STOCK

PRÄZISION

Span - um Span - Spitze

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STOCK

Seit über 125 Jahren bietet die Robert Stock AG ein umfangreiches Sortiment an Hightech-Zerspanungswerkzeugen. Das Unternehmen blickt auf eine traditionsreiche Vergangenheit zurück.

1891 stellte Stock den ersten deutschen Spiralbohrer her – und legte damit den Grundstein der deutschen Werkzeugherstellung.

Auch heute bietet Stock im weltweiten Vertrieb ein umfangreiches Sortiment an standardisierten Bohr-, Gewinde-, Fräs-, Reib- und Senkwerkzeugen aus HSS, HSS-Co, PM, Hartmetall, Cermet und PKD sowie Sonderwerkzeugen.
Werkzeugaufnahmen, Werkzeugausgabesysteme und Dienstleistungen rund ums Werkzeug, wie das Nachschleifen und Beschichten, komplettieren unser Leistungsspektrum.

seit 1887
R.STOCK&Co
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SPIRALBOHRER

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PRÄZISIONSWERKZEUGE

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FRÄSWERKZEUGE SUPER F-UT

VHM-Hochleistungsfräser

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Tieflochbohrer
Wechselplattenbohrsysteme

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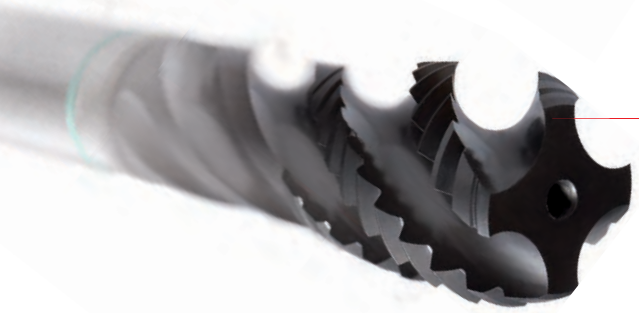

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51122	238	DIN 338	TiAlN nano	Spiralbohrer kurz	HSS-Co	V66 Ti
51132	261	Werksnorm	TiAlN nano	Spiralbohrer mit verst. Zylinderschaft	HSS-E-PM	V-PM
51158	251	DIN 338	TiAlN nano	Spiralbohrer kurz	HSS-Co	V97
51159	204	DIN 1897	TiAlN nano	Spiralbohrer extra kurz	HSS-Co	V97
51184	134	DIN 6539	TiAlN nano	Spiralbohrer extra kurz	VHM	N
51720	108	Werksnorm	AlTiN	SuperV-M VHM-Universal-Kleinstbohrer	VHM	SuperV-M
51764	97	Werksnorm	AlTiN	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-T
51765	98	Werksnorm	AlTiN	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-T
51766	99	Werksnorm	AlTiN	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-T
51767	100	Werksnorm	AlTiN	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-T
51768	101	Werksnorm	AlTiN	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-T
51770	76	DIN 6537K	AlTiN nano	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-VA
51771	78	DIN 6537K	AlTiN nano	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-VA
51772	87	DIN 6537L	AlTiN nano	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-VA
51773	89	DIN 6537L	AlTiN nano	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-VA
51776	72	DIN 6537K	TiAlN nano	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-IK-U
51781	83	DIN 6537L	TiAlN nano	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-IK-U
51787	68	DIN 6537L	TiAlN nano	SuperV-Bohrer ohne Innenkühlung	VHM	SuperV-U
51789	91	Werksnorm	TiAlN nano	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-IK-U
51871	66	DIN 6537K	TiAlN nano	SuperV-Bohrer ohne Innenkühlung	VHM	SuperV-U
51873	64	DIN 6537K	TiAlN nano	SuperV-Bohrer ohne Innenkühlung	VHM	SuperV-U
51876	74	DIN 6537K	TiAlN nano	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-IK-U
51881	85	DIN 6537L	TiAlN nano	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-IK-U
51887	70	DIN 6537L	TiAlN nano	SuperV-Bohrer ohne Innenkühlung	VHM	SuperV-U
51889	92	Werksnorm	TiAlN nano	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-IK-U
51893	95	Werksnorm	TiAlN nano	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-IK-U
51997	105	Werksnorm	AlTiN	SuperV-NX VHM-Hochleistungs-Kleinstbohrer mit Innenkühlung	VHM	SuperV-IK-NX
51998	106	Werksnorm	AlTiN	SuperV-NX VHM-Hochleistungs-Kleinstbohrer mit Innenkühlung	VHM	SuperV-IK-NX
51999	107	Werksnorm	AlTiN	SuperV-NX VHM-Hochleistungs-Kleinstbohrer mit Innenkühlung	VHM	SuperV-IK-NX
52360	743	Werksnorm	blank	Entgratgabeln	VHM	SuperE-U
52365	651, 742	Werksnorm	AlTiN nano	Vor- und Rückwärtsentgrater 90°	VHM	SuperAD-90
53050	368	DIN 371	TiCN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Intensiv Synchro
53051	369	DIN 376	TiCN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Intensiv Synchro
53052	438	DIN 374	TiCN	Gewindebohrer für Metrische ISO-Feingewinde	HSS-E-PM	Intensiv Synchro
53053	362	DIN 371	TiCN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Produktiv Synchro
53054	363	DIN 376	TiCN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Produktiv Synchro
53055	437	DIN 374	TiCN	Gewindebohrer für Metrische ISO-Feingewinde	HSS-E-PM	Produktiv Synchro
53393	645, 736	Werksnorm	AlTiN	Entgratfräser 60°	VHM	SuperAF-60
53394	646, 737	Werksnorm	AlTiN	Entgratfräser 60°	VHM	SuperAF-60
53395	647, 738	Werksnorm	AlTiN	Entgratfräser 90°	VHM	SuperAF-90
53396	648, 739	Werksnorm	AlTiN	Entgratfräser 90°	VHM	SuperAF-90
53397	649, 740	Werksnorm	AlTiN	Entgratfräser 120°	VHM	SuperAF-120
53398	650, 741	Werksnorm	AlTiN	Entgratfräser 120°	VHM	SuperAF-120
53620	478	~DIN 371	AlCrN	Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde	HSS-E-PM	Durativ
53621	479	~DIN 371	AlCrN	Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde	HSS-E-PM	Durativ
53622	480	~DIN 376	AlCrN	Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde	HSS-E-PM	Durativ
53640	397	DIN 371	TiCN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Produktiv H
53641	412	DIN 371	TiCN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Produktiv HD
53642	398	DIN 371	TiCN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv H
53643	416	DIN 376	TiCN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Produktiv HD
53661	404	DIN 371	TiCN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv H
53662	420	DIN 371	TiCN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Intensiv HD
53665	424	DIN 376	TiCN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Intensiv HD
53666	382	DIN 371/DIN 376	TiCN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Intensiv HDX
53667	377	DIN 371/DIN 376	TiCN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Produktiv HDX
53668	381	DIN 371/DIN 376	AlTiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Intensiv HX
53669	376	DIN 371/DIN 376	AlTiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Produktiv HX
53670	383	DIN 371	TiCN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	HCX
53733	364	~DIN 371/~DIN 376	AlTiZrN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv N-X
53746	370	~DIN 371/~DIN 376	TiAlN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv N-X
53778	436	DIN 374	AlTiZrN	Gewindebohrer für Metrische ISO-Feingewinde	HSS-E	Produktiv N-X
53780	435	DIN 374	TiAlN	Gewindebohrer für Metrische ISO-Feingewinde	HSS-E	Intensiv N-X
53787	471	DIN 5156	AlTiZrN	Gewindebohrer für Whitworth-Rohrgewinde	HSS-E	Produktiv N-X
53788	466	DIN 5156	TiAlN	Gewindebohrer für Whitworth-Rohrgewinde	HSS-E	Intensiv N-X
53810	486	Werksnorm	TiCN	Gewindefräser mit Senkfase für Metr. ISO-Gewinde	VHM	TMC SP
53820	487	Werksnorm	TiCN	Gewindefräser mit Senkfase für Metr. ISO-Feingewinde	VHM	TMC SP
53830	490	Werksnorm	TiCN	Gewindefräser ohne Senkfase für Metr. ISO-Gewinde	VHM	TM SP
54080	664	Werksnorm	TiAlN	Mini-Bohrnutenfräser (3-Schneider)	M42	N
54180	665	Werksnorm	TiAlN	Mini-Bohrnutenfräser (3-Schneider)	M42	N
54201	616	Werksnorm	TiAlN	Schlichtfräser, mehrschneidig	VHM	NH
54205	615	Werksnorm	TiAlN	Schlichtfräser, mehrschneidig	VHM	NH
54206	614	DIN 6527L	TiAlN	Schaftfräser mit Eckradius	VHM	NH

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54207	619	Werksnorm	TiAlSiN	Hartfräser, mehrschneidig	VHM	H
54221	618	Werksnorm	TiAlN	Schlichtfräser, mehrschneidig	VHM	NH
54225	617	Werksnorm	TiAlN	Schlichtfräser, mehrschneidig	VHM	NH
54227	620	Werksnorm	TiAlSiN	Hartfräser, mehrschneidig	VHM	H
54275	680	DIN 327	TiAlN	Radiusfräser	M42	N
54276	681	Werksnorm	TiAlN	Radiusfräser	M42	N
54294	662	DIN 844L	TiAlN	Bohrnutenfräser (3-Schneider)	M42	N
54300	642	Werksnorm	TiAlSiN	Kopierfräser mit Vollradius	VHM	N
54301	643	Werksnorm	TiAlSiN	Kopierfräser mit Vollradius	VHM	N
54302	638	Werksnorm	TiAlSiN	Kopierfräser mit Torusanschliff	VHM	N
54303	639	Werksnorm	TiAlSiN	Kopierfräser mit Torusanschliff	VHM	N
54304	636	Werksnorm	TiAlSiN	Kopierfräser mit Torusanschliff	VHM	H
54305	637	Werksnorm	TiAlSiN	Kopierfräser mit Torusanschliff	VHM	H
54306	640	Werksnorm	TiAlSiN	Kopierfräser mit Vollradius	VHM	H
54307	641	Werksnorm	TiAlSiN	Kopierfräser mit Vollradius	VHM	H
54404	594	Werksnorm	TiAlN	Langlochfräser (2-Schneider)	VHM	N
54424	603	Werksnorm	TiAlN	Bohrnutenfräser (3-Schneider)	VHM	N
54444	611	Werksnorm	TiAlN	Schaftfräser (4-Schneider)	VHM	N
54496	621	DIN 6527L	TiAlN	Schruppfräser	VHM	NF
54497	622	DIN 6527L	TiAlN	Schruppfräser	VHM	NF
54519	590	DIN 6527L	TiAlN	Langlochfräser (2-Schneider)	VHM	N
54520	589	DIN 6527K	TiAlN	Langlochfräser (2-Schneider)	VHM	N
54521	592	DIN 6527L	TiAlN	Langlochfräser (2-Schneider)	VHM	N
54522	612	DIN 6527L	TiAlN	Schaftfräser mit Eckradius	VHM	N
54523	599	DIN 6527L	TiAlN	Bohrnutenfräser (3-Schneider)	VHM	N
54524	608	DIN 6527L	TiAlN	Schaftfräser (4-Schneider)	VHM	N
54526	613	DIN 6527L	TiAlN	Schaftfräser mit Eckradius	VHM	N
54531	633	DIN 6528	TiAlN	Radiusfräser	VHM	N
54541	628	DIN 6527L	TiAlN	Radiusfräser	VHM	N
54551	521	DIN 6527L	TiAlN	SuperF-UT-Fräser N	VHM	SuperF-UT N
54552	525	Werksnorm	TiAlN	SuperF-UT-Fräser N	VHM	SuperF-UT N
54556	541	DIN 6527L	TiAlN	SuperF-UT-Fräser VA	VHM	SuperF-UT VA
54558	535	DIN 6527L	AlTiN nano	SuperF-UT-Fräser VA-X	VHM	SuperF-UT VA-X
54559	536	DIN 6527L	AlTiN nano	SuperF-UT-Fräser VA-X	VHM	SuperF-UT VA-X
54560	532	DIN 6527L	AlTiN+	SuperF-UT-Fräser Ti	VHM	SuperF-UT Ti
54561	533	DIN 6527L	AlTiN+	SuperF-UT-Fräser Ti	VHM	SuperF-UT Ti
54562	523	Werksnorm	TiAlN	SuperF-UT-Fräser N	VHM	SuperF-UT N
54563	524	Werksnorm	TiAlN	SuperF-UT-Fräser N	VHM	SuperF-UT N
54564	528	Werksnorm	TiAlN	SuperF-UT-Fräser N-3	VHM	SuperF-UT N-3
54565	529	Werksnorm	TiAlN	SuperF-UT-Fräser N-3	VHM	SuperF-UT N-3
54566	526	DIN 6527L	TiAlN	SuperF-UT-Fräser N-F	VHM	SuperF-UT N-F
54567	527	DIN 6527L	TiAlN	SuperF-UT-Fräser N-F	VHM	SuperF-UT N-F
54568	539	DIN 6527L	AlTiN nano	SuperF-UT-Fräser VA-XF	VHM	SuperF-UT VA-XF
54569	540	DIN 6527L	AlTiN nano	SuperF-UT-Fräser VA-XF	VHM	SuperF-UT VA-XF
54570	546	Werksnorm	blank	SuperF-UT-Fräser Al-F	VHM	SuperF-UT Al-F
54571	547	Werksnorm	blank	SuperF-UT-Fräser Al-F	VHM	SuperF-UT Al-F
54572	550	DIN 6527L	TiAlSiN	SuperF-UT-Fräser H	VHM	SuperF-UT H
54573	551	DIN 6527L	TiAlSiN	SuperF-UT-Fräser H	VHM	SuperF-UT H
54574	537	DIN 6527L	AlTiN nano	SuperF-UT-Fräser VA-X IK	VHM	SuperF-UT VA-X IK
54575	538	DIN 6527L	AlTiN nano	SuperF-UT-Fräser VA-X IK	VHM	SuperF-UT VA-X IK
54576	534	DIN 6527K	AlTiN nano	SuperF-UT-Fräser VA-X	VHM	SuperF-UT VA-X
54579	530	Werksnorm	TiAlN	SuperF-UT-Fräser N-5	VHM	SuperF-UT N-5
54580	531	Werksnorm	TiAlN	SuperF-UT-Fräser N-5	VHM	SuperF-UT N-5
54590	518	DIN 6527L	TiAlSiN	SuperF-UT-Fräser NX	VHM	SuperF-UT NX
54591	519	DIN 6527L	TiAlSiN	SuperF-UT-Fräser NX	VHM	SuperF-UT NX
54700	644	DIN 6527L	AlTiN+	Pilotfräser	VHM	N
54815	671	DIN 844K	TiAlN	Schruppschlichtfräser	M42	NF
54816	675	DIN 844K	TiAlN	Schruppfräser (4-Schneider)	M42	NR
54825	673	DIN 844K	TiAlN	Schruppfräser (3-Schneider)	HSS-E-PM	NRf
54836	679	DIN 844L	TiAlN	Schruppfräser (4-Schneider)	M42	NR
54845	677	DIN 844K	TiAlN	Schruppfräser (4-Schneider)	HSS-E-PM	NRf
54847	669	DIN 844L	TiAlN	Schaftfräser (mehrschneidig)	M42	N
55017	151	Werksnorm	TiCN	Einlippenbohrer SuperT-NX	HM	SuperT-NX
55018	150	Werksnorm	TiCN	Einlippenbohrer SuperT-NX	HM	SuperT-NX
55020	157	Werksnorm	AlTiN+	Einlippenbohrer TBE-VHM	VHM	TBE-VHM
55021	161	Werksnorm	AlTiN+	Einlippenbohrer TBE-VHM	VHM	TBE-VHM
55022	152	Werksnorm	TiCN	Einlippenbohrer SuperT-NX	HM	SuperT-NX
55023	153	Werksnorm	TiCN	Einlippenbohrer SuperT-NX	HM	SuperT-NX
55024	155	Werksnorm	AlTiN+	Einlippenbohrer TBE-VHM	VHM	TBE-VHM
55026	159	Werksnorm	AlTiN+	Einlippenbohrer TBE-VHM	VHM	TBE-VHM
55027	143	Werksnorm	AlTiN nano	Einlippenbohrer SuperT-AL	VHM	SuperT-AL
55028	144	Werksnorm	AlTiN nano	Einlippenbohrer SuperT-AL	VHM	SuperT-AL

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55029	145	Werksnorm	AlTiN nano	Einlippenbohrer SuperT-AL	VHM	SuperT-AL
56011	129	Werksnorm	TiAlN	SuperV-AP maxi Wechselplatte	VHM	SuperV-AP maxi
61112	207	DIN 1897	TiN	Spiralbohrer extra kurz	HSS-Co	VX
61115	220	DIN 338	TiN Kopf	Spiralbohrer kurz	HSS	N
61116	218	DIN 338	TiN	Spiralbohrer kurz	HSS	N
61118	197	DIN 1897	TiN	Spiralbohrer extra kurz	HSS	N
61120	257	Werksnorm	TiN	Spiralbohrer mit verst. Zylinderschaft	HSS-Co	NX
61121	259	Werksnorm	TiN	Spiralbohrer mit verst. Zylinderschaft	HSS-Co	NX
61124	243	DIN 338	TiN	Spiralbohrer kurz	HSS	V70
61131	205	DIN 1897	TiN	Spiralbohrer extra kurz	HSS-E-PM	V-PM
61136	268	DIN 340	TiN	Spiralbohrer lang	HSS	N
61150	277	DIN 340	TiN	Spiralbohrer lang	HSS	V70
61158	247	DIN 338	TiN	Spiralbohrer kurz	HSS-Co	V70
61175	294	Werksnorm	TiN	NC-Anbohrer	HSS	N
61220	202	DIN 1897	TiN	Spiralbohrer extra kurz	HSS-Co	NX
61221	230	DIN 338	TiN	Spiralbohrer kurz	HSS-Co	NX
61222	272	DIN 340	TiN	Spiralbohrer lang	HSS-Co	NX
61223	236	DIN 338	TiN	Spiralbohrer kurz	HSS-Co	V66 Ti
61232	253	DIN 338	TiN	Spiralbohrer kurz	HSS-E-PM	V-PM
61602	325	DIN 333	TiN	Zentrierbohrer ohne Fläche	HSS	N
61880	82	DIN 6537L	TiN	SuperV-Bohrer mit Innenkühlung	VHM	SuperV-IK-F
61888	63	DIN 6539	TiN	SuperV-Bohrer ohne Innenkühlung	VHM	SuperV-F
62327	727	DIN 334	TiN	Kegelsenker 60°	HSS	
62347	729	DIN 335	TiN	Kegelsenker 90°	HSS	
62399	733	DIN 335	TiN	Kegelsenkersätze 90°	HSS	
63010	411	~DIN 371	TiCN	Gewindebohrer für Metrische ISO-Gewinde	VHM	H
63013	481	~DIN 371	TiCN	Kühlkanal-Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde	VHM	Durativ
63033	365	DIN 371	TiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv N
63046	371	DIN 371	TiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv N
63048	373	DIN 376	TiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv N
63119	476	~DIN 371	TiN	Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde	HSS-E	Durativ
63120	475	~DIN 371	TiN	Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde	HSS-E	Durativ
63121	483	DIN 371	TiN	Gewindeformer ohne Schmiernuten für Metr. ISO-Gewinde	HSS-E	Durativ
63122	477	~DIN 376	TiN	Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde	HSS-E	Durativ
63123	484	~DIN 376	TiN	Gewindeformer ohne Schmiernuten für Metr. ISO-Gewinde	HSS-E	Durativ
63133	385	DIN 371	TiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv N
63138	388	DIN 376	TiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv N
63146	390	DIN 371	TiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv N
63148	394	DIN 376	TiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv N
63173	444	DIN 374	TiN	Gewindebohrer für Metrische ISO-Feingewinde	HSS-E	Intensiv N
63176	413	DIN 371	TiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv HD
63177	417	DIN 376	TiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv HD
63201	428	DIN 371	AlTiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	GG
63641	399	DIN 371	TiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Produktiv H
63643	402	DIN 376	TiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Produktiv H
63662	421	DIN 371	TiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Intensiv HD
63665	425	DIN 376	TiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Intensiv HD
63674	405	DIN 371	TiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv H
63675	408	DIN 376	TiN	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv H
64080	595	Werksnorm	TiAlN	Mini-Bohrnutenfräser (3-Schneider)	VHM	N
64180	596	Werksnorm	TiAlN	Mini-Bohrnutenfräser (3-Schneider)	VHM	NH
64478	606	DIN 6527L	TiAlN	Bohrnutenfräser NH (3-Schneider)	VHM	NH
64495	625	DIN 6527L	TiAlN	Schruppfräser	VHM	NRf
64497	626	DIN 6527L	TiAlSiN	Schruppfräser	VHM	HR
64522	598	DIN 6527K	TiAlN	Bohrnutenfräser (3-Schneider)	VHM	N
64523	601	DIN 6527L	TiAlN	Bohrnutenfräser (3-Schneider)	VHM	N
64525	610	DIN 6527L	TiAlN	Schaftfräser (4-Schneider)	VHM	N
64532	634	DIN 6527L	TiAlN	Radiusfräser	VHM	N
64535	635	Werksnorm	TiAlN	Radiusfräser	VHM	N
64542	629	DIN 6527L	TiAlN	Radiusfräser	VHM	N
64545	631	Werksnorm	TiAlN	Radiusfräser	VHM	N
64550	520	DIN 6527K	TiAlN	SuperF-UT-Fräser N	VHM	SuperF-UT N
64551	522	DIN 6527L	TiAlN	SuperF-UT-Fräser N	VHM	SuperF-UT N
64557	542	DIN 6527L	TiAlN	SuperF-UT-Fräser VA	VHM	SuperF-UT VA
64558	552	Werksnorm	TiAlN	SuperF-UT-Fräser FS	VHM	SuperF-UT FS
64559	553	Werksnorm	TiAlN	SuperF-UT-Fräser FS	VHM	SuperF-UT FS
64567	543	DIN 6527L	TiAlN	SuperF-UT-Fräser VA-IK	VHM	SuperF-UT VA-IK
64570	604	DIN 6527K	TiAlN	Bohrnutenfräser NH (3-Schneider)	VHM	NH
64571	607	DIN 6527L	TiAlN	Bohrnutenfräser NH (3-Schneider)	VHM	NH
64604	659	DIN 327	TiAlN	Bohrnutenfräser (3-Schneider)	M42	N
64640	653	DIN 327	TiAlN	Langlochfräser (2-Schneider)	M42	N
64641	661	DIN 844K	TiAlN	Bohrnutenfräser (3-Schneider)	M42	N

