240	+234 +180	+267 +180	+320 +180	+400 +180

Diametri nominali in mm oltre	fino a	D					E			F			
		8	9	10	11	12	7	8	9	6	7	8	9
0	3	+34 +20	+45 +20	+60 +20	+80 +20	+120 +20	+24 +14	+28 +14	+39 +14	+12 +6	16 +6	+20 +6	+31 +6
3	6	+48 +30	+60 +30	+78 +30	+105 +30	+150 +30	+32 +20	+38 +20	+50 +20	+18 +10	+22 +10	+28 +10	+40 +10
6	10	+62 +40	+76 +40	+98 +40	+130 +40	+190 +40	+40 +25	+47 +25	+61 +25	+22 +13	+28 +13	+35 +13	+49 +13
10	18	+77 +50	+93 +50	+120 +50	+160 +50	+230 +50	+50 +32	+59 +32	+75 +32	+27 +16	+34 +16	+43 +16	+59 +16
18	30	+98 +65	+117 +65	+149 +65	+195 +65	+275 +65	+61 +40	+73 +40	+92 +40	+33 +20	+41 +20	+53 +20	+72 +20
30	50	+119 +80	+142 +80	+180 +80	+240 +80		+75 +50	+89 +50	+112 +50	+41 +25	+50 +25	+64 +25	+87 +25
50	80	+146 +100	+174 +100	+220 +100	+290 +100		+90 +60	+106 +60	+134 +60	+49 +30	+60 +30	+76 +30	+104 +30
80	120	+174 +120	+207 +120	+260 +120	+340 +120		+107 +72	+126 +72	+159 +72	+58 +36	+71 +36	+90 +36	+123 +36
120	180							+148 +85					
180	250							+172 +100					

Gli accoppiamenti più utilizzati in µm

Diametri nominali in mm oltre	fino a	G		H							J		
		6	**7**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**6**	**7**	**8**
0	3	+8 +2	+12 +2	+6 0	+10 0	+14 0	+25 0	+40 0	+60 0	+100 0	+2 -4	+4 -6	+6 -8
3	6	+12 +4	+16 +4	+8 0	+12 0	+18 0	+30 0	+48 0	+75 0	+120 0	+5 -3	+6 -6	+10 -8
6	10	+14 +5	+20 +5	+9 0	+15 0	+22 0	+36 0	+58 0	+90 0	+150 0	+5 -4	+8 -7	+12 -10
10	18	+17 +6	+24 +6	+11 0	+18 0	+27 0	+43 0	+70 0	+110 0	+180 0	+6 -5	+10 -8	+15 -12
18	30	+20 +7	+28 +7	+13 0	+21 0	+33 0	+52 0	+84 0	+130 0	+210 0	+8 -5	+12 -9	+20 -13
30	50	+25 +9	+34 +9	+16 0	+25 0	+39 0	+62 0	+100 0	+160 0	+250 0	+10 -6	+14 -11	+24 -15
50	80	+29 +10	+40 +10	+19 0	+30 0	+46 0	+74 0	+120 0	+190 0	+300 0	+13 -6	+18 -12	+28 -18
80	120	+34 +12	+47 +12	+22 0	+35 0	+54 0	+87 0	+140 0	+220 0	+350 0	+16 -6	+22 -13	+34 -20
120	180		+54 +14	+25 0	+40 0	+63 0	+100 0	+160 0	+250 0		+18 -7	+26 -14	+41 -22
180	250		+61 +15	+29 0	+46 0	+72 0	+115 0	+185 0	+290 0		+22 -7	+30 -16	+47 -25