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64667	667	DIN 844K	TiAlN	Schaftfräser (mehrschneidig)	M42	N
64670	655	DIN 844K	TiAlN	Langlochfräser (2-Schneider)	M42	N
64671	657	DIN 844L	TiAlN	Langlochfräser (2-Schneider)	M42	N
67011	114	Werksnorm	TiAlN nano	SuperV-AP mini Wechselplatte	VHM	SuperV-AP mini U
67012	117	Werksnorm	AlTiN nano	SuperV-AP mini Wechselplatte	VHM	SuperV-AP mini VA
71106	199	DIN 1897	blank	Spiralbohrer extra kurz	M42	N
71108	194	DIN 1897	dampfbehandelt	Spiralbohrer extra kurz	HSS	N
71109	196	DIN 1897	dampfbehandelt	Spiralbohrer extra kurz	HSS	N
71110	190	DIN 1897	blank	Spiralbohrer extra kurz	HSS	N
71111	192	DIN 1897	blank	Spiralbohrer extra kurz	HSS	N
71112	206	DIN 1897	dampfbehandelt	Spiralbohrer extra kurz	HSS-Co	VX
71113	210	Werksnorm	blank	Spiralbohrer extra kurz	HSS	V72
71114	209	Werksnorm	blank	Spiralbohrer extra kurz	HSS	V72
71115	215	DIN 338	dampfbehandelt	Spiralbohrer kurz	HSS	N
71116	212	DIN 338	blank	Spiralbohrer kurz	HSS	N
71117	226	DIN 338	blank	Spiralbohrer kurz	HSS	H
71119	214	DIN 338	blank	Spiralbohrer kurz	HSS	N
71122	234	DIN 338	blank	Spiralbohrer kurz	HSS-Co	V66 Ti
71123	232	DIN 338	Fasen nitriert	Spiralbohrer kurz	HSS-Co	V66
71124	239	DIN 338	blank	Spiralbohrer kurz	HSS	V70
71126	241	DIN 338	blank	Spiralbohrer kurz	HSS	V70
71128	248	DIN 338	blank	Spiralbohrer kurz	HSS	V72
71129	250	DIN 338	blank	Spiralbohrer kurz	HSS	V72
71130	264	DIN 339	dampfbehandelt	Bohrbuchsenbohrer	HSS	N
71135	266	DIN 340	dampfbehandelt	Spiralbohrer lang	HSS	N
71136	265	DIN 340	blank	Spiralbohrer lang	HSS	N
71145	282	DIN 1869	Fasen nitriert	Spiralbohrer überlang, Reihe 1	HSS	V63
71146	285	DIN 1869	Fasen nitriert	Spiralbohrer überlang, Reihe 2	HSS	V63
71147	287	DIN 1869	Fasen nitriert	Spiralbohrer überlang, Reihe 3	HSS	V63
71148	224	DIN 338	blank	Spiralbohrer kurz	M42	N
71149	222	DIN 338	dampfbehandelt	Spiralbohrer kurz	HSS-Co	N
71150	275	DIN 340	blank	Spiralbohrer lang	HSS	V70
71152	276	DIN 340	blank	Spiralbohrer lang	HSS	V70
71154	278	DIN 340	Fasen nitriert	Spiralbohrer lang	HSS	V73
71156	280	DIN 340	Fasen nitriert	Spiralbohrer lang	HSS-Co	V73
71158	245	DIN 338	Fasen nitriert	Spiralbohrer kurz	HSS-Co	V70
71168	262	Werksnorm	blank	Spiralbohrer kurz, Schaft-Ø 16,0 mm	HSS-Co	V72
71169	263	Werksnorm	blank	Spiralbohrer kurz, Schaft-Ø 25,4 mm	HSS-Co	V72
71175	293	Werksnorm	blank	NC-Anbohrer	HSS	N
71176	295	Werksnorm	blank	NC-Anbohrer	HSS	N
71180	140	DIN 8037	blank	Spiralbohrer mit HM-Schneiden	HM	N
71184	132	DIN 6539	blank	Spiralbohrer extra kurz	VHM	N
71187	291	DIN 1899	blank	Kleinstbohrer	HSS-E-PM	N
71189	139	Werksnorm	blank	NC-Anbohrer	VHM	N
71190	137	Werksnorm	blank	NC-Anbohrer	VHM	N
71191	138	Werksnorm	blank	NC-Anbohrer	VHM	N
71192	284	DIN 1869	Fasen nitriert	Spiralbohrer überlang, Reihe 1	HSS-Co	V63
71193	286	DIN 1869	Fasen nitriert	Spiralbohrer überlang, Reihe 2	HSS-Co	V63
71195	288	Werksnorm	Fasen nitriert	Spiralbohrer extra lang	HSS	V63
71196	289	Werksnorm	blank	Spiralbohrer extra lang	HSS	V63
71220	200	DIN 1897	blank	Spiralbohrer extra kurz	HSS-Co	NX
71221	228	DIN 338	blank	Spiralbohrer kurz	HSS-Co	NX
71222	270	DIN 340	blank	Spiralbohrer lang	HSS-Co	NX
71225	274	DIN 340	blank	Spiralbohrer lang	HSS-Co	V66
71290	135	Werksnorm	blank	Spiralbohrer kurz	VHM	N
71300	298	DIN 345	dampfbehandelt	Spiralbohrer	HSS	N
71303	296	Werksnorm	blank	Spiralbohrer kurz	HSS-Co8	N
71304	297	Werksnorm	blank	Spiralbohrer kurz	HSS-Co8	N
71305	302	DIN 345	blank	Spiralbohrer	HSS	V70
71312	303	DIN 345	blank	Spiralbohrer	HSS-Co	V66 Ti
71313	304	DIN 346	blank	Spiralbohrer	HSS-Co	V66 Ti
71320	305	DIN 341	dampfbehandelt	Bohrbuchsenbohrer	HSS	N
71322	306	DIN 341	blank	Bohrbuchsenbohrer	HSS	V70
71325	307	DIN 1870	Fasen nitriert	Spiralbohrer überlang, Reihe 1	HSS	V63
71326	308	DIN 1870	Fasen nitriert	Spiralbohrer überlang, Reihe 2	HSS	V63
71380	141	DIN 8041	blank	Spiralbohrer mit HM-Schneiden	HM	N
71416	301	DIN 345	dampfbehandelt	Spiralbohrer	HSS-Co	N
71500	319	DIN 8376	dampfbehandelt	Mehrfasenstufenbohrer mit Zylinderschaft	HSS	N
71501	317	DIN 8374	dampfbehandelt	Mehrfasenstufenbohrer mit Zylinderschaft	HSS	N
71503	318	DIN 8378	dampfbehandelt	Mehrfasenstufenbohrer mit Zylinderschaft	HSS	N
71520	321	DIN 8377	dampfbehandelt	Mehrfasenstufenbohrer mit Morsekegel	HSS	N
71523	320	DIN 8379	dampfbehandelt	Mehrfasenstufenbohrer mit Morsekegel	HSS	N

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71550	310	Werksnorm	dampfbehandelt	Mehrbereichs-Spiralbohrer mit Kühlkanal, lang	HSS-Co	V70-IK
71553	311	Werksnorm	dampfbehandelt	Mehrbereichs-Spiralbohrer mit Kühlkanal, lang	HSS-Co	V70-IK
71554	309	Werksnorm	dampfbehandelt	Kühlkanalbohrer	HSS	N-IK
71560	316	Werksnorm		Kühlmittelzuführringe		
71565	312	Werksnorm	dampfbehandelt	Tiefloch-Spiralbohrer mit Kühlkanal, überlang	HSS-Co	V63-IK
71566	314	Werksnorm	dampfbehandelt	Tiefloch-Spiralbohrer mit Kühlkanal, überlang	HSS-Co	V63-IK
71567	313	Werksnorm	dampfbehandelt	Tiefloch-Spiralbohrer mit Kühlkanal, überlang	HSS-Co	V63-IK
71568	315	Werksnorm	dampfbehandelt	Tiefloch-Spiralbohrer mit Kühlkanal, überlang	HSS-Co	V63-IK
71584	290	Werksnorm	blank	Kühlkanalbohrer	HSS	V73-IK
71600	322	DIN 333	blank	Zentrierbohrer ohne Fläche	HSS	N
71601	323	DIN 333	blank	Zentrierbohrer ohne Fläche	HSS	N
71602	324	DIN 333	blank	Zentrierbohrer ohne Fläche	HSS	N
71604	327	DIN 333	blank	Zentrierbohrer ohne Fläche	HSS	N
71605	326	Werksnorm	blank	Zentrierbohrer ohne Fläche	HSS	N
71607	328	Werksnorm	blank	Zentrierbohrer mit Fläche	HSS	N
71609	329	Werksnorm	blank	Zentrierbohrer mit Fläche	HSS	N
71616	142	Werksnorm	blank	Zentrierbohrer ohne Fläche	VHM	N
71862	102	DIN 6537L	blank	SuperV-Bohrer, 3-schneidig	VHM	SuperV83-GAL
71994	93	Werksnorm	blank	SuperV-Bohrer mit Innenkühlung	VHM	SuperV95-GG
71995	80	Werksnorm	blank	SuperV-Bohrer mit Innenkühlung	VHM	SuperV95-GG
71996	94	Werksnorm	blank	SuperV-Bohrer mit Innenkühlung	VHM	SuperV95-GG
71997	96	Werksnorm	blank	SuperV-Bohrer mit Innenkühlung	VHM	SuperV95-GN
71998	103	Werksnorm	AlTiN+	SuperV-NX VHM-Hochleistungs-Kleinstbohrer ohne Innenkühlung	VHM	SuperV-NX
71999	104	Werksnorm	AlTiN+	SuperV-NX VHM-Hochleistungs-Kleinstbohrer ohne Innenkühlung	VHM	SuperV-NX
72200	330	DIN 344	dampfbehandelt	Aufbohrer mit Zylinderschaft	HSS	N
72210	331	DIN 343	dampfbehandelt	Aufbohrer mit Morsekegel	HSS	N
72304	734	DIN 373	blank	Flachsenker mit Führungszapfen, Senkung fein	HSS	
72305	735	DIN 373	blank	Flachsenker mit Führungszapfen, Senkung mittel	HSS	
72326	726	DIN 334	blank	Kegelsenker 60°	HSS	
72345	731	DIN 335	dampfbehandelt	Kegelsenker 90°	HSS	
72346	728	DIN 335	blank	Kegelsenker 90°	HSS	
72356	730	DIN 335	blank	Kegelsenker 90°	HSS	
72399	732	DIN 335	blank	Kegelsenkersätze 90°	HSS	
72600	724	DIN 206	blank	Hand-Reibahlen	HSS	
72610	725	DIN 206	blank	Hand-Reibahlen	HSS	
72640	716	DIN 212-2	blank	Maschinen-Reibahlen	HSS-E	
72650	717	DIN 212-2	blank	Maschinen-Reibahlen	HSS-E	
72654	714	DIN 212-2	blank	Maschinen-Reibahlen	HSS-E	
72660	718	DIN 208	blank	Maschinen-Reibahlen	HSS-E	
72670	719	DIN 208	blank	Maschinen-Reibahlen	HSS-E	
72680	721	DIN 311	nitriert	Maschinen-Nietloch-Reibahlen	HSS	
72690	720	DIN 212-2	blank	Maschinen-Schäl-Reibahlen	HSS-E	
72730	723	DIN 9	blank	Hand-Kegel-Reibahlen	HSS	
72741	722	DIN 2179	blank	Maschinen-Kegel-Reibahlen	HSS-E	
72859	709	~DIN 8051	blank	HM-Maschinen Reibahlen	HM	
72860	708	~DIN 8051	blank	HM-Maschinen Reibahlen	HM	
72867	705	~DIN 8050	blank	HM-Maschinen Reibahlen	HM	
72868	704	~DIN 8050	blank	HM-Maschinen Reibahlen	HM	
72870	694	Werksnorm	AlTiN nano	VHM-Hochleistungs-Reibahlen	VHM	SuperR-HS-S
72871	695	Werksnorm	AlTiN nano	VHM-Hochleistungs-Reibahlen	VHM	SuperR-HS-D
72872	696	Werksnorm	AlTiN nano	VHM-Hochleistungs-Reibahlen	VHM	SuperR-HS-S
72873	698	Werksnorm	AlTiN nano	VHM-Hochleistungs-Reibahlen	VHM	SuperR-HS-D
72880	706	~DIN 8093	blank	HM-Maschinen Reibahlen	HM	
72881	707	~DIN 8093	blank	HM-Maschinen Reibahlen	HM	
72900	710	DIN 212-3	blank	NC-Maschinen-Reibahlen	HSS-E	
72910	712	DIN 212-3	blank	NC-Maschinen-Reibahlen	HSS-E	
72920	700	Werksnorm	blank	NC-Maschinen-Reibahlen	VHM	
72930	702	Werksnorm	blank	NC-Maschinen-Reibahlen	VHM	
73011	384	DIN 371	blank	Gewindebohrer für Metrische ISO-Gewinde	VHM	H
73033	366	DIN 371	dampfbehandelt	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv N
73038	367	DIN 376	dampfbehandelt	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv N
73046	372	DIN 371	dampfbehandelt	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv N
73047	375	DIN 371	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv N
73048	374	DIN 376	dampfbehandelt	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv N
73120	474	~DIN 371	blank	Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde	HSS-E	Durativ
73121	482	DIN 371	blank	Gewindeformer ohne Schmiernuten für Metr. ISO-Gewinde	HSS-E	Durativ
73126	380	DIN 371	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Massiv N
73131	431	DIN 371	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv W
73132	386	DIN 371	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv N
73133	387	DIN 371	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv N
73136	434	DIN 376	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv W
73138	389	DIN 376	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv N

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73145	391	DIN 371	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv N
73146	392	DIN 371	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv N
73148	395	DIN 376	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv N
73156	433	DIN 371	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv W
73173	443	DIN 374	blank	Gewindebohrer für Metrische ISO-Feingewinde	HSS-E	Intensiv N
73176	414	DIN 371	dampfbehandelt	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv HD
73177	418	DIN 376	dampfbehandelt	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv HD
73178	446	DIN 374	dampfbehandelt	Gewindebohrer für Metrische ISO-Feingewinde	HSS-E	Produktiv HD
73180	447	DIN 374	dampfbehandelt	Gewindebohrer für Metrische ISO-Feingewinde	HSS-E	Intensiv HD
73183	439	DIN 374	dampfbehandelt	Gewindebohrer für Metrische ISO-Feingewinde	HSS-E	Produktiv N
73185	378	DIN 371	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	N
73187	440	DIN 374	dampfbehandelt	Gewindebohrer für Metrische ISO-Feingewinde	HSS-E	Intensiv N
73189	432	DIN 376	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv W
73191	379	DIN 376	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	N
73194	448	DIN 374	nitriert	Gewindebohrer für Metrische ISO-Feingewinde	HSS-E	GG
73201	429	DIN 371	nitriert	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	GG
73211	430	DIN 376	nitriert	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	GG
73221	393	DIN 371	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv N
73227	396	DIN 376	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv N
73237	441	DIN 374	blank	Gewindebohrer für Metrische ISO-Feingewinde	HSS-E	N
73243	498	DIN 357	blank	Maschinen-Muttergewindebohrer für Metrische ISO-Gewinde	HSS-E	N
73248	497	Werksnorm	blank	Kombibohrer für Metrische ISO-Gewinde	HSS-E	N
73250	442	DIN 374	blank	Gewindebohrer für Metrische ISO-Feingewinde	HSS-E	Produktiv N
73286	467	DIN 5156	blank	Gewindebohrer für Whitworth-Rohrgewinde	HSS-E	Intensiv N
73288	469	DIN 5156	dampfbehandelt	Gewindebohrer für Whitworth-Rohrgewinde	HSS-E	Intensiv HD
73293	463	Werksnorm	dampfbehandelt	Gewindebohrer für NPT-Gewinde	HSS-E	VA
73295	473	Werksnorm	blank	Kurze Gewindebohrer für NPT-Gewinde	HSS-E	N
73296	472	DIN 40432	blank	Kurze Gewindebohrer für Panzerrohrgewinde	HSS-E	N
73297	453	~DIN 371	dampfbehandelt	Gewindebohrer für UNC-Gewinde	HSS-E	Produktiv HD
73298	454	~DIN 376	dampfbehandelt	Gewindebohrer für UNC-Gewinde	HSS-E	Produktiv HD
73299	461	~DIN 374	dampfbehandelt	Gewindebohrer für UNF-Gewinde	HSS-E	Produktiv HD
73300	468	DIN 5156	dampfbehandelt	Gewindebohrer für Whitworth-Rohrgewinde	HSS-E	Produktiv HD
73304	455	~DIN 371	dampfbehandelt	Gewindebohrer für UNC-Gewinde	HSS-E	Intensiv HD
73305	456	~DIN 376	dampfbehandelt	Gewindebohrer für UNC-Gewinde	HSS-E	Intensiv HD
73306	462	~DIN 374	dampfbehandelt	Gewindebohrer für UNF-Gewinde	HSS-E	Intensiv HD
73308	449	~DIN 371	dampfbehandelt	Gewindebohrer für UNC-Gewinde	HSS-E	Produktiv N
73309	450	~DIN 376	dampfbehandelt	Gewindebohrer für UNC-Gewinde	HSS-E	Produktiv N
73310	459	~DIN 374	dampfbehandelt	Gewindebohrer für UNF-Gewinde	HSS-E	Produktiv N
73321	464	DIN 5156	dampfbehandelt	Gewindebohrer für Whitworth-Rohrgewinde	HSS-E	Produktiv N
73322	451	~DIN 371	dampfbehandelt	Gewindebohrer für UNC-Gewinde	HSS-E	Intensiv N
73323	452	~DIN 376	dampfbehandelt	Gewindebohrer für UNC-Gewinde	HSS-E	Intensiv N
73324	460	~DIN 374	dampfbehandelt	Gewindebohrer für UNF-Gewinde	HSS-E	Intensiv N
73325	465	DIN 5156	dampfbehandelt	Gewindebohrer für Whitworth-Rohrgewinde	HSS-E	Intensiv N
73326	457	~DIN 371	nitriert	Gewindebohrer für UNC-Gewinde	HSS-E	GG
73327	458	~DIN 376	nitriert	Gewindebohrer für UNC-Gewinde	HSS-E	GG
73345	470	DIN 5156	nitriert	Gewindebohrer für Whitworth-Rohrgewinde	HSS-E	GG
73400	499	DIN EN 22568	blank	Schneideisen für Metrische ISO-Gewinde	HSS	
73410	500	DIN EN 22568	blank	Schneideisen für Metrische ISO-Gewinde	HSS	
73413	501	DIN EN 22568	nitriert	Schneideisen für Metrische ISO-Gewinde	HSS-E	
73521	493	DIN 2181	blank	Hand-Gewindebohrer für Metr. ISO-Feingewinde, Satz	HSS	N
73522	496	DIN 5157	blank	Hand-Gewindebohrer für Rohrgewinde, Satz	HSS	N
73531	491	DIN 352	blank	Hand-Gewindebohrer für Metr. ISO-Gewinde, Satz, rechtsschneidend	HSS	N
73532	492	DIN 352	blank	Hand-Gewindebohrer für Metr. ISO-Gewinde, Satz, linksschneidend	HSS	N
73534	495	~DIN 352	blank	Hand-Gewindebohrer für BSW-Gewinde, Satz	HSS	N
73535	494	~DIN 352	blank	Hand-Gewindebohrer für UNC-Gewinde, Satz	HSS	N
73619	406	DIN 371	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	H R15
73640	400	DIN 371	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Produktiv H
73641	415	DIN 371	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Produktiv HD
73642	401	DIN 371	nitriert	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv H
73643	419	DIN 376	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Produktiv HD
73645	403	DIN 376	nitriert	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Produktiv H
73646	445	DIN 374	nitriert	Gewindebohrer für Metrische ISO-Feingewinde	HSS-E	Produktiv H
73659	426	DIN 376	dampfbehandelt	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv HD
73660	422	DIN 371	dampfbehandelt	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv HD
73661	407	DIN 371	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv H
73662	423	DIN 371	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Intensiv HD
73664	409	DIN 376	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E	Intensiv H
73665	427	DIN 376	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	Intensiv HD
73666	410	DIN 376	blank	Gewindebohrer für Metrische ISO-Gewinde	HSS-E-PM	H R15
73810	485	Werksnorm	blank	Gewindefräser mit Senkfase für Metr. ISO-Gewinde	VHM	TMC SP
73820	488	Werksnorm	blank	Gewindefräser mit Senkfase für Metr. ISO-Feingewinde	VHM	TMC SP
73830	489	Werksnorm	blank	Gewindefräser ohne Senkfase für Metr. ISO-Gewinde	VHM	TM SP

Katalog-Nr. Verzeichnis

Katalog-Nr.	Seite	Norm	Oberfläche	Bezeichnung	Schneidstoff	Typ
74202	585	DIN 6527L	blank	Bohrnutenfräser Alu	VHM	W
74203	623	DIN 6527L	blank	Schruppfräser	VHM	WR
74204	584	DIN 6527K	blank	Bohrnutenfräser Alu	VHM	W
74206	586	Werksnorm	blank	Bohrnutenfräser Alu	VHM	W
74231	652	DIN 327	blank	Langlochfräser (2-Schneider)	M42	N
74243	654	DIN 844K	blank	Langlochfräser (2-Schneider)	M42	N
74244	656	DIN 844L	blank	Langlochfräser (2-Schneider)	M42	N
74280	658	DIN 327	blank	Bohrnutenfräser (3-Schneider)	M42	N
74282	660	DIN 844K	blank	Bohrnutenfräser (3-Schneider)	M42	N
74294	663	DIN 844L	blank	Bohrnutenfräser (3-Schneider)	M42	N
74303	624	DIN 6527L	blank	Schruppfräser	VHM	WR
74404	593	Werksnorm	blank	Langlochfräser (2-Schneider)	VHM	N
74424	602	Werksnorm	blank	Bohrnutenfräser (3-Schneider)	VHM	N
74478	605	DIN 6527L	blank	Bohrnutenfräser NH (3-Schneider)	VHM	NH
74479	587	Werksnorm	blank	Bohrnutenfräser Alu	VHM	W
74520	588	DIN 6527K	blank	Langlochfräser (2-Schneider)	VHM	N
74521	591	DIN 6527L	blank	Langlochfräser (2-Schneider)	VHM	N
74522	597	DIN 6527K	blank	Bohrnutenfräser (3-Schneider)	VHM	N
74523	600	DIN 6527L	blank	Bohrnutenfräser (3-Schneider)	VHM	N
74525	609	DIN 6527L	blank	Schaftfräser (4-Schneider)	VHM	N
74531	632	DIN 6528	blank	Radiusfräser	VHM	N
74543	627	DIN 6527L	blank	Radiusfräser	VHM	N
74545	630	Werksnorm	blank	Radiusfräser	VHM	N
74552	548	Werksnorm	blank	SuperF-UT-Fräser Al-3	VHM	SuperF-UT Al-3
74553	549	Werksnorm	blank	SuperF-UT-Fräser Al-3	VHM	SuperF-UT Al-3
74554	544	DIN 6527L	blank	SuperF-UT-Fräser Al	VHM	SuperF-UT Al
74555	545	DIN 6527L	blank	SuperF-UT-Fräser Al	VHM	SuperF-UT Al
74617	666	DIN 844K	blank	Schaftfräser (mehrschneidig)	M42	N
74800	670	Werksnorm	blank	Schaftfräser (4-Schneider)	M42	N
74816	674	DIN 844K	blank	Schruppfräser (4-Schneider)	M42	NR
74825	672	DIN 844K	blank	Schruppfräser (3-Schneider)	HSS-E-PM	NRf
74836	678	DIN 844L	blank	Schruppfräser (4-Schneider)	M42	NR
74845	676	DIN 844K	blank	Schruppfräser (4-Schneider)	HSS-E-PM	NRf
74847	668	DIN 844L	blank	Schaftfräser (mehrschneidig)	M42	N
75017	147	Werksnorm	TiN	Einlippenbohrer SuperT-N	HM	SuperT-N
75018	146	Werksnorm	TiN	Einlippenbohrer SuperT-N	HM	SuperT-N
75020	156	Werksnorm	blank	Einlippenbohrer TBE-VHM	VHM	TBE-VHM
75021	160	Werksnorm	blank	Einlippenbohrer TBE-VHM	VHM	TBE-VHM
75022	148	Werksnorm	TiN	Einlippenbohrer SuperT-N	HM	SuperT-N
75023	149	Werksnorm	TiN	Einlippenbohrer SuperT-N	HM	SuperT-N
75024	154	Werksnorm	blank	Einlippenbohrer TBE-VHM	VHM	TBE-VHM
75026	158	Werksnorm	blank	Einlippenbohrer TBE-VHM	VHM	TBE-VHM
76000	125	Werksnorm	vernickelt	SuperV-AP maxi Wechselplattenhalter		SuperV-AP maxi
76001	126	Werksnorm	vernickelt	SuperV-AP maxi Wechselplattenhalter		SuperV-AP maxi
76003	127	Werksnorm	vernickelt	SuperV-AP maxi Wechselplattenhalter		SuperV-AP maxi
76011	128	Werksnorm	TiN	SuperV-AP maxi Wechselplatte	VHM	SuperV-AP maxi
76020	130	Werksnorm		Spannschrauben		
76021	131	Werksnorm		Torx-Schraubendreher		
77000	110	Werksnorm	vernickelt	SuperV-AP mini Wechselplattenhalter		SuperV-AP mini
77001	111	Werksnorm	vernickelt	SuperV-AP mini Wechselplattenhalter		SuperV-AP mini
77003	112	Werksnorm	vernickelt	SuperV-AP mini Wechselplattenhalter		SuperV-AP mini
77004	113	Werksnorm	vernickelt	SuperV-AP mini Wechselplattenhalter		SuperV-AP mini
77007	109	Werksnorm	vernickelt	SuperV-AP mini Wechselplattenhalter		SuperV-AP mini
77011	123	Werksnorm	AlTiN nano	SuperV-AP mini Wechselplatte	VHM	SuperV-AP mini NC
77012	120	Werksnorm	blank	SuperV-AP mini Wechselplatte	VHM	SuperV-AP mini AL
77020	130	Werksnorm		Spannschrauben		
77021	131	Werksnorm		Torx-Bit Einsätze		
77022	131	Werksnorm		Drehmomentschlüssel		
78206	770			Einsätze für Schnellwechsel-Gewindeschneidfutter		
78213	749	Werksnorm	blank	Hydraulik-Dehnspannfutter SK mit erhöhter Spannkraft		
78221	750	Werksnorm	blank	Hydraulik-Dehnspannfutter MAS/BT mit erhöhter Spannkraft		
78232	758	DIN 69882-4	blank	Zylinderschaftaufnahmen Weldon HSK-A		
78233	762	Werksnorm	brüniert	Zylinderschaftaufnahmen WhistleNotch MAS/BT		
78234	763	Werksnorm	brüniert	Zylinderschaftaufnahmen Weldon MAS/BT		
78240	766	Werksnorm		NC-Bohrfutter MAS/BT mit Innenkühlung		
78242	765	Werksnorm		NC-Bohrfutter SK mit Innenkühlung		
78299	748	DIN 69882-7	blank	Hydraulik-Dehnspannfutter HSK-A mit erhöhter Spannkraft		
78308	768	Werksnorm		Gewindebohr-Spannzangen		
78317	760	Werksnorm	brüniert	Zylinderschaftaufnahmen Weldon SK		
78322	761	Werksnorm	brüniert	Zylinderschaftaufnahmen Whistle Notch SK		
78326	767	Werksnorm		Synchrofutter Zylinderschaft mit Innenkühlung		
78334	759	DIN 69882-5	blank	Zylinderschaftaufnahmen Whistle Notch HSK-A		

Katalog-Nr. Verzeichnis

Katalog-Nr.	Seite	Norm	Oberfläche	Bezeichnung	Schneidstoff	Typ
78335	772	Werksnorm		Dichtscheiben		
78340	769	Werksnorm		Schnellwechsel-Gewindeschneidfutter ohne Innenkühlung		
78346	764	Werksnorm		NC-Bohrfutter HSK-A mit Innenkühlung		
78364	771	Werksnorm		Einstellschrauben „plan“ für Synchrofutter mit Innenkühlung		
78368	751	Werksnorm		Reduzierbuchsen abgedichtet für Hydraulik-Dehnspannfutter		
78369	752	Werksnorm		Reduzierbuchsen für Hydraulik-Dehnspannfutter		
78729	756	Werksnorm	blank	Schrumpffutter SK		
78736	753	DIN 69882-8	blank	Schrumpffutter HSK-A		
78738	755	Werksnorm	blank	Schrumpffutter SK		
78739	757	Werksnorm	blank	Schrumpffutter MAS/BT		
78755	754	Werksnorm	blank	Schrumpffutter HSK-A mit Peripheriekühlung		
78877	256	Werksnorm		Spiralbohrer-Sätze		
78878	256	Werksnorm		Spiralbohrer-Sätze		
78879	254	DIN 338	dampfbehandelt	Spiralbohrer-Sätze	HSS	N
78880	255	DIN 338	TiN Kopf	Spiralbohrer-Sätze	HSS	N
79012	254	DIN 338	blank	Spiralbohrer-Sätze	HSS-Co	NX

HARTMETALL

BOHRWERKZEUGE

ISO-CODES

P	Stahl, hochlegierter Stahl
M	Rostfreier Stahl
K	Grauguss, Sphäroguss und Temperguss
N	Aluminium und andere Nichteisenmetalle
S	Sonder-, Super- und Titanlegierungen
H	Gehärteter Stahl und Hartguss

Auf den Produktseiten finden Sie zu jedem Werkzeug Empfehlungen zur Eignung für die Anwendungsgruppen bzw. die Angaben von max. Zugfestigkeit und Härte:

● optimal geeignet
○ bedingt geeignet
nicht geeignet

PIKTOGRAMME

SCHNEIDSTOFF	VHM				HM							
	Vollhartmetall				Hartmetall							
BESCHICHTUNG	blank	verni-ckelt	TiN	TiAlN nano	AlTiN nano	Al-TiN	TiAlN	TiCN	Al-TiN+			
Ø-TOLERANZ	h5	h6	h7	h8	m7							
BOHRTIEFE	1,5xD	3xD	4xD	5xD	7xD	8xD	10xD	12xD	15xD			
	20xD	25xD	30xD	40xD	50xD	75xD	80xD	~3xD	~5xD			
SCHNEIDRICHTUNG	R											
	rechts											
SCHAFTFORM	Cyl	HA	HE	MK								
SPITZENWINKEL	90°	118°	120°	130°	135°	140°	142°	145°				
NORM	DIN 6539	DIN 6537 K	DIN 6537 L	DIN 8037	DIN 8041	WN						
						Werksnorm						
TYP	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

SuperV-Bohrer ohne Innenkühlung

P	M	K	N	S	H	Typ	Schaft-form	Bohrtiefe	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
○	●	○	○	●	●	SuperV-F	zyl.	3xD	VHM	TiN	DIN 6539	3,000 - 12,000	**61888**	63
●		●	○	○	○	SuperV-U	HA	3xD	VHM	TiAlN-nano	DIN 6537K	3,000 - 20,000	**51873**	64
●		●	○	○	○	SuperV-U	HE	3xD	VHM	TiAlN-nano	DIN 6537K	3,000 - 20,000	**51871**	66
●		●	○	○	○	SuperV-U	HA	5xD	VHM	TiAlN-nano	DIN 6537L	3,000 - 20,000	**51787**	68
●		●	○	○	○	SuperV-U	HE	5xD	VHM	TiAlN-nano	DIN 6537L	3,000 - 20,000	**51887**	70

SuperV-Bohrer mit Innenkühlung

P	M	K	N	S	H	Typ	Schaft-form	Bohrtiefe	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
●	○	●	○	○	○	SuperV-IK-U	HA	3xD	VHM	TiAlN-nano	DIN 6537K	3,000 - 20,000	**51776**	72
●	○	●	○	○	○	SuperV-IK-U	HE	3xD	VHM	TiAlN-nano	DIN 6537K	3,000 - 20,000	**51876**	74
	●			○		SuperV-VA	HA	3xD	VHM	AlTiN nano	DIN 6537K	3,000 - 20,000	**51770**	76
	●			○		SuperV-VA	HE	3xD	VHM	AlTiN nano	DIN 6537K	3,000 - 20,000	**51771**	78
		●	○			Su-perV95-GG	HA	4xD	VHM	blank	Werksnorm	3,000 - 21,500	**71995**	80
○	●	○	○	●	●	SuperV-IK-F	HE	5xD	VHM	TiN	DIN 6537L	4,000 - 25,000	**61880**	82
●	○	●	○	○	○	SuperV-IK-U	HA	5xD	VHM	TiAlN-nano	DIN 6537L	3,000 - 20,000	**51781**	83
●	○	●	○	○	○	SuperV-IK-U	HE	5xD	VHM	TiAlN-nano	DIN 6537L	3,000 - 20,000	**51881**	85
	●			○		SuperV-VA	HA	5xD	VHM	AlTiN nano	DIN 6537L	3,000 - 20,000	**51772**	87
	●			○		SuperV-VA	HE	5xD	VHM	AlTiN nano	DIN 6537L	3,000 - 20,000	**51773**	89

SuperV-Bohrer mit Innenkühlung

P	M	K	N	S	H	Typ	Schaft-form	Bohrtiefe	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
●	○	●	○	○	○	SuperV-IK-U	HA	7xD	VHM	TiAlN-nano	Werksnorm	3,000 - 20,000	**51789**	91
●	○	●	○	○	○	SuperV-IK-U	HE	7xD	VHM	TiAlN-nano	Werksnorm	3,000 - 20,000	**51889**	92
		●	○			SuperV95-GG	HA	7xD	VHM	blank	Werksnorm	3,000 - 20,000	**71994**	93
		●	○			SuperV95-GG	HA	10xD	VHM	blank	Werksnorm	3,000 - 20,000	**71996**	94
●	○	●	○	○		SuperV-IK-U	HA	12xD	VHM	TiAlN-nano	Werksnorm	3,000 - 20,000	**51893**	95
		●	○			SuperV95-GN	HA	15xD	VHM	blank	Werksnorm	5,000 - 14,000	**71997**	96
●	●	●	○	○		SuperV-T	HA	15xD	VHM	AlTiN	Werksnorm	3,000 - 14,000	**51764**	97
●	●	●	○	○		SuperV-T	HA	20xD	VHM	AlTiN	Werksnorm	3,000 - 14,000	**51765**	98
●	●	●	○	○		SuperV-T	HA	25xD	VHM	AlTiN	Werksnorm	3,000 - 12,000	**51766**	99
●	●	●	○	○		SuperV-T	HA	30xD	VHM	AlTiN	Werksnorm	3,000 - 10,000	**51767**	100
●	●	●	○	○		SuperV-T	HA	40xD	VHM	AlTiN	Werksnorm	3,000 - 8,000	**51768**	101

SuperV-Bohrer, 3-schneidig

		●	●			SuperV83-GAL	HA	5xD	VHM	blank	DIN 6537L	3,000 - 20,000	**71862**	102

SuperV-NX VHM-Hochleistungs-Kleinstbohrer ohne Innenkühlung

●	○	●	○	○		SuperV-NX	zyl.	4xD	VHM	AlTiN+	Werksnorm	0,500 - 3,000	**71998**	103
●	○	●	○	○		SuperV-NX	HA	7xD	VHM	AlTiN+	Werksnorm	0,500 - 3,000	**71999**	104

SuperV-NX VHM-Hochleistungs-Kleinstbohrer mit Innenkühlung

P	M	K	N	S	H	Typ	Schaft-form	Bohrtiefe	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
●	●	●	○	○		SuperV-IK-NX	HA	5xD	VHM	AlTiN	Werksnorm	1,400 - 3,000	**51997**	105
●	●	●	○	○		SuperV-IK-NX	HA	8xD	VHM	AlTiN	Werksnorm	1,400 - 3,000	**51998**	106
●	●	●	○	○		SuperV-IK-NX	HA	15xD	VHM	AlTiN	Werksnorm	1,400 - 3,000	**51999**	107

SuperV-M VHM-Universal-Kleinstbohrer

●		●				SuperV-M	HA		VHM	AlTiN	Werksnorm	0,100 - 3,000	**51720**	108

SuperV-AP mini Wechselplattenhalter

						SuperV-AP mini	HE	1,5xD		vernickelt	Werksnorm		**77007**	109
						SuperV-AP mini	HE	3xD		vernickelt	Werksnorm		**77000**	110
						SuperV-AP mini	HE	5xD		vernickelt	Werksnorm		**77001**	111
						SuperV-AP mini	HE	7xD		vernickelt	Werksnorm		**77003**	112
						SuperV-AP mini	HE	10xD		vernickelt	Werksnorm		**77004**	113

SuperV-AP mini Wechselplatte

●		○				SuperV-AP mini U			VHM	TiAlN-nano	Werksnorm	11,000 - 40,000	**67011**	114
	●	○		○		SuperV-AP mini VA			VHM	AlTiN nano	Werksnorm	11,000 - 40,000	**67012**	117
			●			SuperV-AP mini AL			VHM	blank	Werksnorm	11,000 - 40,000	**77012**	120

P	M	K	N	S	H	Typ	Schaft-form	Bohrtiefe	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
SuperV-AP mini Wechselplatte														
●	●	●	●	○		SuperV-AP mini NC			VHM	AlTiN nano	Werksnorm	11,000 - 40,000	**77011**	123
SuperV-AP maxi Wechselplattenhalter														
						SuperV-AP maxi	HE	3xD		vernickelt	Werksnorm		**76000**	125
						SuperV-AP maxi	HE	5xD		vernickelt	Werksnorm		**76001**	126
						SuperV-AP maxi	HE	7xD		vernickelt	Werksnorm		**76003**	127
SuperV-AP maxi Wechselplatte														
●		●	○			SuperV-AP maxi			VHM	TiN	Werksnorm	16,000 - 40,500	**76011**	128
●		●	○			SuperV-AP maxi			VHM	TiAlN	Werksnorm	16,000 - 40,500	**56011**	129
Spannschrauben														
											Werksnorm		**76020**	130
											Werksnorm		**77020**	130
											Werksnorm		**77022**	131
											Werksnorm		**77021**	131
											Werksnorm		**76021**	131

P	M	K	N	S	H	Typ	Schaft-form	Bohrtiefe	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
Spiralbohrer extra kurz														
●	●	●	●			N	zyl.	~3xD	**VHM**	blank	DIN 6539	1,000 - 15,000	**71184**	132
●	●	●	●			N	zyl.	~3xD	**VHM**	TiAlN-nano	DIN 6539	1,000 - 12,000	**51184**	134
Spiralbohrer kurz														
●	●	●	●			N	zyl.	~5xD	**VHM**	blank	Werksnorm	1,000 - 12,000	**71290**	135
NC-Anbohrer														
●	●	●	●	●		N	HA		**VHM**	blank	Werksnorm	5,000 - 20,000	**71190**	137
●	●	●	●	●		N	HA		**VHM**	blank	Werksnorm	5,000 - 20,000	**71191**	138
●	●	●	●	●		N	HB		**VHM**	blank	Werksnorm	4,000 - 20,000	**71189**	139
Spiralbohrer mit HM-Schneiden														
○		○	○			N	zyl.		**HM**	blank	DIN 8037	3,000 - 20,000	**71180**	140
○		●	○	○	○	N	MK		**HM**	blank	DIN 8041	11,000 - 33,000	**71380**	141
Zentrierbohrer ohne Fläche														
●	○	●	●	○		N			**VHM**	blank	Werksnorm	1,000 - 6,300	**71616**	142

Einlippenbohrer SuperT-AL

P	M	K	N	S	H	Typ	Schaft-form	Bohrtiefe	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
●	●	●	●	●		SuperT-AL	HA	25xD	VHM	AlTiN nano	Werksnorm	2,380 - 12,000	**55027**	143
●	●	●	●	●		SuperT-AL	HA	50xD	VHM	AlTiN nano	Werksnorm	2,380 - 8,000	**55028**	144
●	●	●	●	●		SuperT-AL	HA	75xD	VHM	AlTiN nano	Werksnorm	2,380 - 6,000	**55029**	145

Einlippenbohrer SuperT-N

●	●	●	●			SuperT-N	HA	20xD	HM	TiN	Werksnorm	4,000 - 12,000	**75018**	146
●	●	●	●			SuperT-N	HA	30xD	HM	TiN	Werksnorm	4,000 - 12,000	**75017**	147
●	●	●	●			SuperT-N	HA	40xD	HM	TiN	Werksnorm	4,000 - 12,000	**75022**	148
●	●	●	●			SuperT-N	HA	80xD	HM	TiN	Werksnorm	4,950 - 11,950	**75023**	149

Einlippenbohrer SuperT-NX

●	●	●	○	○		SuperT-NX	HA	20xD	HM	TiCN	Werksnorm	3,970 - 12,700	**55018**	150
●	●	●	○	○		SuperT-NX	HA	30xD	HM	TiCN	Werksnorm	3,970 - 12,700	**55017**	151
●	●	●	○	○		SuperT-NX	HA	40xD	HM	TiCN	Werksnorm	3,970 - 12,700	**55022**	152
●	●	●	○	○		SuperT-NX	HA	80xD	HM	TiCN	Werksnorm	4,950 - 12,650	**55023**	153

Einlippenbohrer TBE-VHM

●	●	●	●	○		TBE-VHM	HA	45.000	VHM	blank	Werksnorm	1,200 - 3,200	**75024**	154
●	●	●	●	○		TBE-VHM	HA	45.000	VHM	AlTiN+	Werksnorm	2,000 - 3,200	**55024**	155

Einlippenbohrer TBE-VHM

P	M	K	N	S	H	Typ	Schaft-form	Bohrtiefe	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
●	●	○	○	○		TBE-VHM	HA	80.000	**VHM**	blank	Werksnorm	1,200 - 5,000	**75020**	156
●	●	●	○	○		TBE-VHM	HA	80.000	**VHM**	AlTiN+	Werksnorm	2,000 - 5,000	**55020**	157
●	●	○	●	○		TBE-VHM	HA	120.000	**VHM**	blank	Werksnorm	1,500 - 5,000	**75026**	158
●	●	●	○	○		TBE-VHM	HA	120.000	**VHM**	AlTiN+	Werksnorm	2,000 - 5,000	**55026**	159
●	●	○	●	○		TBE-VHM	HA	160.000	**VHM**	blank	Werksnorm	1,500 - 8,000	**75021**	160
●	●	●	○	○		TBE-VHM	HA	160.000	**VHM**	AlTiN+	Werksnorm	2,000 - 8,000	**55021**	161

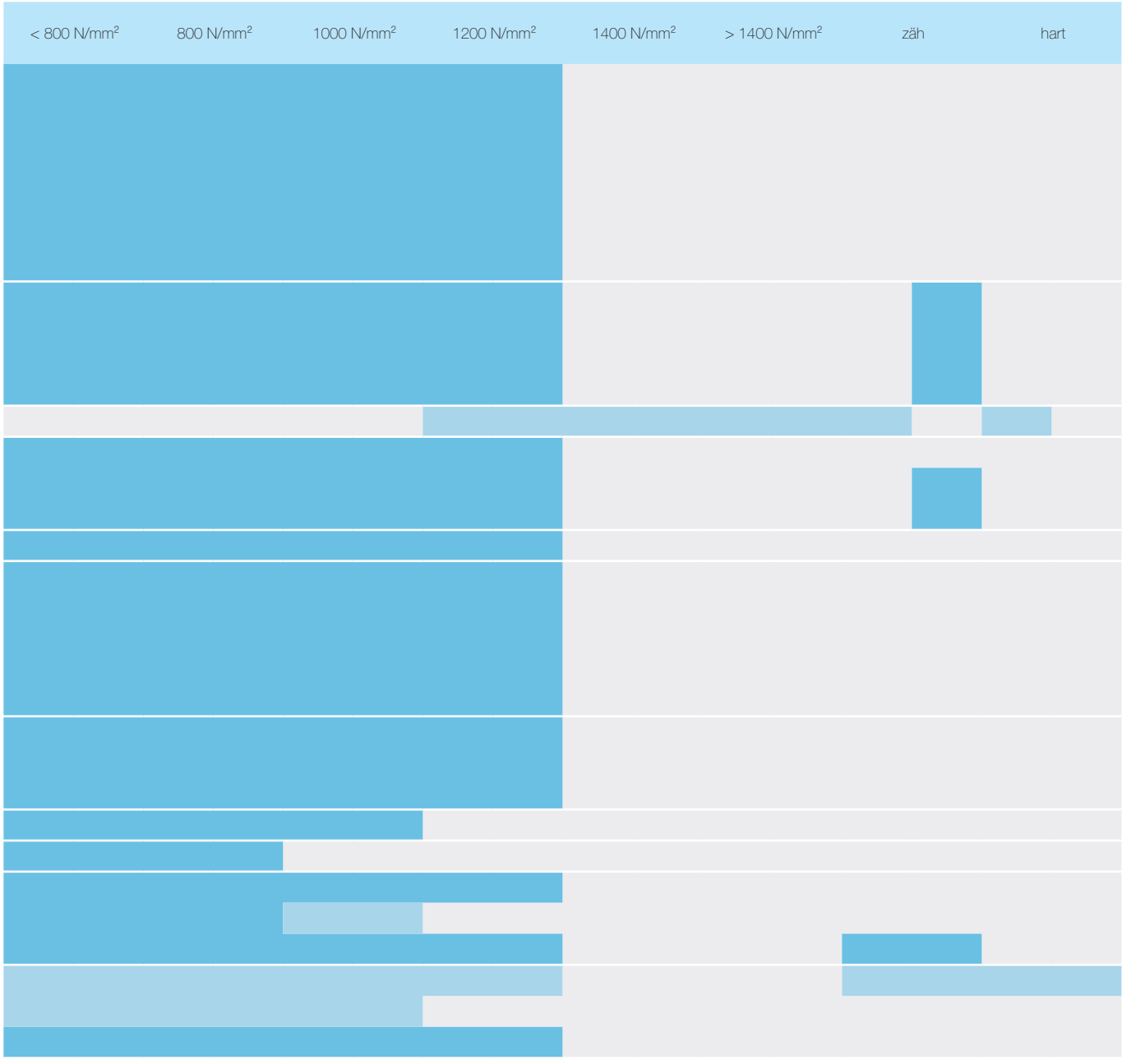
Anwendung

Zuordnung nach Werkstoffen

Typ	Katalog-Nr. ohne IK	Katalog-Nr. mit IK	Nichteisenmetalle, Aluminium	Stähle	GG, GGG	rost- und säurebest. Stähle	Nickel, Ti-Legierungen	Gehärtete Stähle
SuperV-U	51873	51776	optimal	optimal	optimal			
	51871	51876	optimal	optimal	optimal			
	51787	51781	optimal	optimal	optimal			
	51887	51881	optimal	optimal	optimal			
		51789	optimal	optimal	optimal			
		51889	optimal	optimal	optimal			
		51893	optimal	optimal	optimal			
SuperV-VA		51770	optimal	optimal		optimal	gut geeignet	
		51771	optimal	optimal		optimal	gut geeignet	
		51772	optimal	optimal		optimal	gut geeignet	
		51773	optimal	optimal		optimal	gut geeignet	
SuperV-F	61888	61880	gut geeignet	gut geeignet	gut geeignet	gut geeignet	gut geeignet	optimal
SuperV-NX		51997	optimal	optimal	optimal	optimal	optimal	
	71998	51998	optimal	optimal	optimal	optimal	optimal	
	71999	51999	optimal	optimal	optimal	optimal	optimal	
SuperV-M	51720			optimal	optimal			
SuperV-T		51764		optimal	optimal	optimal		
		51765		optimal	optimal	optimal		
		51766		optimal	optimal	optimal		
		51767		optimal	optimal	optimal		
		51768		optimal	optimal	optimal		
SuperV95-GG		71995	optimal		optimal			
		71994	optimal		optimal			
		71996	optimal		optimal			
SuperV95-GN		71997	optimal		optimal			
SuperV83-GAL	71862		optimal	optimal				
SuperV-AP mini		67011		optimal	gut geeignet			
		77012	optimal					
		67012	gut geeignet	gut geeignet		optimal	optimal	
SuperV-AP maxi		77011	NC-Wechselplatte zum Zentrieren und Pilotieren					
		76011		gut geeignet	gut geeignet			
		56011		optimal	optimal			

optimal gut geeignet

Zuordnung nach Zugfestigkeit



Arbeitsrichtwerte für SuperV-Bohrer

Vorschubreihen

Werkzeug-Ø mm \ Code-Buchstabe	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

Vorschübe f (mm/U)

Werkzeuge mit fett gedruckten Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

K, P, K/P
Die universelle Einsetzbarkeit unserer neuen K-Hartmetalle hat u.a. auch zur Folge, dass wir die HM-Anwendungsgruppen nur noch mit K bzw. K/P definieren.