Diametri nominali in mm oltre	fino a	JS				K			M		
		6	7	8	9	6	7	8	6	7	8
0	3	+3 -3	+5 -5	+7 -7	+12,5 -12,5	0 -6	0 -10	0 -14	-2 -8	-2 -12	-4 -18
3	6	+4 -4	+6 -6	+9 -9	+15 -15	+2 -6	+3 -9	+5 -13	-1 -9	0 -12	+2 -16
6	10	+4,5 -4,5	+7,5 -7,5	+11 -11	+18 -18	+2 -7	+5 -10	+6 -16	-3 -12	0 -215	+1 -21
10	18	+5,5 -5,5	+9 -9	+13,5 -13,5	+21,5 -21,5	+2 -9	+6 -12	+8 -19	-4 -15	0 -18	+2 -25
18	30	+6,5 -6,5	+10,5 -10,5	+16,5 -16,5	+26 -26	+2 -11	+6 -15	+10 -23	-4 -17	0 -21	+4 -29
30	50	+8 -8	+12,5 -12,5	+19,5 -19,5	+31 -31	+3 -13	+7 -18	+12 -27	-4 -20	0 -25	+5 -34
50	80	+9,5 -9,5	+15 -15	+23 -23	+37 -37	+4 -15	+9 -21	+14 -32	-5 -24	0 -30	+5 -41
80	120	+11 -11	+17,5 -17,5	+27 -27	+43,5 -43,5	+4 -18	+10 -25	+16 -38	-6 -28	0 -35	+6 -48
120	180					+4 -21	+12 -28				
180	250					+5 -24	+13 -33				

Gli accoppiamenti più utilizzati in µm

Diametri nominali in mm oltre	fino a	N						P			R	
		6	7	8	9	10	11	6	7	9	6	7
0	3	-4	-4	-4	-4	-4	-4	-6	-6	-6	-10	-10
		-10	-14	-8	-29	-44	-64	-12	-16	-31	-16	-20
3	6	-5	-4	-2	0	0	0	-9	-8	-12	-12	-11
		-13	-16	-20	-30	-48	-75	-17	-20	-42	-20	-23
6	10	-7	-4	-3	0	0	0	-12	-9	-15	-16	-13
		-16	-19	-25	-36	-58	-90	-21	-24	-51	-25	-28
10	18	-9	-5	-3	0	0	0	-15	-11	-18	-20	-16
		-20	-23	-30	-43	-70	-110	-26	-29	-61	-31	-34
18	30	-11	-7	-3	0	0	0	-18	-14	-22	-24	-20
		-24	-28	-36	-52	-84	-130	-31	-35	-74	-37	-41
30	50	-12	-8	-3	0	0	0	-21	-17	-26	-29	-25
		-28	-33	-42	-62	-100	-160	-37	-42	-88	-45	-50
50	65	-14	-9	-4	0	0	0	-26	-21	-32	-35	-30
		-33	-39	-50	-74	-120	-190	-45	-51	-106	-54	-60
65	80	-14	-9	-4	0	0	0	-26	-21	-32	-37	-32
		-33	-39	-50	-74	-120	-190	-45	-51	-106	-56	-62
80	100	-16	-10	-4	0	0	0	-30	-24	-37	-44	-38
		-38	-45	-58	-87	-140	-220	-52	-59	-124	-66	-73
100	120	-16	-10	-4	0	0	0	-30	-24		-47	-41
		-38	-45	-58	-87	-140	-220	-52	-59		-69	-76