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

≤3×D Bohrtiefe

≤4×D

Katalog-Nr.	61888	51873	51871	51770	51771	51776	51876	71995
Schneidstoff	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM
HM-Anwendgsgr.	K/P	K/P	K/P	K/P	K/P	K/P	K/P	K
Oberfläche	TiN	TiAlN nano	TiAlN nano	AlTiN nano	AlTiN nano	TiAlN nano	TiAlN nano	blank
DIN/Form	6539	6537K	6537K	6537K	6537K	6537K	6537K	WN
Typ	F	U	U	VA	VA	U	U	GG
Innenkühlung				axial	axial	axial	axial	axial
Katalogseite	63	64	66	76	78	72	74	80

v_c m/min	VR-Code	v_c m/min	Vorschubreihen-Code		v_c m/min	Vorschubreihen-Code		v_c m/min	Vorschubreihen-Code		v_c m/min	VR-Code
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		

Arbeitsrichtwerte für SuperV-Bohrer

Vorschubreihen

Werkzeug-Ø mm \ Code-Buchstabe	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

Vorschübe f (mm/U)

Werkzeuge mit fett gedruckten Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

K, P, K/P
Die universelle Einsetzbarkeit unserer neuen K-Hartmetalle hat u.a. auch zur Folge, dass wir die HM-Anwendungsgruppen nur noch mit K bzw. K/P definieren.

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

≤5×D Bohrtiefe

Katalog-Nr.	51887	51787	51781	51881	71862	51772	51773	61880
Schneidstoff	VHM	VHM	VHM	VHM	VHM	VHM	VHM	VHM
HM-Anwendgsgr.	K/P	K/P	K/P	K/P	K	K/P	K/P	K/P
Oberfläche	TiAlN nano	TiAlN nano	TiAlN nano	TiAlN nano	blank	AlTiN nano	AlTiN nano	TiN
DIN/Form	6537L	6537L	6537L	6537L	6537L	6537L	6537L	6537L
Typ	U	U	U	U	GAL	VA	VA	F
Innenkühlung			axial	axial		axial	axial	axial
Katalogseite	70	68	83	85	102	87	89	82

v_c m/min	Vorschubreihen-Code		v_c m/min	Vorschubreihen-Code		v_c m/min	VR-Code	v_c m/min	Vorschubreihen-Code		v_c m/min	VR-Code
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

Arbeitsrichtwerte für SuperV-Bohrer

Vorschubreihen

Werkzeug-Ø mm \ Code-Buchstabe	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

Vorschübe f (mm/U)

Werkzeuge mit fett gedruckten Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

K, P, K/P
Die universelle Einsetzbarkeit unserer neuen K-Hartmetalle hat u.a. auch zur Folge, dass wir die HM-Anwendungsgruppen nur noch mit K bzw. K/P definieren.

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

≤7×D Bohrtiefe

Katalog-Nr.	51789	51889	71994	71996	51893	71997
Schneidstoff	VHM	VHM	VHM	VHM	VHM	VHM
HM-Anwendgsgr.	K/P	K/P	K	K	K/P	K
Oberfläche	TiAlN nano		blank	blank	TiAlN nano	blank
DIN/Form	WN	WN	WN	WN	WN	WN
Typ	U	U	GG	GG	U	GN
Innenkühlung	axial	axial	axial	axial	axial	axial
Katalogseite	91	92	93	94	95	96

v_c m/min	Vorschubreihen-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
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		

Arbeitsrichtwerte für SuperV-Bohrer

Vorschubreihen

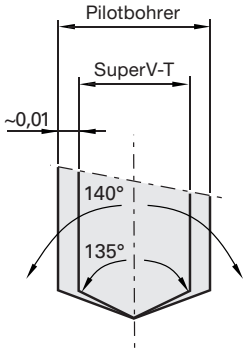
Code-Buchstabe	A	B	C	D	E	F	G	H	I
Werkzeug-Ø mm / Vorschübe f (mm/U)									
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	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

Werkzeuge mit fett gedruckten Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

K, P, K/P
Die universelle Einsetzbarkeit unserer neuen K-Hartmetalle hat u.a. auch zur Folge, dass wir die HM-Anwendungsgruppen nur noch mit K bzw. K/P definieren.

Sicherheitshinweise: Enorm wichtig ist, dass aus Sicherheitsgründen kein Bohrer ohne Abstützung mit einer höheren Drehzahl als n = 6.000 U/min frei drehen darf. Die Zentrifugalkräfte könnten sonst die langen Werkzeuge schon vor dem Erreichen der Werkstückoberfläche brechen!

Einsatzhinweise SuperV-T-Bohrer:
Um bei tiefen Bohrungen optimale Bearbeitungsergebnisse zu erzielen, empfehlen wir:
1. Herstellen einer zylindrischen Pilotbohrung (Toleranz F9), Bohrtiefe 1 x D mit unseren SuperV-Bohrern Typ U bzw. VA (140° Spitzenwinkel, Ø-Toleranz m7). Alternativ kann auch der Pilotbohrfräser Artikel-Nr. 54700 eingesetzt werden.
2. Einfahren in Pilotbohrung: Drehzahl ca. 300 U/min, Vorschub ca. 500 mm/min.
3. Einstellen des Kühlschmierstoffdruckes und der Drehzahl.
4. Kontinuierliches Bohren auf volle Bohrtiefe ohne Entspanzyklus.
5. Bei Durchgangsbohrungen mit geradem (90°) Austritt, v_f ca. 1 mm vor dem Durchbrechen auf 50% reduzieren.
6. Bei Durchgangsbohrungen mit schrägem Austritt, v_f ca. 1 mm vor dem Durchbrechen auf 40% reduzieren.
7. Nach Erreichen der Bohrtiefe Drehzahl und Kühlschmierstoff abschalten, Ausfahren mit max. 5000 mm/min.



Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

	≤15×D	≤20×D	≤25×D	≤30×D	≤40×D
Katalog-Nr.	51764	51765	51766	51767	51768
Schneidstoff	VHM	VHM	VHM	VHM	VHM
HM-Anwendgsgr.	K/P	K/P	K/P	K/P	K/P
Oberfläche	AlTiN	AlTiN	AlTiN	AlTiN	AlTiN
DIN/Form	WN	WN	WN	WN	WN
Typ	T	T	T	T	T
Innenkühlung	axial	axial	axial	axial	axial
Katalogseite	97	98	99	100	101

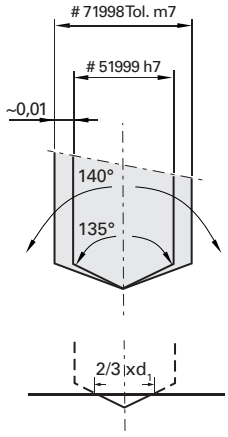
v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code
110	H	110	H	100	H	80	G	80	G
110	H	110	H	100	H	80	G	80	G
120	H	120	H	120	H	100	H	100	H
120	H	120	H	100	H	100	H	100	H
110	F	110	F	110	F	110	F	110	F
110	H	110	H	100	H	80	G	80	G
100	G	100	G	100	G	80	G	80	G
110	G	110	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

SuperV-NX VHM-Hochleistungs-Kleinstbohrer

Arbeitsrichtwerte

Vorschubreihen

Vorschub-Code	A	B	C	D	E	F	G	H	I	J	K	L	M
Werkzeug-Ø mm / Vorschübe f (mm/U)													
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



Werkzeuge mit **fett gedruckten** Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

Sicherheitshinweise: Enorm wichtig ist, dass aus Sicherheitsgründen kein Bohrer ohne Abstützung mit einer höheren Drehzahl als n = 6.000 U/min frei drehen darf. Die Zentrifugalkräfte könnten sonst die langen Werkzeuge schon vor dem Erreichen der Werkstückoberfläche brechen!

Allgemeine Hinweise: Spielarme Spindeln, fluchtungsgenaue Werkzeugaufnahmen. Wir empfehlen die Anwendung von Hydraulik-Dehnspannfuttern oder Schrumpffuttern sowie Kühlschmierung durch Emulsion oder Öl, Druck min. 40 bar.

Pilotbohrung
Beim Einsatz des SuperV-NX-Bohrers 15xD empfehlen wir die Herstellung einer Pilotbohrung mit 1xD bis 2xD Tiefe.
Der SuperV-NX-Bohrer 4xD ist optimal für diese Pilotbohrung geeignet. Sein Spitzenwinkel und seine Durchmessertoleranz sind darauf abgestimmt.

Zentrieren
Um bei den SuperV-NX-Bohrern ab 8xD Bohrtiefe die volle Leistung zu erreichen, empfehlen wir das Zentrieren. Hierzu kann der SuperV-NX-Bohrer bis 4xD, Katalog-Nr. 71998, verwendet werden. Der Zentrierdurchmesser sollte ca. 2/3xD haben. Alternativ kann die Zentrierung auch mit dem Stock NC-Anbohrer 142°, Katalog-Nr. 71189, erstellt werden.

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**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
Katalog-Nr.	**51720**	**71998**	**71999**	**51997**	**51998**	**51999**
Schneidstoff	**VHM**	**VHM**	**VHM**	**VHM**	**VHM**	**VHM**
Oberfläche	AlTiN	AlTiN+	AlTiN+	AlTiN	AlTiN	AlTiN
DIN	**Werksnorm**	**Werksnorm**	**Werksnorm**	**Werksnorm**	**Werksnorm**	**Werksnorm**
Typ	M	NX	NX	NX	NX	NX
Innenkühlung	-	-	-	**axial**	**axial**	**axial**
Katalogseite	108	103	104	105	106	107

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	**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**

SuperV-AP mini - Das Wechselplatten-Bohrsystem

Arbeitsrichtwerte

Vorschubreihen

Werkzeug-Ø mm (Code-Buchstabe)	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

Vorschübe f (mm/U)

Werkzeuge mit **fett gedruckten** Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

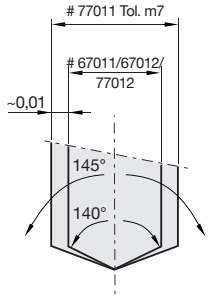
K, P, K/P Die universelle Einsetzbarkeit unserer neuen K-Hartmetalle hat u.a. auch zur Folge, dass wir die HM-Anwendungsgruppen nur noch mit K bzw. K/P definieren.

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Bitte beachten Sie die Anwendungsrichtlinien auf Seite 55!

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **1.2050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

Wechselplatten-Träger ≤ 1,5×D, Pilotierwerkzeug
Katalog-Nr. 77007



Katalog-Nr.	67011	67012	77012	77011
Schneidstoff	VHM	VHM	VHM	VHM
HM-Anwendungsgr.	K/P	K/P	K/P	K/P
Oberfläche	TiAlN nano	AlTiN nano	blank	AlTiN nano
Typ	U	VA	AL	NC
Innenkühlung	axial	axial	axial	axial
Katalogseite	114	117	120	123

v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code
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

SuperV-AP mini - Das Wechselplatten-Bohrsystem

Arbeitsrichtwerte

Vorschubreihen

Werkzeug-Ø mm (Code-Buchstabe)	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

Vorschübe f (mm/U)

Werkzeuge mit **fett gedruckten** Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

K, P, K/P Die universelle Einsetzbarkeit unserer neuen K-Hartmetalle hat u.a. auch zur Folge, dass wir die HM-Anwendungsgruppen nur noch mit K bzw. K/P definieren.

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Bitte beachten Sie die Anwendungsrichtlinien auf Seite 55!

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

Wechselplatten-Träger ≤ 3×D
Katalog-Nr. 77000

Katalog-Nr.	67011	67012	77012
Schneidstoff	VHM	VHM	VHM
HM-Anwendungsgr.	K/P	K/P	K
Oberfläche	TiAlN nano	AlTiN nano	blank
Typ	U	VA	AL
Innenkühlung	axial	axial	axial
Katalogseite	114	117	120

v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code
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				
		25	B		
		55	C		
		40	C		
		35	C		
		90	F		
		25	B		
		40	C		
		35	B		
				200	G
				180	G
				150	G
				120	G
				180	G
				70	F
				180	G
				120	F
				70	F
				50	F
				45	F
				35	E

SuperV-AP mini - Das Wechselplatten-Bohrsystem

Arbeitsrichtwerte

Vorschubreihen

Werkzeug-Ø mm (Code-Buchstabe)	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

Vorschübe f (mm/U)

Werkzeuge mit **fett gedruckten** Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

K, P, K/P Die universelle Einsetzbarkeit unserer neuen K-Hartmetalle hat u.a. auch zur Folge, dass wir die HM-Anwendungsgruppen nur noch mit K bzw. K/P definieren.

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Bitte beachten Sie die Anwendungsrichtlinien auf Seite 55!

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **1.2050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

Wechselplatten-Träger ≤ 5×D
Katalog-Nr. 77001

Katalog-Nr.	67011	67012	77012
Schneidstoff	VHM	VHM	VHM
HM-Anwendungsgr.	K/P	K/P	K
Oberfläche	TiAlN nano	AlTiN nano	blank
Typ	U	VA	AL
Innenkühlung	axial	axial	axial
Katalogseite	114	117	120

v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code
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		
		90	F		
		25	B		
		40	C		
		35	B		
				180	G
				180	G
				140	G
				110	G
				180	G
				70	F
				180	G
				120	F
				70	F
				50	F
				45	F
				35	E

SuperV-AP mini - Das Wechselplatten-Bohrsystem

Arbeitsrichtwerte

Vorschubreihen

Code-Buchstabe	A	B	C	D	E	F	G	H	I
Werkzeug-Ø mm / Vorschübe f (mm/U)									
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

Werkzeuge mit **fett gedruckten** Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

K, P, K/P Die universelle Einsetzbarkeit unserer neuen K-Hartmetalle hat u.a. auch zur Folge, dass wir die HM-Anwendungsgruppen nur noch mit K bzw. K/P definieren.

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Bitte beachten Sie die Anwendungsrichtlinien auf Seite 55!

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **1.2050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

Wechselplatten-Träger ≤ 7×D
Katalog-Nr. 77003

Katalog-Nr.	67011	67012	77012
Schneidstoff	VHM	VHM	VHM
HM-Anwendungsgr.	K/P	K/P	K
Oberfläche	TiAlN nano	AlTiN nano	blank
Typ	U	VA	AL
Innenkühlung	axial	axial	axial
Katalogseite	114	117	120

v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code
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

SuperV-AP mini - Das Wechselplatten-Bohrsystem

Arbeitsrichtwerte

Vorschubreihen

Code-Buchstabe	A	B	C	D	E	F	G	H	I
Werkzeug-Ø mm / Vorschübe f (mm/U)									
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

Werkzeuge mit **fett gedruckten** Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

K, P, K/P Die universelle Einsetzbarkeit unserer neuen K-Hartmetalle hat u.a. auch zur Folge, dass wir die HM-Anwendungsgruppen nur noch mit K bzw. K/P definieren.

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Bitte beachten Sie die Anwendungsrichtlinien auf Seite 55!

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **1.2050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

Wechselplatten-Träger ≤ 10×D
Katalog-Nr. 77004

Katalog-Nr.	67011	67012	77012
Schneidstoff	VHM	VHM	VHM
HM-Anwendungsgr.	K/P	K/P	K
Oberfläche	TiAlN nano	AlTiN nano	blank
Typ	U	VA	AL
Innenkühlung	axial	axial	axial
Katalogseite	114	117	120

v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code
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				
		25	A		
		55	B		
		40	B		
		35	B		
		70	F		
		25	A		
		40	B		
		35	A		
				150	F
				150	F
				130	F
				105	F
				150	F
				70	E
				150	F
				110	E
				70	E
				50	E
				45	E
				35	D

SuperV-AP maxi - Das Wechselplatten-Bohrsystem

Arbeitsrichtwerte

Vorschubreihen

Code-Buchstabe	A	B	C	D	E	F	G	H	I
Werkzeug-Ø mm / Vorschübe f (mm/U)									
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

Werkzeuge mit **fett gedruckten** Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

K, P, K/P Die universelle Einsetzbarkeit unserer neuen K-Hartmetalle hat u.a. auch zur Folge, dass wir die HM-Anwendungsgruppen nur noch mit K bzw. K/P definieren.

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

Wechselplatten-Träger ≤ 3×D
Katalog-Nr. 76000

Katalog-Nr.	**56011**	**76011**
Schneidstoff	**VHM**	**VHM**
HM-Anwendungsgr.	K/P	K/P
Oberfläche	TiAlN	TiN
Typ	SuperV-AP maxi	SuperV-AP maxi
Innenkühlung	axial	axial
Katalogseite	129	128

v_c m/min	VR-Code
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
55	E
50	D
55	C
50	B
25	B
55	C
40	C
35	C
210	**G**
155	**G**
155	**G**
130	**F**
35	B
40	C
35	B
290	G
260	G
235	G
195	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	VR-Code
100	**F**
85	**E**
100	**G**
85	**F**
100	**F**
95	**F**
85	**E**
85	**F**
70	**E**
100	**G**
85	**F**
55	**D**
80	E
55	D
40	E
35	D
40	C
35	B
20	B
40	C
30	C
25	C
160	**G**
80	**G**
120	**G**
100	**F**
25	B
30	C
25	B
220	G
200	G
180	G
150	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

SuperV-AP maxi - Das Wechselplatten-Bohrsystem

Arbeitsrichtwerte

Vorschubreihen

Code-Buchstabe	A	B	C	D	E	F	G	H	I
Werkzeug-Ø mm / Vorschübe f (mm/U)									
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

Werkzeuge mit **fett gedruckten** Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

K, P, K/P Die universelle Einsetzbarkeit unserer neuen K-Hartmetalle hat u.a. auch zur Folge, dass wir die HM-Anwendungsgruppen nur noch mit K bzw. K/P definieren.

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

Wechselplatten-Träger ≤ 5×D
Katalog-Nr. 76001

Katalog-Nr.	**56011**	**76011**
Schneidstoff	**VHM**	**VHM**
HM-Anwendungsgr.	K/P	K/P
Oberfläche	TiAlN	TiN
Typ	SuperV-AP maxi	SuperV-AP maxi
Innenkühlung	axial	axial
Katalogseite	129	128

v_c m/min	VR-Code
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	VR-Code
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

SuperV-AP maxi - Das Wechselplatten-Bohrsystem

Arbeitsrichtwerte

Vorschubreihen

Werkzeug-Ø mm (Code-Buchstabe)	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

Vorschübe f (mm/U)

Werkzeuge mit **fett gedruckten** Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

K, P, K/P Die universelle Einsetzbarkeit unserer neuen K-Hartmetalle hat u.a. auch zur Folge, dass wir die HM-Anwendungsgruppen nur noch mit K bzw. K/P definieren.

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **1.2050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

Wechselplatten-Träger ≤ 7×D
Katalog-Nr. 76003

Katalog-Nr.	**56011**	**76011**
Schneidstoff	**VHM**	**VHM**
HM-Anwendungsgr.	K/P	K/P
Oberfläche	TiAlN	TiN
Typ	SuperV-AP maxi	SuperV-AP maxi
Innenkühlung	axial	axial
Katalogseite	129	128

v_c m/min	VR-Code
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	VR-Code
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

Arbeitsrichtwerte für VHM-Bohrer

Vorschubreihen

Werkzeug-Ø mm \ Code-Buchstabe	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

Vorschübe f (mm/U)

Werkzeuge mit **fett gedruckten** Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

K, P, K/P
Die universelle Einsetzbarkeit unserer neuen K-Hartmetalle hat u.a. auch zur Folge, dass wir die HM-Anwendungsgruppen nur noch mit K bzw. K/P definieren.

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

≤3×D Bohrtiefe

≤5×D

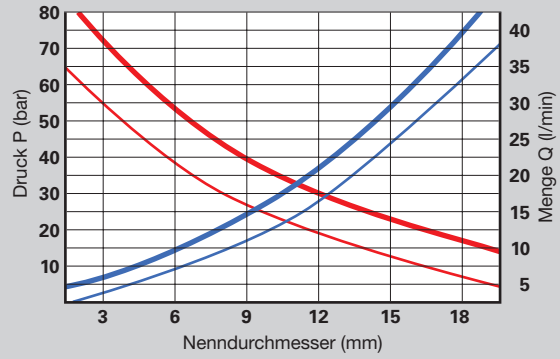
Katalog-Nr.	71184	51184	71380	71180	71290
Schneidstoff	VHM	VHM	HM	HM	VHM
HM-Anwendgsgr.	K10/K20	K/P	K10/K20	K10/K20	K10/K20
Oberfläche	blank	TiAlN nano	blank	blank	blank
DIN/Form	6539	6539	8041	8037	WN
Typ	N	N	N	N	N
Innenkühlung					
Katalogseite	132	134	141	140	135

v_c m/min	Vorschubreihen-Code	v_c m/min	Vorschubreihen-Code	v_c m/min	Vorschubreihen-Code		v_c m/min	Vorschubreihen-Code
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 SuperV-Bohrer

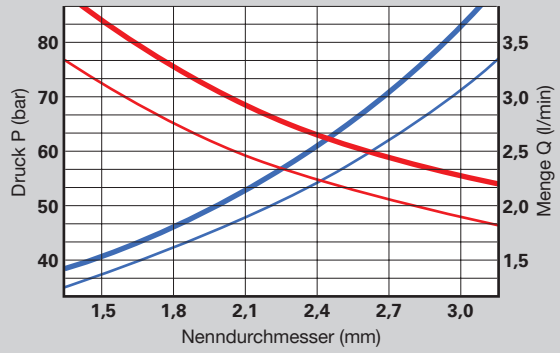
Kühlmittelempfehlungen

Kühlmittel-Werte SuperV-T
(Richtwerte für Emulsion)



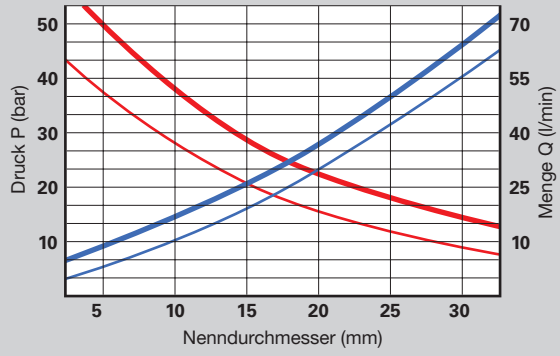
max. Kühlmitteldruck
min. Kühlmitteldruck
max. Kühlmittelmenge
min. Kühlmittelmenge

Kühlmittel-Werte SuperV-NX
(Richtwerte für Emulsion)



max. Kühlmitteldruck
min. Kühlmitteldruck
max. Kühlmittelmenge
min. Kühlmittelmenge

Kühlmittel-Werte SuperV 95-GG/GN
(Richtwerte für Emulsion)



max. Kühlmitteldruck
min. Kühlmitteldruck
max. Kühlmittelmenge
min. Kühlmittelmenge

Stock SuperV-Bohrsysteme
Anwendungsrichtlinien

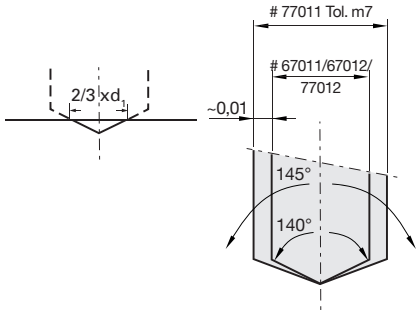
für alle Wechselplatten-Träger

- Bei Durchgangsbohrungen ist darauf zu achten, dass die Führungsfasen im Eingriff bleiben.
- Das Bohrwerkzeug ist nicht ohne Versuch im unterbrochenen Schnitt (Nuten, Querbohrungen) einzusetzen. Bei unterbrochenem Schnitt (max. 0,2 x D) empfehlen wir den Vorschub nach Möglichkeit zu reduzieren.
- SuperV-AP ist im Gegensatz zum klassischen Wendeplattenbohrer auch zum Bohren von Blechpakete geeignet.
- Bei Drehmaschinen (stehendes Bohrwerkzeug) ist darauf zu achten, dass das Werkzeug exakt auf Mitte steht.
- Voraussetzung für eine optimale Zerspanung ist eine ausreichende Kühlschmierstoff-Versorgung durch Emulsion oder Öl.
- Das Werkzeug ist nur bedingt für die Trockenbearbeitung oder MMS geeignet.

Unsere Anwendungstechniker beraten Sie gerne.

Zusätzliche Hinweise für Wechselplatten-Träger **ab 5×D**

- **Generell empfehlen wir bei Bohrtiefen ab 5xD mit Halter Katalog-Nr. 77007 und NC-Platte Katalog-Nr. 77011 zu zentrieren bzw. zu pilotieren.**
  Alternativ können - abhängig vom zu bearbeitenden Werkstoff - SuperV-Bohrer vom Typ U, GG oder VA bzw. der VHM-NC-Anbohrer 142°, Katalog-Nr. 71189, eingesetzt werden.
- Bei Durchgangsbohrungen ist darauf zu achten, dass die Führungsfasen im Eingriff bleiben. Außerdem empfehlen wir, vor dem Durchbohren den Vorschub zu reduzieren.



Für SuperV-AP mini:

Bitte beachten Sie beim Plattenwechsel die folgenden Anzugsmomente für die Spannschraube. Ihre Einhaltung ist für optimale Beabeitungsergebnisse unbedingt erforderlich!

Durchmesser-bereich 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
Gewinde	M2,2	M2,5	M3	M3,5	M4	M4,5	M5	M6
Torxgröße	T7	T8	T9	T10	T15	T15	T20	T25
Anzugsmoment (Nm)	0,8	1,0	1,7	2,7	4,0	6,0	8,0	14,0

Angaben sind gültig für Gewindesicherung (Loctite).

Arbeitsrichtwerte für Tieflochbohrer

Vorschubreihen

Werkzeug-Ø mm / Code-Buchstabe	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

Vorschübe f (mm/U)

*Die Vorschubwerte beziehen sich immer auf Werkzeuge mit der empfohlenen Beschichtung. In einigen Fällen kann die Funktion der Werkzeuge ohne Beschichtung nicht gewährleistet werden.

STOP Sämtliche Tieflochbohrer müssen beim Anbohren geführt werden. Tieflochbohrer dürfen nie mit voller Drehzahl frei im Maschinenraum bewegt werden.

Bitte beachten Sie die Anwendungsrichtlinien auf Seite 62!

Kühlmitteleinsatz:

Schneidöl, hochaktiviert, grenzflächenaktives Schmiermittel mit wirksamen Stoffen (Additiven), die chemisch reagieren und dabei einen besonders haftenden und verschleißmindernden Schmierfilm erzeugen. ■

Bohrölemulsion ■

ohne Schmiermittel □

nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

Katalog-Nr.	55027	55028 55029	75024 75020 75026 75021	55024 55020 55026 55021	75018 75017 75022 75023	55018 55017 55022 55023
Schneidstoff	VHM	VHM	VHM	VHM	HM-Kopf	HM-Kopf
Oberfläche	AlTiN nano	AlTiN nano	blank	AlTiN +	TiN	TiCN
Typ	SuperT-Al	SuperT-Al	TBE-VHM	TBE-VHM	SuperT-N	SuperT-NX
Katalogseite	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

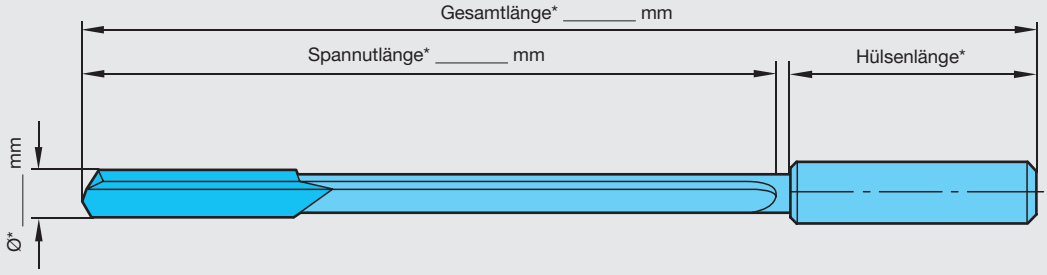
Einlippenbohrer SuperT-N/SuperT-NX

Fragebogen für Sonderlösungen

☐ **Anfrage** ☐ **Bestellung** ☐ **Wiederholauftrag, Sobo-Nr.** _____

Tieflochbohrer: ☐ **SuperT-N** ☐ **SuperT-NX** **Benötigte Stückzahl:** _____

* Ø 2,0 - 40,0 mm
Max. Gesamtlänge 3000 mm
Gesamtlänge, Spannutlänge und Hülsenlänge ergeben sich abhängig von der gewählten Einspannhülse



Skizze Bohrsituation nur in Sonderfällen nötig

Einspannhülse: ☐ **Keine** ☐ **Kennzahl:**_____ ☐ **nach beigefügter Zeichnung**

Beschichtung: ☐ **TiN** ☐ **TiCN** ☐ **blank** ☐ _____

Werkstück: **Bohrtiefe:** _____ **Bohrungs-Toleranz:** _____ **Material/Bezeichnung:** _____
Zugfestigkeit/Härte: _____

Maschinen-Typ: ☐ **Tiefbohrmaschine** ☐ **konventionelle Werkzeugmaschine**

Kühlschmierstoff: ☐ **Tiefbohröl** ☐ **Emulsion**
Druck _____ **bar** **Menge** _____ **l/min**

Firma: _____ **Firmenstempel:**

Telefon/Fax: _____

Ansprechpartner: _____ **Unterschrift:** _____

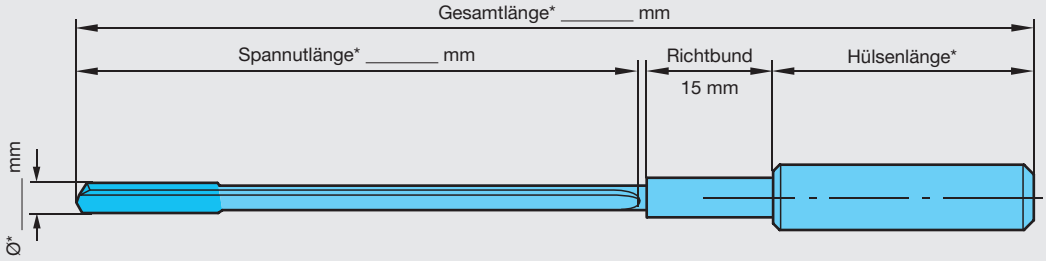
Einlippenbohrer TBE-VHM

Fragebogen für Sonderlösungen

☐ **Anfrage** ☐ **Bestellung** ☐ **Wiederholauftrag, Sobo-Nr.** _____

Tieflochbohrer: ☐ **TBE-VHM** **Benötigte Stückzahl:** _____

* Ø 0,9 - 12,0 mm
Spannutlänge max. 500 mm
Gesamtlänge und Hülsenlänge ergeben sich abhängig von der gewählten Einspannhülse



Skizze Bohrsituation nur in Sonderfällen nötig

Einspannhülse: ☐ **Keine** ☐ **Kennzahl:**_____ ☐ **nach beigefügter Zeichnung**

Beschichtung: ☐ **TiN** ☐ **TiAlN** ☐ **AlTiN nano** ☐ **AlTiN+** ☐ **blank** ☐ _____

Werkstück: **Bohrtiefe:** _____ **Bohrungs-Toleranz:** _____ **Material/Bezeichnung:** _____
Zugfestigkeit/Härte:_____

Maschinen-Typ: ☐ **Tiefbohrmaschine** ☐ **konventionelle Werkzeugmaschine**

Kühlschmierstoff: ☐ **Tiefbohröl** ☐ **Emulsion**
Druck_____ **bar** **Menge** _____ **l/min**

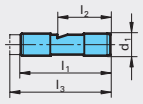
Firma: _____ **Firmenstempel:**

Telefon/Fax: _____

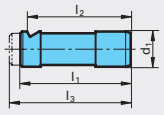
Ansprechpartner: _____ **Unterschrift:** _____

Einspannhülsen & Zubehörteile

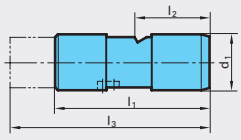
Einspannhülsen für Tiefbohrmaschinen



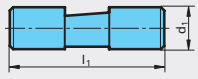
Kennzahl	d_1	l_1	l_2	l_3
1.1	10	40	24	-
1.2	10	40	24	45
1.3	10	40	24	55
1.4	16	45	31,2	-
1.5	25	70	34	-
1.6	25	70	34	78



Kennzahl	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

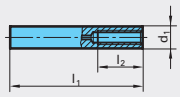


Kennzahl	d_1	l_1	l_2	l_3
3.1	25	70	34	100



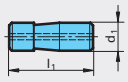
Kennzahl	d_1	l_1
4.1	19,05	70
4.2	12,70	70
4.3	25,40	70
4.4	31,75	70
4.5	38,10	70

5



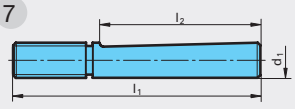
Kennzahl	d_1	l_1	l_2
5.1	10	60	20
5.2	16	80	28
5.3	25	100	50
5.4	10	100	
5.5	10	110	

6



Kennzahl	d_1	l_1
6.1	12.7	38
6.2	19.05	70
6.3	38.1	70

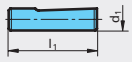
7



Kennzahl	d_1	l_1	l_2
7.1	16	112	73
7.2	20	126	82

Einspannhülsen nach DIN 1835

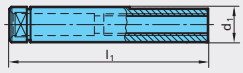
9 Form E



Kennzahl	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

Einspannhülsen nach VDI-Entwurf

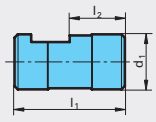
12



Kennzahl	d_1	l_1
12.1	10	68
12.2	16	90
12.3	25	112

Einspannhülsen nach Speed-Bit-System

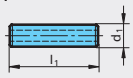
13



Kennzahl	d_1	l_1	l_2
13.1	16	40	16
13.2	25	50	25
13.3	35.6	60	

Einspannhülsen nach DIN 6535

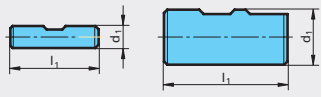
10 Form HA



Kennzahl	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

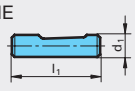
8 Form HB

bei Kennzahl 8.6, 8.7, 8.8



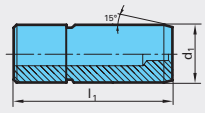
Kennzahl	d_1	l_1
8.1	8	36
8.2	10	40
8.3	12	45
8.4	16	48
8.5	20	50
8.6	25	56
8.7	32	60
8.8	40	70

11 Form HE



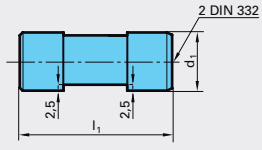
Kennzahl	d_1	l_1
11.1	8	36
11.2	10	40
11.3	12	45
11.4	16	48
11.5	20	50
11.6	25.4	70
11.7	25	56
11.8	32	60
11.9	40	70

16 ähnl. Form HA



Kennzahl	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 ähnl. Form HE



Kennzahl	d_1	l_1
17.1	19.05	70
17.2	25.40	70
17.3	31.75	70
17.4	38.1	70

Das hier vorgestellte Hülsenprogramm halten wir am Lager, es stellt jedoch nur eine Auswahl von Einspannhülsen dar. Wir fertigen natürlich auch Hülsen nach Kundenzeichnung individuell mit höchster Präzision.

Achtung! Bei **VHM-Tieflochbohrern** sind Spannhülsen mit Richtzapfen erforderlich. Informationen auf Anfrage.

Zubehör für Tiefbohrmaschinen

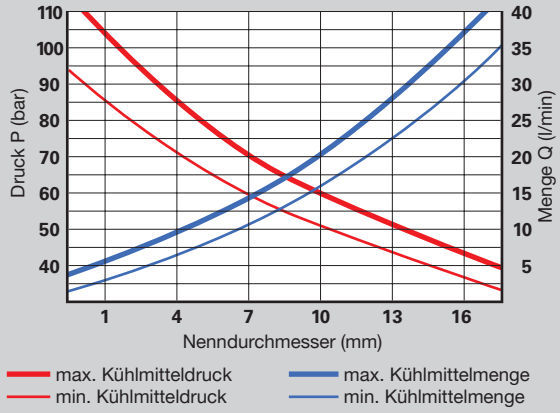
Im Gegensatz zu konventionellen Werkzeugmaschinen gehören auf Tiefbohrmaschinen gewisse Zubehörteile wie z.B. Bohrbuchsen, Dichtscheiben, Lünettenbuchsen usw. mit zur Standardausrüstung.

Aufgrund der Vielzahl des auf dem Markt üblichen Zubehörs ist es unmöglich, sämtliche Teile mit Maßtabellen in diesem Katalog abzubilden, wir können Ihnen jedoch die gängigsten Artikel auf Anfrage (evtl. mit Skizze) anbieten.

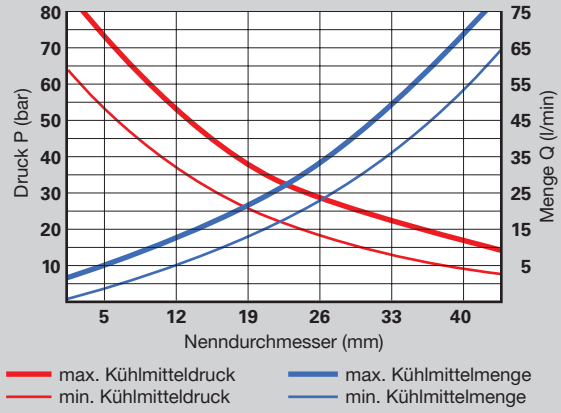
Stock Tieflochbohrwerkzeuge

Kühlmittelempfehlungen

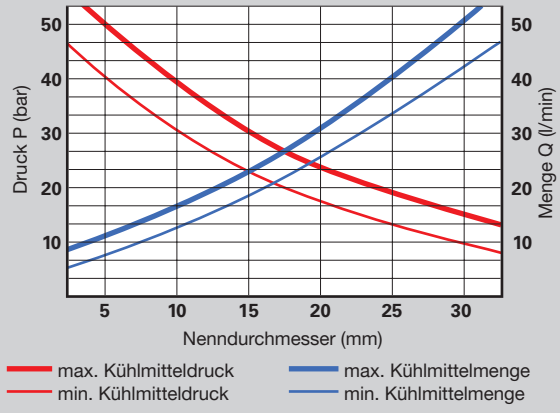
Kühlmittel-Werte TBE-VHM/SuperT-AL
(Richtwerte für Emulsion)



Kühlmittel-Werte SuperT-N/-NX
(Richtwerte für Emulsion)



Kühlmittel-Werte SuperT-GG
(Richtwerte für Emulsion)



Stock Tieflochbohrwerkzeuge

Einsatzempfehlungen

Die Arbeitsschritte beim Tiefbohren

- Herstellen einer Pilotbohrung (L = 1,5 × D, Toleranz H8)
- Einfahren mit einer Drehzahl von ca. 200 U/min, Vorschub ca. 500 mm/min
- Einstellen des Kühlschmierstoff-Drucks und der Drehzahl
- Kontinuierliches Bohren auf Bohrtiefe ohne Entspanen. Bei Einsatz von Tieflochbohrern mit sehr großem Längen-Durchmesser-Verhältnis (z.B. VHM-Einlippenbohrern ab Spannut-Länge 160 mm) empfehlen wir, bis zu einer Bohrtiefe von ca. 25 mm mit reduzierten Schnittparametern (ca. 75% der optimalen Schnittgeschwindigkeit) zu arbeiten.
- Abschalten der Kühlschmierstoff-Zufuhr nach Erreichen der Bohrtiefe.
- Rückzug mit max. 5000 mm/min. und stehender Spindel.

Bei nicht ausreichenden Kühlmittelschmierstoffdaten kann mit reduzierten Schnittparametern gearbeitet werden.
Es sind auch Druckerhöhungssysteme möglich.

Vorgehensweise

Um bei der Herstellung tiefer Bohrungen optimale Bearbeitungsergebnisse insbesondere beim Anbohren auf Radien und oder unebener Oberflächenstruktur zu erzielen, empfehlen wir folgende Bearbeitungsschritte:

1. Anfräsen einer Fläche, z. B. mit dem Fräser SuperF-UT-N inkl. Zentrumschnitt. Die Fläche muss rechtwinklig zum Eintrittswinkel der Bohrbearbeitung ausgeführt werden.
2. Herstellen einer zylindrischen Pilotbohrung (Toleranz F9) mit einer Bohrtiefe von mindestens 1 x D. Hierfür empfehlen wir unsere SuperV-Bohrer. Dank ihres Spitzenwinkel von 140° und ihrer Ø-Toleranz m7 sind diese Bohrer bestens für diesen Bearbeitungsschritt geeignet.
3. Einfahren in die Pilotbohrung mit einer Drehzahl von ca. 300 U/min bei einem Vorschub von ca. 500 mm/min.
4. Einstellen des Kühlschmierstoffdruckes und der Drehzahl.
5. Kontinuierliches Bohren auf volle Bohrtiefe ohne Entspanzyklus.
6. Bei Durchgangsbohrungen mit geradem, d.h. 90° Austritt, die Vorschubgeschwindigkeit ca. 1 mm vor dem Durchbrechen auf 50% reduzieren.
7. Bei Durchgangsbohrungen mit schrägem Austritt die Vorschubgeschwindigkeit v_f ca. 1 mm vor dem Durchbrechen auf 40% reduzieren.
8. Nach Erreichen der Bohrtiefe Drehzahl und Kühlschmierstoff abschalten, Ausfahren mit max. 5000 mm/min.

SuperV-Bohrer

SuperV-Bohrer ohne Innenkühlung

Katalog-Nr. 61888

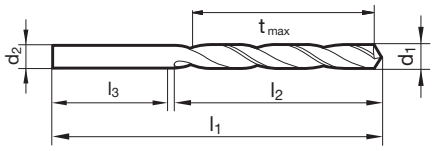
SuperV-F | 3xD | DIN 6539 | VHM | TiN | 140° | m7 | R | Cyl

P	M	K	N	S	H
○	●	○	○	●	●

Arbeitsrichtwerte Seite 26

- Ausspitzung ≥ Ø 3,000
- Kegelmantelanschliff
- Hauptschneidenform konkav
- optimierte Schneidengeometrie
- scharfes Schnittverhalten

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



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

SuperV-Bohrer

SuperV-Bohrer ohne Innenkühlung

Katalog-Nr. 51873

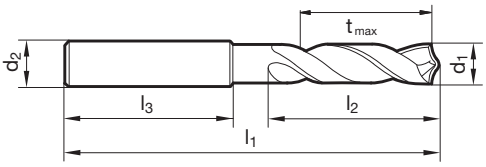
SuperV-U | 3xD | DIN 6537 K | VHM | TiAlN nano | 140° | m7 | R | HA

P	M	K	N	S	H
●		●	○	○	○

Arbeitsrichtwerte Seite 26

- Ausspitzung ≥ Ø 3,000
- Flächenanschliff
- Hauptschneidenform gerade
- optimierte Schneidengeometrie

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



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

SuperV-Bohrer

SuperV-Bohrer ohne Innenkühlung

Katalog-Nr. 51871

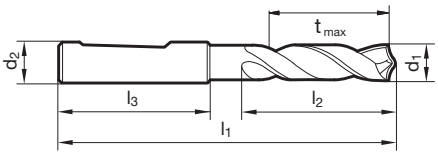
SuperV-U | 3xD | DIN 6537 K | VHM | TiAlN nano | 140° | m7 | R | HE

P	M	K	N	S	H
●		●	○	○	○

Arbeitsrichtwerte Seite 26

- Ausspitzung ≥ Ø 3,000
- Flächenanschliff
- Hauptschneidenform gerade
- optimierte Schneidengeometrie

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



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

SuperV-Bohrer

SuperV-Bohrer ohne Innenkühlung

Katalog-Nr. 51787

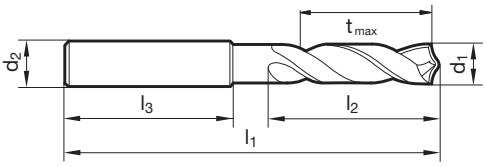
SuperV-U | 5xD | DIN 6537 L | VHM | TiAlN nano | 140° | m7 | R | HA

P	M	K	N	S	H
●		●	○	○	○

Arbeitsrichtwerte Seite 28

- Ausspitzung ≥ Ø 3,000
- Flächenanschliff
- Hauptschneidenform gerade
- optimierte Schneidengeometrie

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



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

SuperV-Bohrer

SuperV-Bohrer ohne Innenkühlung

Katalog-Nr. 51887

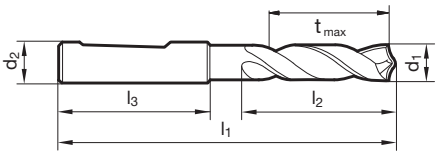
SuperV-U | 5xD | DIN 6537 L | VHM | TiAlN nano | 140° | m7 | R | HE

P	M	K	N	S	H
●		●	○	○	○

Arbeitsrichtwerte Seite 28

- Ausspitzung ≥ Ø 3,000
- Flächenanschliff
- Hauptschneidenform gerade
- optimierte Schneidengeometrie

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



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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

Katalog-Nr. 51776

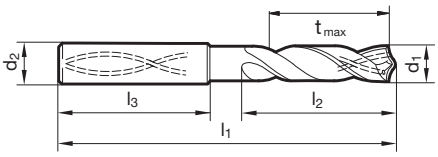
SuperV-IK-U | 3xD | DIN 6537K | VHM | TiAlN nano | 140° | m7 | R | HA

P	M	K	N	S	H
●	○	●	○	○	○

Arbeitsrichtwerte Seite 26

- Ausspitzung ≥ Ø 3,000
- Flächenanschliff
- Hauptschneidenform gerade
- optimierte Schneidengeometrie

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



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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