Diametri nominali in mm oltre	fino a	S		T	U			X		Z	
		6	7	6	6	7	10	10	11	10	11
0	3	-14	-14	-18	-18	-18	-18	-20	-20	-26	-26
		-20	-24	-24	-24	-28	-58	-60	-80	-66	-86
3	6	-16	-15	-20	-20	-19	-23	-28	-28	-35	-35
		-24	-27	-28	-28	-31	-71	-76	-103	-83	-110
6	10	-20	-17	-25	-25	-22	-28	-34	-34	-42	-42
		-29	-32	-34	-34	-37	-86	-92	-124	-100	-132
10	14	-25	-21	-30	-30	-26	-33	-40	-40	-50	-50
		-36	-39	-41	-41	-44	-103	-110	-150	-120	-160
14	18	-25	-21	-30	-30	-26	-33	-45	-45	-60	-60
		-36	-39	-41	-41	-44	-103	-115	-155	-130	-170
18	24	-31	-27	-37	-37	-33	-41	-54	-54	-73	-73
		-44	-48	-50	-50	-54	-125	-138	-184	-157	-203
24	30	-31	-27	-37	-44	-40	-48	-64	-64	-88	-88
		-44	-48	-50	-57	-61	-132	-148	-194	-172	-218
30	40	-38	-34	-43	-55	-51	-60	-80	-80	-112	-112
		-54	-59	-59	-71	-76	-160	-180	-240	-212	-272
40	50	-38	-34	-49	-65	-61	-70	-97	-97	-136	-136
		-54	-59	-65	-81	-86	-170	-197	-257	-236	-296
50	65	-47	-42	-60	-81	-76	-87	-122	-122	-172	-172
		-66	-72	-79	-100	-106	-207	-242	-312	-292	-362
65	80	-53	-48	-69	-96	-91	-102	-146	-146	-210	-210
		-72	-78	-88	-115	-121	-222	-266	-336	-330	-400
80	100	-64	-58	-84	-117	-111	-124	-178	-178	-258	-258
		-86	-93	-106	-139	-146	-264	-318	-398	-398	-478
100	120	-72	-66	-97	-137	-131	-144	-210	-210	-310	-310
		-94	-101	-119	-159	-166	-284	-350	-430	-450	-530

PUNTE

Modulo soluzione speciali

Quantitá _____ **Nr. Fori** _____

Materiale

Materiale da lavorare _____ Caprico di rottura durezza _____ N/mm² HRC

Pezzo da lavorare

Profonditá del foro _____ mm Tolleranza _____

Utensile in

☐ Metallo Duro ☐ HSS-E HSCO ☐ HSS

Refrigerazione

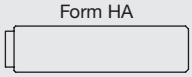
☐ Interna ☐ Esterna

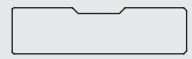
Pressione ila Refrigerazione _____ bar

Simile allo standard codice ☐

_____

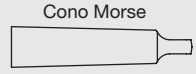
Gambo

☐ Form HA  Cilindrico

☐ Form HB  Weldon

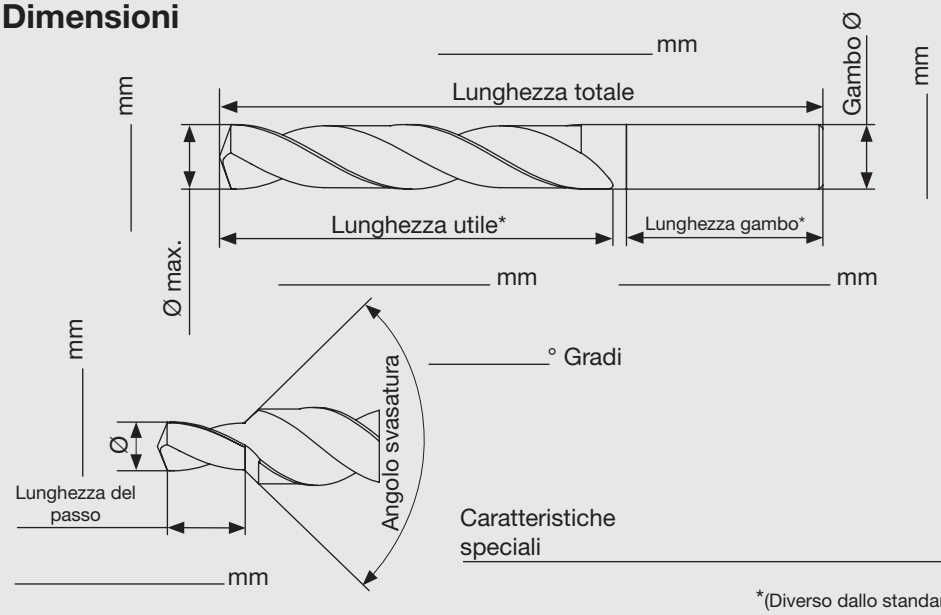
☐ Forma HE  Whistle Notch

☐ Cilindrico 

☐ Cono Morse 

_____ Misura

Dimensioni



Caratteristiche speciali _____

*(Diverso dallo standard)