Katalog-Nr. 51876

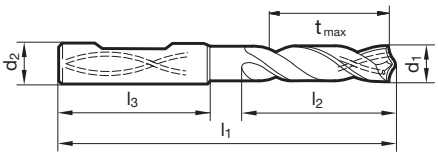
SuperV-IK-U | 3xD | DIN 6537 K | VHM | TiAlN nano | 140° | m7 | R | HE

P	M	K	N	S	H
●	○	●	○	○	○

Arbeitsrichtwerte Seite 26

- Ausspitzung ≥ Ø 3,000
- Flächenanschliff
- Hauptschneidenform gerade
- optimierte Schneidengeometrie

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



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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

Katalog-Nr. 51770

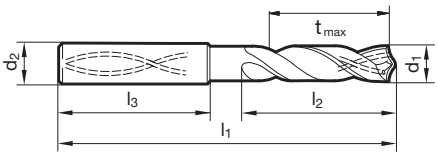
SuperV-VA | 3xD | DIN 6537K | VHM | AlTiN nano | 140° | m7 | R | HA

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 26

- Ausspitzung ≥ Ø 3,000
- Flächenanschliff
- Hauptschneidenform gerade
- optimierte Schneidengeometrie
- besonders geeignet für rostfreie Stähle

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



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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

Katalog-Nr. 51771

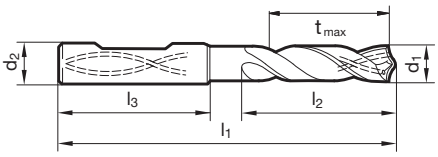
SuperV-VA | 3xD | DIN 6537K | VHM | AlTiN nano | 140° | m7 | R | HE

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 26

- Ausspitzung ≥ Ø 3,000
- Flächenanschliff
- Hauptschneidenform gerade
- optimierte Schneidengeometrie
- besonders geeignet für rostfreie Stähle

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



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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

Katalog-Nr. 71995

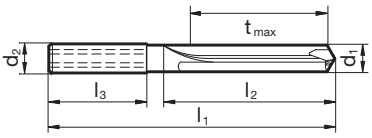
SuperV-95-GG | 4xD | WN | VHM | blank | 120° | m7 | R | HA

P	M	K	N	S	H
		●	○		

Arbeitsrichtwerte Seite 26

- Ausspitzung ≥ Ø 3,000
- Kegelmantelanschliff
- enge Durchmessertoleranzen
- sehr gute Bohrungsoberflächen
- Kühlmitteldruck beachten (s. Diagramm „Kühlmittelempfehlungen“)

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



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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

Katalog-Nr. 61880

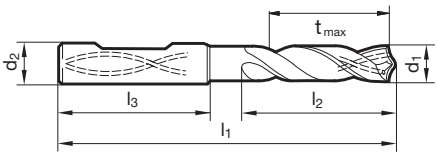
SuperV-IK-F | 5xD | DIN 6537 L | VHM | TiN | 140° | m7 | R | HE

P	M	K	N	S	H
○	●	○	○	●	●

Arbeitsrichtwerte Seite 28

- Ausspitzung ≥ Ø 4,000
- Kegelmantelanschliff
- Hauptschneidenform konkav
- optimierte Schneidengeometrie
- scharfes Schnittverhalten

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



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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

Katalog-Nr. 51781

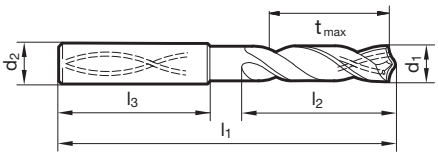
SuperV-IK-U | 5xD | DIN 6537 L | VHM | TiAlN nano | 140° | m7 | R | HA

P	M	K	N	S	H
●	○	●	○	○	○

Arbeitsrichtwerte Seite 28

- Ausspitzung ≥ Ø 3,000
- Flächenanschliff
- Hauptschneidenform gerade
- optimierte Schneidengeometrie

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



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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

Katalog-Nr. 51881

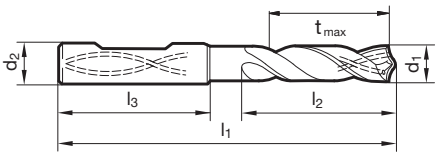
SuperV-IK-U | 5xD | DIN 6537 L | VHM | TiAlN nano | 140° | m7 | R | HE

P	M	K	N	S	H
●	○	●	○	○	○

Arbeitsrichtwerte Seite 28

- Ausspitzung ≥ Ø 3,000
- Flächenanschliff
- Hauptschneidenform gerade
- optimierte Schneidengeometrie

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



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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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 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
15,700		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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

Katalog-Nr. 51772

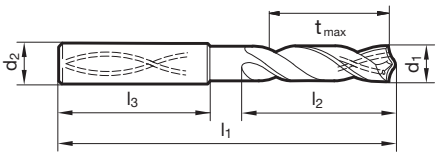
SuperV-VA | 5xD | DIN 6537 L | VHM | AlTiN nano | 140° | m7 | R | HA

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 28

- Ausspitzung ≥ Ø 3,000
- Flächenanschliff
- Hauptschneidenform gerade
- optimierte Schneidengeometrie
- besonders geeignet für rostfreie Stähle

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



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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

Katalog-Nr. 51773

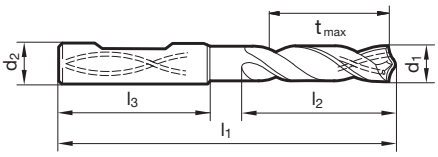
SuperV-VA | 5xD | DIN 6537 L | VHM | AlTiN nano | 140° | m7 | R | HE

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 28

- Ausspitzung ≥ Ø 3,000
- Flächenanschliff
- Hauptschneidenform gerade
- optimierte Schneidengeometrie
- besonders geeignet für rostfreie Stähle

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



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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

Katalog-Nr. 51789

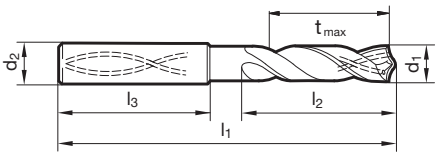
SuperV-IK-U | 7xD | WN | VHM | TiAlN nano | 140° | m7 | R | HA

P	M	K	N	S	H
●	○	●	○	○	○

Arbeitsrichtwerte Seite 30

- Ausspitzung ≥ Ø 3,000
- Flächenanschliff
- Hauptschneidenform gerade
- optimierte Schneidengeometrie
- vier Führungsfasen

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



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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

Katalog-Nr. 51889

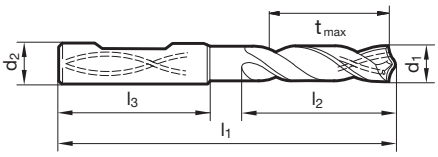
SuperV-IK-U | 7xD | WN | VHM | TiAlN nano | 140° | m7 | R | HE

P	M	K	N	S	H
●	○	●	○	○	○

Arbeitsrichtwerte Seite 30

- Ausspitzung ≥ Ø 3,000
- Flächenanschliff
- Hauptschneidenform gerade
- optimierte Schneidengeometrie
- vier Führungsfasen

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



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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

Katalog-Nr. 71994

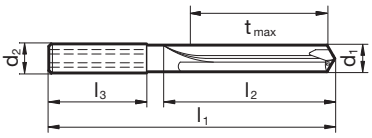
SuperV-95-GG | 7xD | WN | VHM | blank | 120° | m7 | R | HA

P	M	K	N	S	H
		●	○		

Arbeitsrichtwerte Seite 30

- Ausspitzung ≥ Ø 3,000
- Kegelmantelanschliff
- enge Durchmessertoleranzen
- sehr gute Bohrungsoberflächen
- Kühlmitteldruck beachten (s. Diagramm „Kühlmittelempfehlungen“)

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



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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

Katalog-Nr. 71996

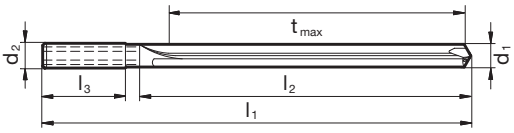
SuperV-95-GG | 10xD | WN | VHM | blank | 120° | m7 | R | HA

P	M	K	N	S	H
		●	○		

Arbeitsrichtwerte Seite 30

- Ausspitzung ≥ Ø 3,000
- Kegelmantelanschliff
- enge Durchmessertoleranzen
- sehr gute Bohrungsoberflächen
- Kühlmitteldruck beachten (s. Diagramm „Kühlmittelempfehlungen“)

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



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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

Katalog-Nr. 51893

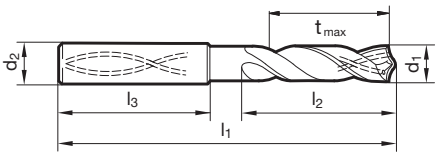
SuperV-IK-U | 12xD | WN | VHM | TiAlN nano | 135° | h7 | R | HA

P	M	K	N	S	H
●	○	●	○	○	

Arbeitsrichtwerte Seite 30

- Ausspitzung ≥ Ø 3,000
- Flächenanschliff
- Kopfbeschichtung
- Hauptschneidenform gerade
- optimierte Schneidengeometrie
- vier Führungsfasen
- Kühlmitteldruck beachten (s. Diagramm „Kühlmittelempfehlungen“)

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



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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

Katalog-Nr. 71997

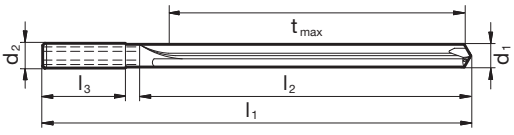
SuperV-95-GN | 15xD | WN | VHM | blank | 120° | m7 | R | HA

P	M	K	N	S	H
		●	○		

Arbeitsrichtwerte Seite 30

- Ausspitzung ≥ Ø 5,000
- Kegelmantelanschliff
- negative Steigung
- für sehr maßhaltige Bohrungen
- sehr gute Bohrungsoberflächen
- Kühlmitteldruck beachten (s. Diagramm „Kühlmittelempfehlungen“)

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



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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

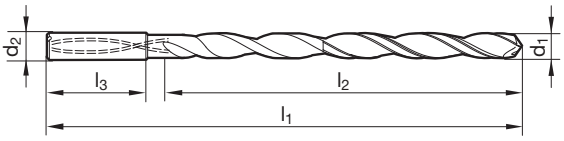
Katalog-Nr. 51764

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

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 32

- Ausspitzung ≥ Ø 3,000
- Kegelmantelanschliff
- Kopfbeschichtung
- Hauptschneidenform konkav
- optimierter Nutquerschnitt
- maximaler Kühlkanalquerschnitt
- Einsatz im Hydrodehn-Spannfutter
- vier Führungsfasen
- Kühlmitteldruck beachten (s. Diagramm „Kühlmittelempfehlungen“)



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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

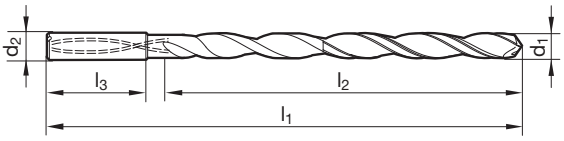
Katalog-Nr. 51765

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

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 32

- Ausspitzung ≥ Ø 3,000
- Kegelmantelanschliff
- Kopfbeschichtung
- Hauptschneidenform konkav
- optimierter Nutquerschnitt
- maximaler Kühlkanalquerschnitt
- Einsatz im Hydro-Dehnspannfutter
- vier Führungsfasen
- Kühlmitteldruck beachten (s. Diagramm „Kühlmittelempfehlungen“)



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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

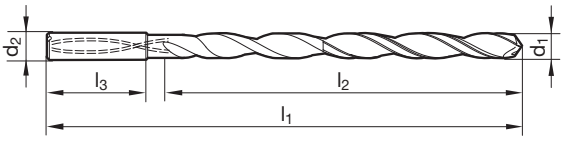
Katalog-Nr. 51766

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

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 32

- Ausspitzung ≥ Ø 3,000
- Kegelmantelanschliff
- Kopfbeschichtung
- Hauptschneidenform konkav
- optimierter Nutquerschnitt
- maximaler Kühlkanalquerschnitt
- Einsatz im Hydro-Dehnspannfutter
- vier Führungsfasen
- Kühlmitteldruck beachten (s. Diagramm „Kühlmittelempfehlungen“)



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

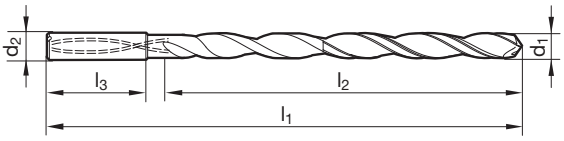
Katalog-Nr. 51767

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

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 32

- Ausspitzung ≥ Ø 3,000
- Kegelmantelanschliff
- Kopfbeschichtung
- Hauptschneidenform konkav
- optimierter Nutquerschnitt
- maximaler Kühlkanalquerschnitt
- Einsatz im Hydro-Dehnspannfutter
- vier Führungsfasen
- Kühlmitteldruck beachten (s. Diagramm „Kühlmittelempfehlungen“)



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

SuperV-Bohrer

SuperV-Bohrer mit Innenkühlung

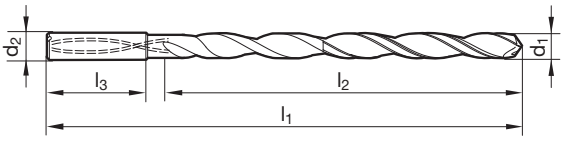
Katalog-Nr. 51768

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

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 32

- Ausspitzung ≥ Ø 3,000
- Kegelmantelanschliff
- Kopfbeschichtung
- Hauptschneidenform konkav
- optimierter Nutquerschnitt
- maximaler Kühlkanalquerschnitt
- Einsatz im Hydro-Dehnspannfutter
- vier Führungsfasen
- Kühlmitteldruck beachten (s. Diagramm „Kühlmittelempfehlungen“)



d1 mm	inch	d2 mm	l1 mm	l2 mm	l3 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 mm	inch	d2 mm	l1 mm	l2 mm	l3 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

SuperV-Bohrer

SuperV-Bohrer, 3-schneidig

Katalog-Nr. 71862

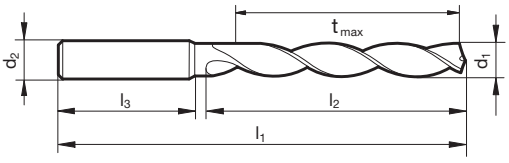
SuperV-83-GAL | 5xD | DIN 6537 L | VHM | blank | 130° | m7 | R | HA

P	M	K	N	S	H
		●	●		

Arbeitsrichtwerte Seite 28

- Ausspitzung ≥ Ø 3,000
- Spiropointanschliff
- weite Spannuten
- optimales Zentrieren
- für unterbrochenen Schnitt geeignet

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



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

SuperV-Bohrer

SuperV-NX VHM-Hochleistungs-Kleinstbohrer ohne Innenkühlung

Katalog-Nr. 71998

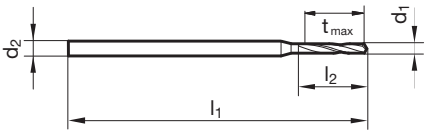
SuperV-NX | 4xD | WN | VHM | Al-TiN+ | 140° | m7 | R | Cyl

P	M	K	N	S	H
●	○	●	○	○	

Arbeitsrichtwerte Seite 34

- Ausspitzung ≥ Ø 0,500
- Flächenanschliff
- Hauptschneidenform gerade
- geschliffener Schneidenabzug

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



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

SuperV-Bohrer

SuperV-NX VHM-Hochleistungs-Kleinstbohrer ohne Innenkühlung

Katalog-Nr. 71999

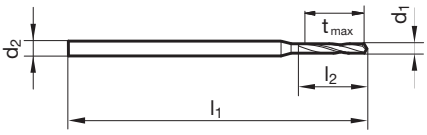
SuperV-NX | 7xD | WN | VHM | Al-TiN+ | 140° | m7 | R | HA

P	M	K	N	S	H
●	○	●	○	○	

Arbeitsrichtwerte Seite 34

- Ausspitzung ≥ Ø 0,500
- Flächenanschliff
- Hauptschneidenform gerade
- geschliffener Schneidenabzug

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



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

SuperV-Bohrer

SuperV-NX VHM-Hochleistungs-Kleinstbohrer mit Innenkühlung

Katalog-Nr. 51997

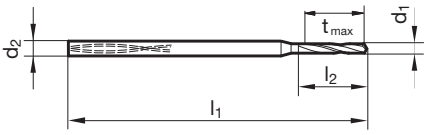
SuperV-IK-NX | 5xD | WN | VHM | Al-TiN | 140° | m7 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 34

- Ausspitzung ≥ Ø 1,400
- Flächenanschliff
- Hauptschneidenform gerade
- geschliffener Schneidenabzug
- Kühlmitteldruck beachten (s. Diagramm „Kühlmittelempfehlungen“)

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



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

SuperV-Bohrer

SuperV-NX VHM-Hochleistungs-Kleinstbohrer mit Innenkühlung

Katalog-Nr. 51998

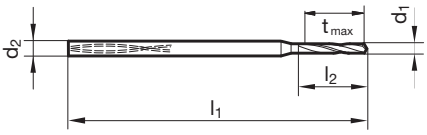
SuperV-IK-NX | 8xD | WN | VHM | Al-TiN | 135° | h7 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 34

- Ausspitzung ≥ Ø 1,400
- Flächenanschliff
- Hauptschneidenform gerade
- geschliffener Schneidenabzug
- Kühlmitteldruck beachten (s. Diagramm „Kühlmittelempfehlungen“)

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



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

SuperV-Bohrer

SuperV-NX VHM-Hochleistungs-Kleinstbohrer mit Innenkühlung

Katalog-Nr. 51999

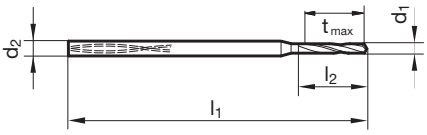
SuperV-IK-NX | 15xD | WN | VHM | Al-TiN | 135° | h7 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 34

- Ausspitzung ≥ Ø 1,400
- Flächenanschliff
- Kopfbeschichtung
- Hauptschneidenform gerade
- geschliffener Schneidenabzug
- Kühlmitteldruck beachten (s. Diagramm „Kühlmittelempfehlungen“)

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



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

SuperV-Bohrer

SuperV-M VHM-Universal-Kleinstbohrer

Katalog-Nr. 51720

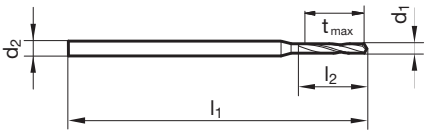
SuperV-M | WN | VHM | Al-TiN | 140° | h7 | R | HA

P	M	K	N	S	H
●		●			

Arbeitsrichtwerte Seite 34

- Ausspitzung ≥ Ø 0,800
- Flächenanschliff
- Hauptschneidenform gerade

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



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

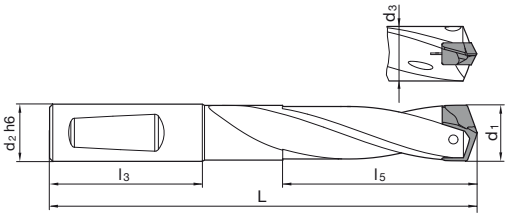
SuperV-Bohrsysteme

SuperV-AP mini Wechselplattenhalter

Katalog-Nr. 77007

SuperV-AP mini | 1,5xD | WN | verni-ckelt | R | HE

Arbeitsrichtwerte Seite 36



- besonders hohe Verschleißfestigkeit
- optimierter Nutquerschnitt
- optimierter Kühlkanalaustritt
- Spannschrauben Katalog-Nr. 77020 enthalten
- Schraubendreher Katalog-Nr. 76021 enthalten

d1 mm	Code-Nr.	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Größe
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

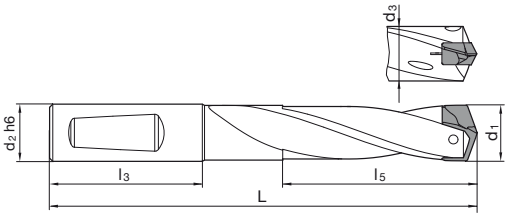
SuperV-Bohrsysteme

SuperV-AP mini Wechselplattenhalter

Katalog-Nr. 77000

SuperV-AP mini | 3xD | WN | verni-ckelt | R | HE

Arbeitsrichtwerte Seite 38



- besonders hohe Verschleißfestigkeit
- optimierter Nutquerschnitt
- optimierter Kühlkanalaustritt
- Spannschrauben Katalog-Nr. 77020 enthalten
- Schraubendreher Katalog-Nr. 76021 enthalten

d1 mm	Code-Nr.	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Größe
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

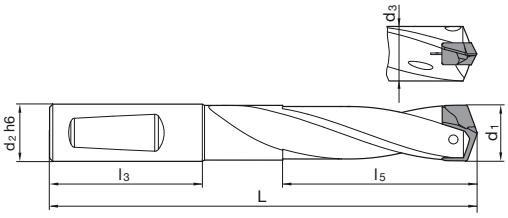
SuperV-Bohrsysteme

SuperV-AP mini Wechselplattenhalter

Katalog-Nr. 77001

SuperV-AP mini | 5xD | WN | verni-ckelt | R | HE

Arbeitsrichtwerte Seite 40



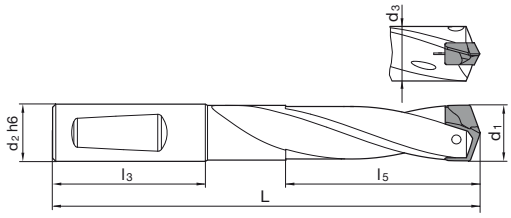
- besonders hohe Verschleißfestigkeit
- optimierter Nutquerschnitt
- optimierter Kühlkanalaustritt
- Spannschrauben Katalog-Nr. 77020 enthalten
- Schraubendreher Katalog-Nr. 76021 enthalten

d1 mm	Code-Nr.	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Größe
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

SuperV-Bohrsysteme

SuperV-AP mini Wechselplattenhalter

Katalog-Nr. 77003



SuperV-AP mini | 7xD | WN | verni-ckelt | R | HE

Arbeitsrichtwerte Seite 42

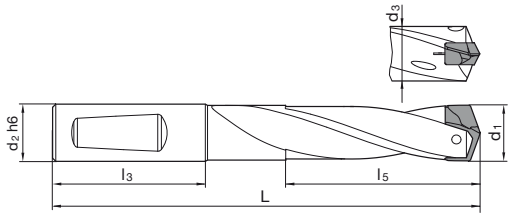
- besonders hohe Verschleißfestigkeit
- optimierter Nutquerschnitt
- optimierter Kühlkanalaustritt
- Spannschrauben Katalog-Nr. 77020 enthalten
- Schraubendreher Katalog-Nr. 76021 enthalten

d1 mm	Code-Nr.	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Größe
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

SuperV-Bohrsysteme

SuperV-AP mini Wechselplattenhalter

Katalog-Nr. 77004



SuperV-AP mini | 10xD | WN | verni-ckelt | R | HE

Arbeitsrichtwerte Seite 44

- besonders hohe Verschleißfestigkeit
- optimierter Nutquerschnitt
- optimierter Kühlkanalaustritt
- Spannschrauben Katalog-Nr. 77020 enthalten
- Schraubendreher Katalog-Nr. 76021 enthalten

d1 mm	Code-Nr.	d2 h6 mm	d3 mm	L mm	l3 mm	l5 mm	Größe
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

SuperV-Bohrsysteme

SuperV-AP mini Wechselplatte

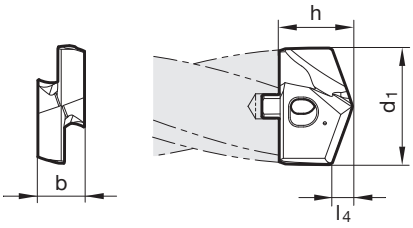
Katalog-Nr. 67011

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

P	M	K	N	S	H
●		○			

Arbeitsrichtwerte Seite 36-44

- Ausspitzung ≥ Ø 11,000
- Flächenanschliff
- Hauptschneidenform gerade (durch Korrektur)
- Spannschrauben Katalog-Nr. 77020 enthalten



d1 mm	d1 inch	Code-Nr.	l4 mm	b mm	h mm	Größe
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	Code-Nr.	l4 mm	b mm	h mm	Größe
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	Code-Nr.	l4 mm	b mm	h mm	Größe
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

SuperV-Bohrsysteme

SuperV-AP mini Wechselplatte

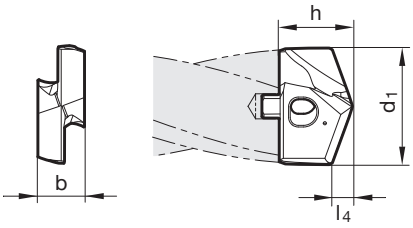
Katalog-Nr. 67012

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

P	M	K	N	S	H
	●	○		○	

Arbeitsrichtwerte Seite 36-44

- Ausspitzung ≥ Ø 11,000
- Kegelmantelanschliff
- Hauptschneidenform gerade (durch Korrektur)
- Spannschrauben Katalog-Nr. 77020 enthalten



d1 mm	d1 inch	Code-Nr.	l4 mm	b mm	h mm	Größe
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	Code-Nr.	l4 mm	b mm	h mm	Größe
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	**Code-Nr.**	l4 mm	b mm	h mm	Größe
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

SuperV-Bohrsysteme

SuperV-AP mini Wechselplatte

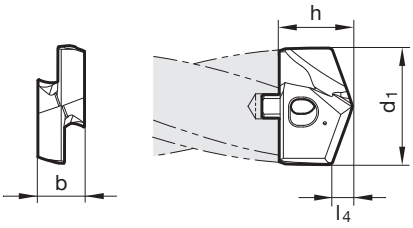
Katalog-Nr. 77012

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

P	M	K	N	S	H
			●		

Arbeitsrichtwerte Seite 36-44

- Ausspitzung ≥ Ø 11,000
- Kegelmantelanschliff
- Hauptschneidenform konkav
- Spannschrauben Katalog-Nr. 77020 enthalten



d1 mm	d1 inch	Code-Nr.	l4 mm	b mm	h mm	Größe
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	Code-Nr.	l4 mm	b mm	h mm	Größe
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	**Code-Nr.**	l4 mm	b mm	h mm	Größe
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

SuperV-Bohrsysteme

SuperV-AP mini Wechselplatte

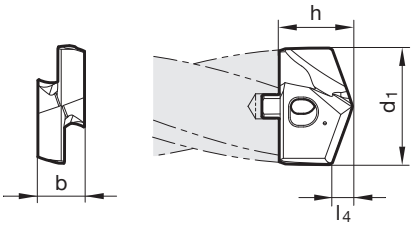
Katalog-Nr. 77011

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

P	M	K	N	S	H
●	●	●	●	○	

Arbeitsrichtwerte Seite 36

- Ausspitzung ≥ Ø 11,000
- Flächenanschliff
- vier Führungsfasen
- Hauptschneidenform gerade (durch Korrektur)
- Spannschrauben Katalog-Nr. 77020 enthalten
- speziell zum Einsatz mit Katalog-Nr. 77007



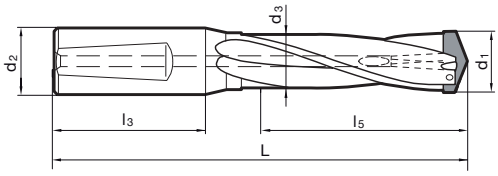
d1 mm	d1 inch	Code-Nr.	l4 mm	b mm	h mm	Größe
11,000		**11,000**	1,800	4,500	7,200	110
11,200		**11,200**	1,800	4,500	7,200	110
11,510	29/64	**11,510**	1,900	4,500	7,200	110
11,800		**11,800**	1,900	4,500	7,200	110
12,000		**12,000**	1,900	5,000	7,400	120
12,200		**12,200**	2,000	5,000	7,400	120
12,500		**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	Code-Nr.	l4 mm	b mm	h mm	Größe
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

SuperV-Bohrsysteme

SuperV-AP maxi Wechselplattenhalter

Katalog-Nr. 76000



SuperV-APmaxi | 3xD | WN | verni-ckelt | R | HE

Arbeitsrichtwerte Seite 46

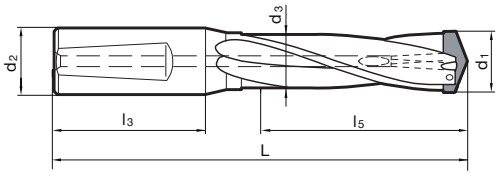
- verstärkter Schaft
- Wechselplatte im eingebauten Zustand austauschbar
- Spannschrauben Katalog-Nr. 76020 enthalten
- Schraubendreher Katalog-Nr. 76021 enthalten

d1 mm	Code-Nr.	d2 mm	d3 mm	L mm	l3 mm	l5 mm	Größe
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

SuperV-Bohrsysteme

SuperV-AP maxi Wechselplattenhalter

Katalog-Nr. 76001



SuperV-APmaxi | 5xD | WN | verni-ckelt | R | HE

Arbeitsrichtwerte Seite 48

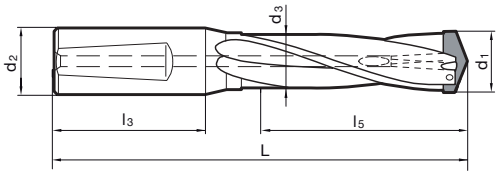
- verstärkter Schaft
- Wechselplatte im eingebauten Zustand austauschbar
- Spannschrauben Katalog-Nr. 76020 enthalten
- Schraubendreher Katalog-Nr. 76021 enthalten

d1 mm	Code-Nr.	d2 mm	d3 mm	L mm	l3 mm	l5 mm	Größe
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

SuperV-Bohrsysteme

SuperV-AP maxi Wechselplattenhalter

Katalog-Nr. 76003



SuperV-APmaxi | 7xD | WN | verni-ckelt | R | HE

Arbeitsrichtwerte Seite 50

- verstärkter Schaft
- Wechselplatte im eingebauten Zustand austauschbar
- Spannschrauben Katalog-Nr. 76020 enthalten
- Schraubendreher Katalog-Nr. 76021 enthalten

d1 mm	Code-Nr.	d2 mm	d3 mm	L mm	l3 mm	l5 mm	Größe
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

SuperV-Bohrsysteme

SuperV-AP maxi Wechselplatte

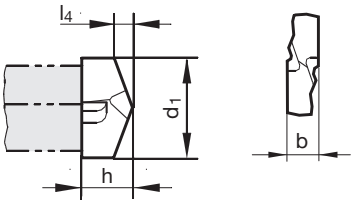
Katalog-Nr. 76011

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

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 46-50

- Kegelmantelanschliff
- Hauptschneidenform konkav
- Spannschrauben Katalog-Nr. 76020 enthalten



d1 mm	d1 inch	Code-Nr.	l4 mm	b mm	h mm	Größe
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

SuperV-Bohrsysteme

SuperV-AP maxi Wechselplatte

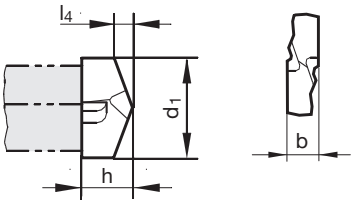
Katalog-Nr. 56011

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

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 46-50

- Kegelmantelanschliff
- Hauptschneidenform konkav
- höhere Verschleißfestigkeit
- Spannschrauben Katalog-Nr. 76020 enthalten



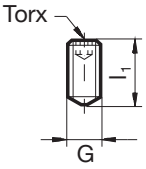
d1 mm	d1 inch	Code-Nr.	l4 mm	b mm	h mm	Größe
16,000		**16,000**	3,000	4,500	8,000	0.1
16,500		**16,500**	3,100	4,500	8,000	0.1
17,000		**17,000**	3,100	4,500	8,000	0.1
17,500		**17,500**	3,200	4,500	8,000	0.2
18,000		**18,000**	3,300	5,000	8,000	1.1
18,500		**18,500**	3,400	5,000	8,000	1.1
19,000		**19,000**	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

SuperV-Bohrsysteme

Spannschrauben

WN

Katalog-Nr. 76020



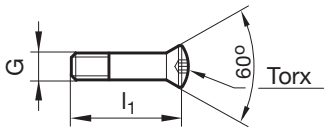
G	l1 mm	Torx	Code-Nr.
M 3X0,35	7,000	T6	**3,000**
M 3X0,35	6,000	T6	**3,006**
M 3,5X0,35	8,000	T7	**3,500**
M 4X0,5	9,000	T8	**4,000**
M 4,5X0,5	10,000	T8	**4,500**
M 5X0,5	11,000	T10	**5,000**

SuperV-Bohrsysteme

Spannschrauben

WN

Katalog-Nr. 77020



G	l1 mm	Torx	Code-Nr.
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**

SuperV-Bohrsysteme

Drehmomentschlüssel

Katalog-Nr. 77022

Tip	Code-Nr.	Torx	L mm	Drehmoment 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

SuperV-Bohrsysteme

Torx-Bit Einsätze

Katalog-Nr. 77021

Torx	L mm	kg	Code-Nr.
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**

SuperV-Bohrsysteme

Torx-Schraubendreher

Katalog-Nr. 76021

Torx	Code-Nr.	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

Hartmetall-Spiralbohrer

Spiralbohrer extra kurz

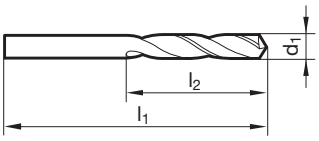
Katalog-Nr. 71184

N | ~3xD | DIN 6539 | VHM | blank | 118° | h7 | R | Cyl

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 52

- Ausspitzung ≥ Ø 2,100
- Flächenanschliff
- Hauptschneidenform gerade



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 mm	inch	l1 mm	l2 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 mm	inch	l1 mm	l2 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

Hartmetall-Spiralbohrer

Spiralbohrer extra kurz

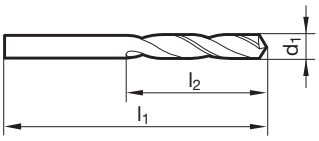
Katalog-Nr. 51184

N | ~3xD | DIN 6539 | VHM | TiAlN nano | 118° | h7 | R | Cyl

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 52

- Ausspitzung ≥ Ø 2,100
- Flächenanschliff
- Hauptschneidenform gerade
- höhere Verschleißfestigkeit



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

Hartmetall-Spiralbohrer

Spiralbohrer kurz

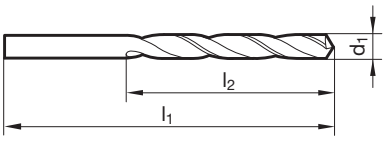
Katalog-Nr. 71290

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

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 52

- Ausspitzung ≥ Ø 2,100
- Flächenanschliff
- Hauptschneidenform gerade



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 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
10,300		133,000	87,000
10,500		133,000	87,000

d1 mm	inch	l1 mm	l2 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

Hartmetall-Spiralbohrer

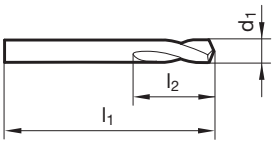
NC-Anbohrer

Katalog-Nr. 71190

N | WN | VHM | blank | 90° | h6 | R | HA

P	M	K	N	S	H
●	●	●	●	●	

- Flächenanschliff
- nur zum Anbohren geeignet



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
20,000	131,000	45,000

Hartmetall-Spiralbohrer

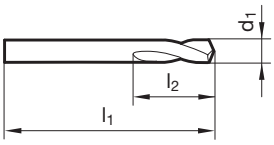
NC-Anbohrer

Katalog-Nr. 71191

N | WN | VHM | blank | 120° | h6 | R | HA

P	M	K	N	S	H
●	●	●	●	●	

- Flächenanschliff
- nur zum Anbohren geeignet



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
20,000	131,000	45,000

Hartmetall-Spiralbohrer

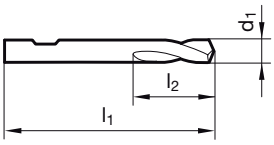
NC-Anbohrer

Katalog-Nr. 71189

N | WN | VHM | blank | 142° | h6 | R | HB

P	M	K	N	S	H
●	●	●	●	●	

- Flächenanschliff
- nur zum Anbohren geeignet
- ab Ø 6 mm Schaft mit Spannfläche



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

Hartmetall-Spiralbohrer

Spiralbohrer mit HM-Schneiden

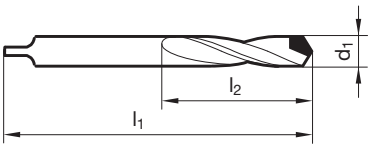
Katalog-Nr. 71180

N | DIN 8037 | HM | blank | 118° | h8 | R | Cyl

P	M	K	N	S	H
○		○	○		

Arbeitsrichtwerte Seite 52

- Ausspitzung ≥ Ø 3,000
- Flächenanschliff
- HM-bestückt



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

Hartmetall-Spiralbohrer

Spiralbohrer mit HM-Schneiden

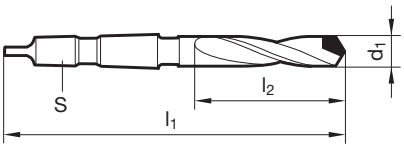
Katalog-Nr. 71380

N | DIN 8041 | HM | blank | 118° | h8 | R | MK

P	M	K	N	S	H
○		●	○	○	○

Arbeitsrichtwerte Seite 52

- Ausspitzung ≥ Ø 11,000
- Flächenanschliff
- HM-bestückt



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

VHM-Zentrierbohrer

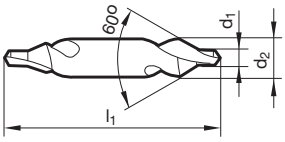
Zentrierbohrer ohne Fläche

Katalog-Nr. 71616

N | WN | VHM | blank | 118° | R

P	M	K	N	S	H
●	○	●	●	○	

- Ausspitzung ≥ Ø 2,000
- Kegelmantelanschliff
- für Zentrierbohrungen nach DIN 332 Teil 1, Form 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

Einlippenbohrer

Einlippenbohrer SuperT-AL

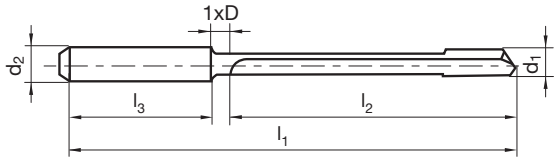
Katalog-Nr. 55027

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

P	M	K	N	S	H
●	●	●	●	●	

Arbeitsrichtwerte Seite 56

- Umfangsform G
- VHM-Vollschaft mit kegeligem MMS-Schaftende ab d1 = 3 mm bzw. d2 = 6 mm
- universell einsetzbar



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer SuperT-AL

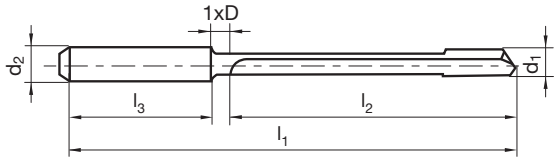
Katalog-Nr. 55028

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

P	M	K	N	S	H
●	●	●	●	●	

Arbeitsrichtwerte Seite 56

- Umfangsform G
- VHM-Vollschaft mit kegeligem MMS-Schaftende ab d1 = 3 mm bzw. d2 = 6 mm
- universell einsetzbar



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer SuperT-AL

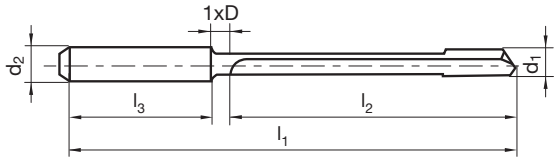
Katalog-Nr. 55029

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

P	M	K	N	S	H
●	●	●	●	●	

Arbeitsrichtwerte Seite 56

- Umfangsform G
- VHM-Vollschaft mit kegeligem MMS-Schaftende ab d1 = 3 mm bzw. d2 = 6 mm
- universell einsetzbar



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer SuperT-N

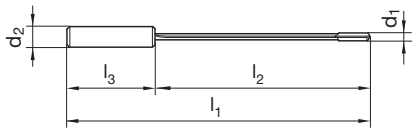
Katalog-Nr. 75018

SuperT-N | 20xD | WN | HM | TiN | h5 | R | HA

P	M	K	N	S	H
•	•	•	•		

Arbeitsrichtwerte Seite 56

- mit Längsspanteiler
- Umfangsform G



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer SuperT-N

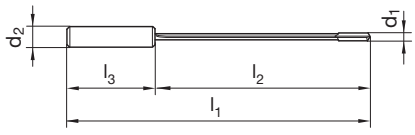
Katalog-Nr. 75017

SuperT-N | 30xD | WN | HM | TiN | h5 | R | HA

P	M	K	N	S	H
•	•	•	•		

Arbeitsrichtwerte Seite 56

- mit Längsspanteiler
- Umfangsform G



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer SuperT-N

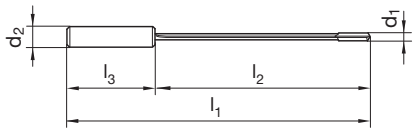
Katalog-Nr. 75022

SuperT-N | 40xD | WN | HM | TiN | h5 | R | HA

P	M	K	N	S	H
•	•	•	•		

Arbeitsrichtwerte Seite 56

- mit Längsspanteiler
- Umfangsform G



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer SuperT-N

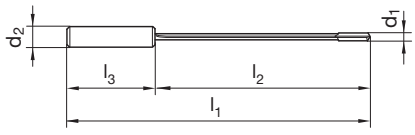
Katalog-Nr. 75023

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

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 56

- mit Längsspanteiler
- Umfangsform G
- maximale Bohrtiefe je Werkzeug 40xD, bei größeren Bohrtiefen zuerst Bohrer Katalog-Nr. 75022 verwenden
- für langspanende Stähle



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer SuperT-NX

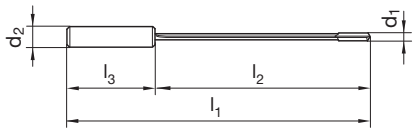
Katalog-Nr. 55018

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

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 56

- Umfangsform G
- für legierte und hochlegierte Stähle



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer SuperT-NX

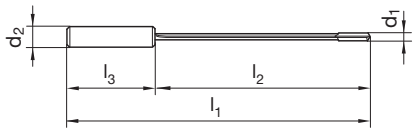
Katalog-Nr. 55017

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

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 56

- Umfangsform G
- für legierte und hochlegierte Stähle



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer SuperT-NX

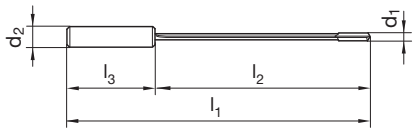
Katalog-Nr. 55022

SuperT-NX | 40xD | WN | HM | TiCN | h5 | R | HA

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 56

- Umfangsform G
- für legierte und hochlegierte Stähle



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer SuperT-NX

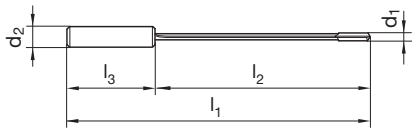
Katalog-Nr. 55023

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

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 56

- Umfangsform G
- maximale Bohrtiefe je Werkzeug 40xD, bei größeren Bohrtiefen zuerst Bohrer Katalog-Nr. 75022 verwenden
- für legierte und hochlegierte Stähle



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer TBE-VHM

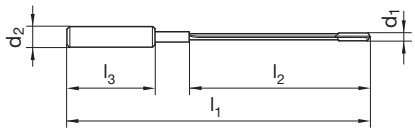
Katalog-Nr. 75024

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

P	M	K	N	S	H
●	●	●	●	○	

Arbeitsrichtwerte Seite 56

- Spannutlänge 45 mm
- Umfangsform G
- universell einsetzbar



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer TBE-VHM

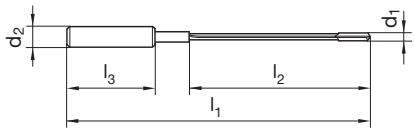
Katalog-Nr. 55024

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

P	M	K	N	S	H
●	●	●	●	○	

Arbeitsrichtwerte Seite 56

- Spannutlänge 45 mm
- Umfangsform G
- für legierte und hochlegierte Stähle



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer TBE-VHM

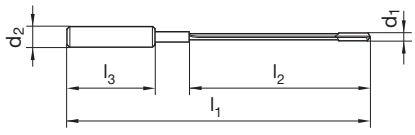
Katalog-Nr. 75020

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

P	M	K	N	S	H
●	●	○	○	○	

Arbeitsrichtwerte Seite 56

- Spannutlänge 80 mm
- Umfangsform G
- universell einsetzbar



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer TBE-VHM

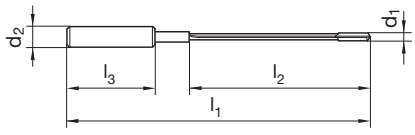
Katalog-Nr. 55020

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

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 56

- Spannutlänge 80 mm
- Umfangsform G
- für legierte und hochlegierte Stähle



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer TBE-VHM

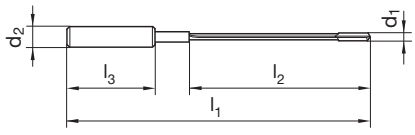
Katalog-Nr. 75026

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

P	M	K	N	S	H
●	●	○	●	○	

Arbeitsrichtwerte Seite 56

- Spannutlänge 120 mm
- Umfangsform G
- universell einsetzbar



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer TBE-VHM

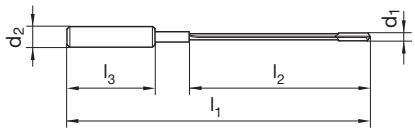
Katalog-Nr. 55026

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

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 56

- Spannutlänge 120 mm
- Umfangsform G
- für legierte und hochlegierte Stähle



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer TBE-VHM

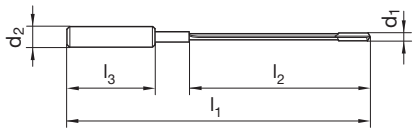
Katalog-Nr. 75021

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

P	M	K	N	S	H
●	●	○	●	○	

Arbeitsrichtwerte Seite 56

- Spannutlänge 160 mm
- Umfangsform G
- universell einsetzbar



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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