Rivestimento

☐ superficie lucida ☐ TiN ☐ TiAlN ☐ AlTiN nano ☐ TiAlSiN ☐ _____ (altro)

Contatto

Societá: _____ Timbro societá

Persona: _____

Telefono/Fax: _____ Data: _____

E-Mail: _____ Firma: _____

FILETTARE

Modulo soluzione speciali

Quantitá _____ **Nr. Fori** _____

Materiale

Materiale da lavorare _____ Caprico di rottura durezza _____ N/mm² HRC

Pezzo da lavorare

Lunghezza Filetto _____ mm Misura Filetto _____ as. M18x0,5 ISO3/6H

Utensile in

☐ Metallo duro ☐ HSS-E-PM ☐ HSS-E

Refrigerazione

☐ Interna ☐ Externa

Simile allo standard codice ☐

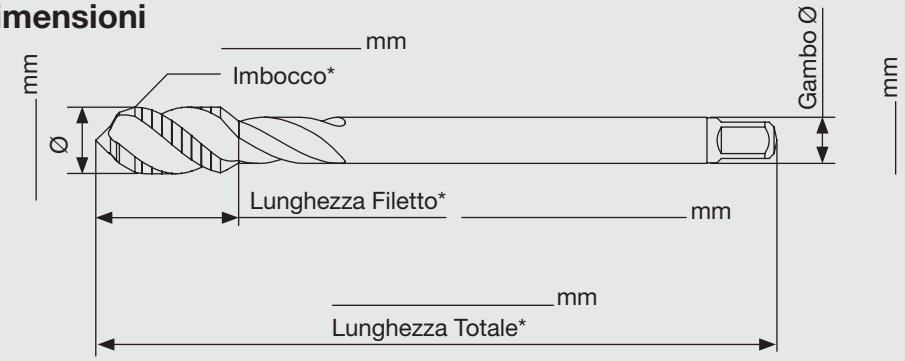
_____

Gambo

☐ DIN 371 codolo rinforzato

☐ DIN 374 / DIN 376

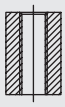
Dimensioni

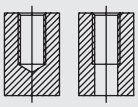


Caratteristiche speciali _____

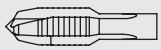
*(Diverso dallo standard)

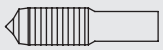
Tipo di foro

☐  Foro passante

☐  Foro Cielo

Utensile

☐  a filettare

☐  maschi a rullare

Rivestimento

☐ superficie lucida ☐ vaporizzato ☐ TiN ☐ TiCN ☐ TiAlN ☐ AlCrN

Contatto

Società: _____ Timbro società

Persona: _____

Telefono/Fax: _____ Data: _____

E-Mail: _____ Firma: _____

FRESE

Modulo soluzione speciali

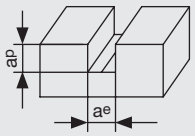
Quantitá ☐ 5 ☐ 10 ☐ >10 _____ Pezzi.

Materiale

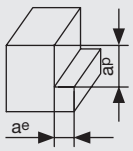
Materiale da lavorare _____

Caprico di rottura durezza _____ N/mm² HRC

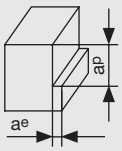
Impiego

☐ 

Lavorazione cave

☐ 

Sgrossatura

☐ 

Finitura

Profondita di taglio ap: _____ mm

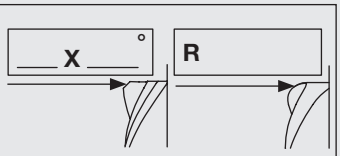
Laghezza di taglio ae: _____ mm

Utensile in

☐ Metallo Duro ☐ HSS-E-PM ☐ HSCO ☐ M 42

Angolo Radiale

☐ 
Testa sferlca

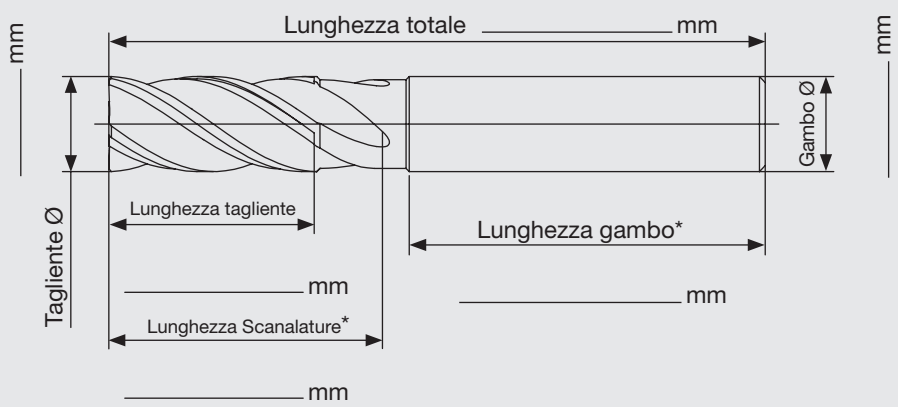


Smusso Esterno Raggio Esterno

Simile allo standard codice ☐

_____

Dimensioni



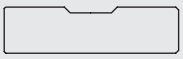
Collo Ridotto ☐ si ☐ no

Caratteristiche speciali _____

*(Diverso dallo standard)

Gambo

☐ Form HA  plano

☐ Form HB  Weldon

Nr. dei Taglienti

_____ 

Taglio al centro

☐

Rivestimento

☐ superficie lucida ☐ TiN ☐ TiAlN

☐ AlTiN nano ☐ TiAlSiN ☐ _____ (altro)

Forma del Profilo

☐  ☐  ☐ 

Contatto

Societá: _____ Timbro societá

Persona: _____

Telefono/Fax: _____ Data: _____

E-Mail: _____ Firma: _____

ALESATORI

Modulo soluzione speciali

Quantitá _____ (quantita minima 5 pezzi)

Simile allo standard codice _____

Materiale

Materiale da lavorare _____

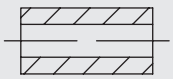
Caprico di rottura durezza _____ N/mm² HRC

Pezzo da lavorare

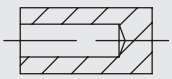
Profonditá _____ mm Diametro-Ø _____ mm Toleranza _____

Tipologia del Foro

☐ Foro Passante



☐ Forco Cieco



Refrigerazione

☐ Esterna

☐ Interna

☐ _____ Pressione della Refrigerazione

Utensile in

☐ Metallo Duro

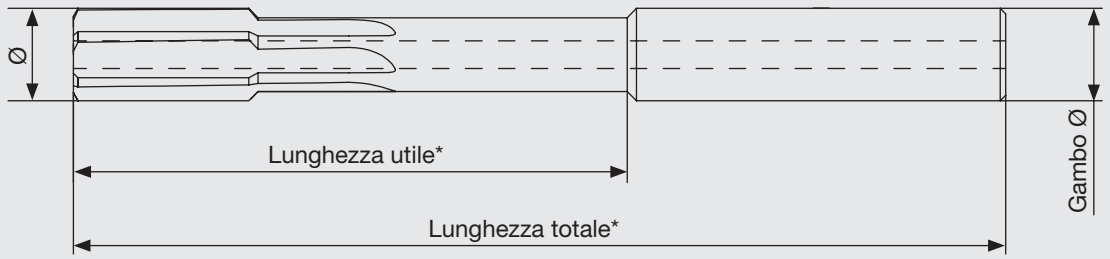
☐ Cuspide in Metallo Duro

☐ HSS-E

☐ Cuspide in Cermet

☐ Super R-HS

Dimensioni



Rivestimento

☐ no ☐ si _____

Caratteristiche speciali _____

*(Diverso dallo standard)

Contatto

Societá: _____ Timbro societá

Persona: _____

Telefono/Fax: _____ Data: _____

E-Mail: _____ Firma: _____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