Einlippenbohrer

Einlippenbohrer TBE-VHM

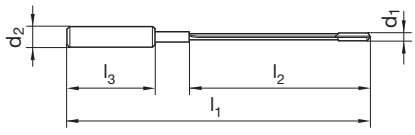
Katalog-Nr. 55021

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

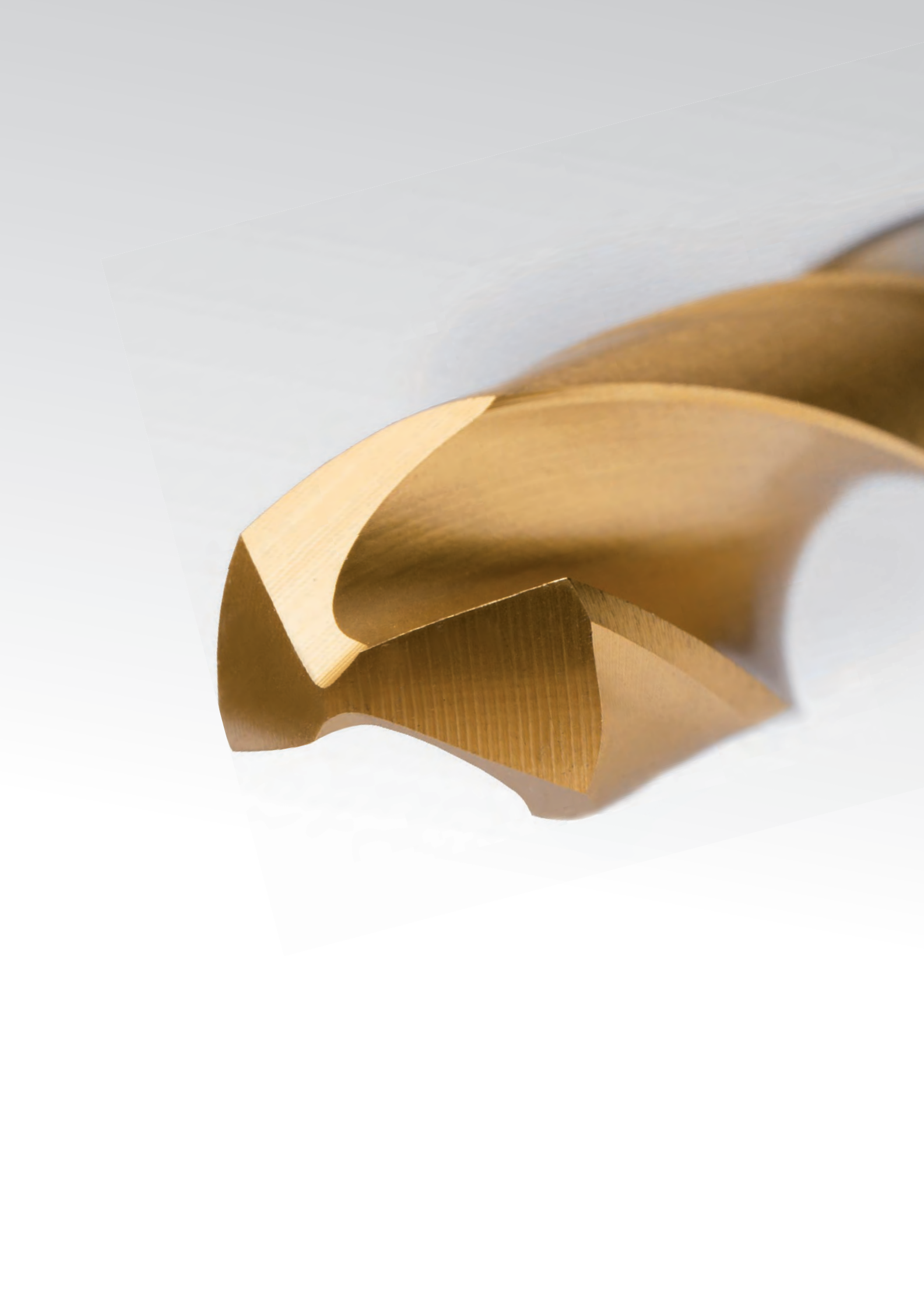
P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 56

- Spannutlänge 160 mm
- Umfangsform G
- für legierte und hochlegierte Stähle



d1 mm	d2 mm	l1 mm	l2 mm	l3 mm	Code-Nr.
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



HOCHLEISTUNGSSCHNELLSTAHL

SPIRALBOHRER

ISO-CODES

P	Stahl, hochlegierter Stahl
M	Rostfreier Stahl
K	Grauguss, Sphäroguss und Temperguss
N	Aluminium und andere Nichteisenmetalle
S	Sonder-, Super- und Titanlegierungen
H	Gehärteter Stahl und Hartguss

Auf den Produktseiten finden Sie zu jedem Werkzeug Empfehlungen zur Eignung für die Anwendungsgruppen bzw. die Angaben von max. Zugfestigkeit und Härte:

● optimal geeignet
○ bedingt geeignet
nicht geeignet

PIKTOGRAMME

SCHNEIDSTOFF	HSS	M42	HSS-Co	HSS-E-PM	HSS-Co8					
BESCHICHTUNG	blank	dampfbehandelt		TiN Kopf	TiN	TiAlN nano	Fasen nitriert			
Ø-TOLERANZ	h6	h8	-0,004							
BOHRTIEFE	~3xD	~5xD	~10xD	~15xD	~20xD	~25xD	<5xD	>25xD		
SCHNEIDRICHTUNG	R rechts		L links							
SCHAFTFORM	Cyl	HA	MK							
SPITZENWINKEL	90°	118°	120°	130°	135°					
NORM	DIN 1897	DIN 338	DIN 339	DIN 1869	DIN 1899	DIN 345	DIN 346	DIN 341	DIN 344	DIN 1870
	DIN 8374	DIN 8378	DIN 8376	DIN 8379	DIN 8377	DIN 333	DIN 343	DIN 340	WN Werksnorm	
TYP	N	NX	V97	V-PM	VX	V72	H	V66		
	V66 Ti	V70	V73	V63	V73-IK	N-IK	V70-IK	V63-IK		

Spiralbohrer extra kurz

P	M	K	N	S	H	Typ	Schneid-richtung	Spitzen-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
•		•	•			N	rechts	118	HSS	blank	DIN 1897	0,500 - 32,000	**71110**	190
•		•	•			N	links	118	HSS	blank	DIN 1897	0,500 - 32,000	**71111**	192
•		•	•			N	rechts	118	HSS	dampfbe-handelt	DIN 1897	2,000 - 27,000	**71108**	194
•		•	•			N	links	118	HSS	dampfbe-handelt	DIN 1897	2,600 - 26,500	**71109**	196
•		•	○			N	rechts	118	HSS	TiN	DIN 1897	1,000 - 13,100	**61118**	197
•	•	•	•	•	○	N	rechts	135	M42	blank	DIN 1897	1,000 - 10,000	**71106**	199
•	•	•	•			NX	rechts	118	HSS-Co	blank	DIN 1897	1,000 - 14,000	**71220**	200
•	•	•	•			NX	rechts	118	HSS-Co	TiN	DIN 1897	1,000 - 14,000	**61220**	202
•	•	○	○			V97	rechts	130	HSS-Co	TiAlN nano	DIN 1897	2,000 - 16,000	**51159**	204
•	•	•	○			V-PM	rechts	130	HSS-E-PM	TiN	DIN 1897	1,000 - 14,000	**61131**	205
•	•	•	○	○		VX	rechts	118	HSS-Co	dampfbe-handelt	DIN 1897	1,000 - 10,000	**71112**	206
•	•	•	○	○		VX	rechts	118	HSS-Co	TiN	DIN 1897	1,000 - 12,500	**61112**	207
•		•	•			V72	rechts	118	HSS	blank	Werksnorm	1,000 - 16,000	**71114**	209
•		•	•			V72	links	118	HSS	blank	Werksnorm	1,000 - 16,000	**71113**	210

Spiralbohrer kurz

•		•	•			N	rechts	118	HSS	blank	DIN 338	0,200 - 16,000	**71116**	212

Spiralbohrer kurz

P	M	K	N	S	H	Typ	Schneid-richtung	Spitzen-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
●		●	●			N	links	118	HSS	blank	DIN 338	2,800 - 13,500	**71119**	214
●		●	●			N	rechts	118	HSS	dampfbe-handelt	DIN 338	2,000 - 20,000	**71115**	215
●		●	○			N	rechts	118	HSS	TiN	DIN 338	1,000 - 16,000	**61116**	218
●		●	○			N	rechts	118	HSS	TiN Kopf	DIN 338	1,000 - 16,000	**61115**	220
●	●	●	○			N	rechts	118	HSS-Co	dampfbe-handelt	DIN 338	1,000 - 15,000	**71149**	222
●	●	●	●	●	○	N	rechts	135	M42	blank	DIN 338	1,000 - 16,000	**71148**	224
			○			H	rechts	118	HSS	blank	DIN 338	1,000 - 12,000	**71117**	226
●	●	●	●			NX	rechts	118	HSS-Co	blank	DIN 338	1,000 - 14,000	**71221**	228
●	●	●	●			NX	rechts	118	HSS-Co	TiN	DIN 338	1,000 - 14,000	**61221**	230
●	○			○		V66	rechts	130	HSS-Co	Fasen nitriert	DIN 338	0,800 - 13,500	**71123**	232
○	●			●		V66 Ti	rechts	130	HSS-Co	blank	DIN 338	1,000 - 16,000	**71122**	234
	●			○		V66 Ti	rechts	130	HSS-Co	TiN	DIN 338	1,000 - 13,500	**61223**	236
○	●			○		V66 Ti	rechts	130	HSS-Co	TiAlN nano	DIN 338	2,000 - 13,000	**51122**	238
●		○	●			V70	rechts	130	HSS	blank	DIN 338	1,500 - 15,500	**71124**	239
●		○	●			V70	links	130	HSS	blank	DIN 338	1,500 - 16,000	**71126**	241
●		●	○			V70	rechts	130	HSS	TiN	DIN 338	1,500 - 16,000	**61124**	243

Spiralbohrer kurz

P	M	K	N	S	H	Typ	Schneid-richtung	Spitzen-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
●		●	○			V70	rechts	130	HSS-Co	Fasen nitriert	DIN 338	1,500 - 13,000	**71158**	245
●		●	○			V63	rechts	130	HSS-Co	TiN	DIN 338	1,500 - 13,000	**61158**	247
●		○	●			V72	rechts	118	HSS	blank	DIN 338	0,550 - 13,000	**71128**	248
●		○	●			V72	links	118	HSS	blank	DIN 338	0,500 - 12,800	**71129**	250
●	○	○	○			V97	rechts	130	HSS-Co	TiAlN nano	DIN 338	1,000 - 13,000	**51158**	251
○	○	●	○			V-PM	rechts	130	HSS-E-PM	TiN	DIN 338	1,000 - 14,000	**61232**	253

Spiralbohrer-Sätze

●	●	●	●			NX	rechts	118	HSS-Co	blank	DIN 338		**79012**	254
●		●	●			N	rechts	118	HSS	dampfbe-handelt	DIN 338		**78879**	254
○		●	○			N	rechts	118	HSS	TiN Kopf	DIN 338		**78880**	255

P	M	K	N	S	H	Typ	Schneid-richtung	Spitzen-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite

Spiralbohrer-Sätze

											Werksnorm		**78877**	256

											Werksnorm		**78878**	256

Spiralbohrer mit verst. Zylinderschaft

•	•	•	•			NX	rechts	118	**HSS-Co**	TiN	Werksnorm	2,000 - 20,000	**61120**	257

•	•	•	•			NX	rechts	118	**HSS-Co**	TiN	Werksnorm	2,000 - 20,000	**61121**	259

•		•		○		V-PM	rechts	130	**HSS-E-PM**	TiAlN nano	Werksnorm	2,000 - 13,000	**51132**	261

Spiralbohrer kurz, Schaft-Ø 16,0 mm

						V72	rechts	118	**HSS-Co**	blank	Werksnorm	16,000 - 30,000	**71168**	262

Spiralbohrer kurz, Schaft-Ø 25,4 mm

						V72	rechts	118	**HSS-Co**	blank	Werksnorm	28,000 - 40,000	**71169**	263

Bohrbuchsenbohrer

•		•	•			N	rechts	118	**HSS**	dampfbe-handelt	DIN 339	1,000 - 19,500	**71130**	264

Spiralbohrer lang

P	M	K	N	S	H	Typ	Schneid-richtung	Spitzen-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
•		•	•			N	rechts	118	HSS	blank	DIN 340	0,500 - 16,500	**71136**	265
•		•	•			N	rechts	118	HSS	dampfbe-handelt	DIN 340	1,800 - 20,000	**71135**	266
•		•	○			N	rechts	118	HSS	TiN	DIN 340	1,000 - 16,000	**61136**	268
•	•	•	•			NX	rechts	118	HSS-Co	blank	DIN 340	1,000 - 14,000	**71222**	270
•	•	•	•			NX	rechts	118	HSS-Co	TiN	DIN 340	1,000 - 14,000	**61222**	272
•	•		•	•		V66	rechts	130	HSS-Co	blank	DIN 340	1,000 - 13,000	**71225**	274
•		•	○			V70	rechts	130	HSS	blank	DIN 340	1,500 - 12,000	**71150**	275
•		•	○			V70	links	130	HSS	blank	DIN 340	1,500 - 13,000	**71152**	276
•		•	○			V70	rechts	130	HSS	TiN	DIN 340	2,000 - 12,000	**61150**	277
•		•	○			V73	rechts	130	HSS	Fasen nitriert	DIN 340	1,500 - 12,700	**71154**	278
•	○	•	○			V73	rechts	130	HSS-Co	Fasen nitriert	DIN 340	1,500 - 13,000	**71156**	280

Spiralbohrer überlang, Reihe 1

•		•	•			V63	rechts	130	HSS	Fasen nitriert	DIN 1869	2,000 - 13,000	**71145**	282
•	○	•	•			V63	rechts	130	HSS-Co	Fasen nitriert	DIN 1869	3,000 - 12,700	**71192**	284

Spiralbohrer überlang, Reihe 2

•		•	•			V63	rechts	130	HSS	Fasen nitriert	DIN 1869	3,000 - 13,000	**71146**	285

P	M	K	N	S	H	Typ	Schneid-richtung	Spitzen-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
Spiralbohrer überlang, Reihe 2														
•	○	•	•			V63	rechts	130	HSS-Co	Fasen nitriert	DIN 1869	3,000 - 12,000	**71193**	286
Spiralbohrer überlang, Reihe 3														
•		•	•			V63	rechts	130	HSS	Fasen nitriert	DIN 1869	3,500 - 13,000	**71147**	287
Spiralbohrer extra lang														
•		•	•			V63	rechts	130	HSS	Fasen nitriert	Werksnorm	6,000 - 12,000	**71195**	288
•		•	•			V63	rechts	130	HSS	blank	Werksnorm	8,000 - 12,000	**71196**	289
Kühlkanalbohrer														
•		•	•			V73-IK	rechts	130	HSS	blank	Werksnorm	3,000 - 13,000	**71584**	290
Kleinstbohrer														
•	•	•	•			N	rechts	118	HSS-E-PM	blank	DIN 1899	0,050 - 1,450	**71187**	291
NC-Anbohrer														
•	•	•	•	•		N	rechts	90	HSS	blank	Werksnorm	3,000 - 25,400	**71175**	293
•	•	•	•	•		N	rechts	90	HSS	TiN	Werksnorm	3,000 - 25,000	**61175**	294
•	•	•	•	•		N	rechts	120	HSS	blank	Werksnorm	3,000 - 25,400	**71176**	295

P	M	K	N	S	H	Typ	Schneid-richtung	Spitzen-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
Spiralbohrer kurz														
●	●	○		○	○	N	rechts	130	HSS-Co8	blank	Werksnorm	10,000 - 25,500	**71303**	296
●	●	○		○	○	N	rechts	130	HSS-Co8	blank	Werksnorm	12,000 - 30,000	**71304**	297
Spiralbohrer														
●		●	●			N	rechts	118	HSS	dampfbe-handelt	DIN 345	3,750 - 68,000	**71300**	298
●	○	●				N	rechts	118	HSS-Co	dampfbe-handelt	DIN 345	5,000 - 33,000	**71416**	301
●		●	●			V70	rechts	130	HSS	blank	DIN 345	7,940 - 32,000	**71305**	302
●	●	●		●		V66 Ti	rechts	130	HSS-Co	blank	DIN 345	8,500 - 32,000	**71312**	303
●	●	●		●		V66 Ti	rechts	130	HSS-Co	blank	DIN 346	11,000 - 29,000	**71313**	304
Bohrbuchsenbohrer														
●		●				N	rechts	118	HSS	dampfbe-handelt	DIN 341	6,000 - 45,000	**71320**	305
●		●	●			V70	rechts	130	HSS	blank	DIN 341	8,000 - 44,000	**71322**	306
Spiralbohrer überlang, Reihe 1														
●		●	●			V63	rechts	130	HSS	Fasen nitriert	DIN 1870	8,000 - 30,000	**71325**	307
Spiralbohrer überlang, Reihe 2														
●		●	●			V63	rechts	130	HSS	Fasen nitriert	DIN 1870	8,000 - 43,000	**71326**	308

P	M	K	N	S	H	Typ	Schneid-richtung	Spitzen-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
Kühlkanalbohrer														
●	○	●	○			N-IK	rechts	118	HSS	dampfbe-handelt	Werksnorm	10,000 - 40,000	**71554**	309
Mehrbereichs-Spiralbohrer mit Kühlkanal, lang														
●		●	●			V70-IK	rechts	130	HSS-Co	dampfbe-handelt	Werksnorm	14,500 - 32,000	**71550**	310
●		●	●			V70-IK	rechts	130	HSS-Co	dampfbe-handelt	Werksnorm	8,000 - 31,500	**71553**	311
Tiefloch-Spiralbohrer mit Kühlkanal, überlang														
●	○	●	○	○		V63-IK	rechts	130	HSS-Co	dampfbe-handelt	Werksnorm	14,500 - 31,500	**71565**	312
●	○	●	○	○		V63-IK	rechts	130	HSS-Co	dampfbe-handelt	Werksnorm	8,000 - 14,000	**71567**	313
●	○	●	○	○		V63-IK	rechts	130	HSS-Co	dampfbe-handelt	Werksnorm	14,500 - 32,000	**71566**	314
●	○	●	○	○		V63-IK	rechts	130	HSS-Co	dampfbe-handelt	Werksnorm	8,000 - 31,500	**71568**	315
Kühlmittelzuführringe														
											Werksnorm		**71560**	316

P	M	K	N	S	H	Typ	Schneid-richtung	Senkwin-kel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite

Mehrfasenstufenbohrer mit Zylinderschaft

•		•				N	rechts	90	HSS	dampfbe-handelt	DIN 8374	6,000 - 19,000	**71501**	317

•		•				N	rechts	90	HSS	dampfbe-handelt	DIN 8378	3,400 - 13,500	**71503**	318

•		•				N	rechts	180	HSS	dampfbe-handelt	DIN 8376	6,000 - 18,000	**71500**	319

Mehrfasenstufenbohrer mit Morsekegel

•		•				N	rechts	90	HSS	dampfbe-handelt	DIN 8379	9,000 - 22,000	**71523**	320

•		•				N	rechts	180	HSS	dampfbe-handelt	DIN 8377	11,000 - 26,000	**71520**	321

Zentrierbohrer ohne Fläche

P	M	K	N	S	H	Typ	Schneid-richtung	Form	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
•	•	•	•	○		N	rechts	A	HSS	blank	DIN 333	0,500 - 12,500	**71600**	322
•	•	•	•	○		N	links	A	HSS	blank	DIN 333	0,500 - 8,000	**71601**	323
•	•	•	•	○		N	rechts	R	HSS	blank	DIN 333	0,500 - 10,000	**71602**	324
•	•	•	•	•		N	rechts	R	HSS	TiN	DIN 333	0,800 - 6,300	**61602**	325
•	•	•	•	○		N	rechts	A	HSS	blank	DIN 333	1,000 - 6,300	**71605**	326
•	•	•	•	○		N	rechts	B	HSS	blank	DIN 333	1,000 - 6,300	**71604**	327

Zentrierbohrer mit Fläche

•	•	•	•	○		N	rechts	A	HSS	blank	DIN 333	1,600 - 6,300	**71607**	328
•	•	•	•	○		N	rechts	R	HSS	blank	DIN 333	1,600 - 8,000	**71609**	329

P	M	K	N	S	H	Typ	Schneid-richtung	Spitzen-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite

Aufbohrer mit Zylinderschaft

•		•				N	rechts	120	HSS	dampfbe-handelt	DIN 344	4,800 - 16,000	**72200**	330

Aufbohrer mit Morsekegel

•		•				N	rechts	120	HSS	dampfbe-handelt	DIN 343	9,000 - 48,600	**72210**	331

Arbeitsrichtwerte für Spiralbohrer

Vorschubreihen

Werkzeug-Ø mm \ Code-Buchstabe	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

Vorschübe f (mm/U)

Werkzeuge mit fett gedruckten Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

R rechtsschneidend
(Bestell-Nr. ohne Schneidrichtungssymbol sind grundsätzlich rechtsschneidend)

L linksschneidend

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

≤3×D Bohrtiefe

Katalog-Nr.	71108 71109 L	71110 71111 L	71114 71113 L
Schneidstoff	HSS	HSS	HSS
Oberfläche	bl./dampf.	blank	blank
DIN/Form	1897	1897	WN
Typ	N	N	V72
Katalogseite	194/196	190/192	209/210

61118
HSS
TiN
1897
N
197

71112	71168	71169	71303 71304	71106
HSS-Co	HSS-Co	HSS-Co	HSS-Co8	M42
bl./dampf.	blank	blank	blank	blank
1897	WN	WN	WN	1897
VX	V72	V72	N	N
206	262	263	296/297	199

v_c m/min	Vorschubreihen-Code		
27	**F**	**F**	F
22	**E**	**E**	E
30	**F**	**F**	**F**
30	E	E	E
25	**E**	**E**	**E**
25	**E**	**E**	**E**
30	**F**	**F**	F
16	D	D	
30	**F**	**F**	F
30	F	F	F
25	**F**	**F**	F
20	F	F	F
70			G
70			G
50	G	G	**G**
50	F	F	**F**
70	F	F	F
60	E	E	**E**
40	E	E	**E**
30	D	D	**D**
25	D	D	D
15	D	D	D
18	D	D	**D**
28	E	E	E

v_c m/min	VR-Code
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	Vorschubreihen-Code				
35	E				E
30	E				E
40	E				E
40	**E**	**E**	**E**		E
40	E				E
40	E				E
35	**D**	**D**	**D**	**D**	D
20	**D**	D	D	**D**	D
16	**C**	C	C	**C**	C
36	F				F
20	**D**	D	D	**D**	C
15	**C**	C	C	**C**	C
16	D	D	D	**D**	
12	C	C	C	**C**	C
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
35	**F**				E
30	**F**				E
30	F				E
25	**F**				E
10	C			C	C
8	A	A	A	**A**	A
10	B			**B**	**B**
6	B			**B**	**B**
90					G
90					G
80					G
70					F
70					F
40					E
60					E
40					E
35	D				D
30	**D**				D
20	D				D
15	D				D
20	D	D	D		
30					D

Arbeitsrichtwerte für Spiralbohrer

Vorschubreihen

Werkzeug-Ø mm / Code-Buchstabe	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

Vorschübe f (mm/U)

Vorschubreihen für 71187

Werkzeug-Ø 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

Vorschübe f (mm/U)

Werkzeuge mit fett gedruckten Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

≤3×D Bohrtiefe

Katalog-Nr.	61112	51159	61120	71220	61220	61131	71187
Schneidstoff	HSS-Co	HSS-Co	HSS-Co	HSS-Co	HSS-Co	HSS-E-PM	HSS-E-PM
Oberfläche	TiN	TiAlN	TiN	blank	TiN	TiN	blank
DIN/Form	1897	1897	WN	1897	1897	1897	1899
Typ	VX	V97	NX	NX	NX	V-PM	N
Katalogseite	207	204	257	200	202	205	291

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	v_c m/min	VR-Code
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

Arbeitsrichtwerte für Spiralbohrer

Vorschubreihen

Werkzeug-Ø mm \ Code-Buchstabe	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

Vorschübe f (mm/U)

Werkzeuge mit fett gedruckten Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

R rechtsschneidend
(Bestell-Nr. ohne Schneidrichtungssymbol sind grundsätzlich rechtsschneidend)

L linksschneidend

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

≤5×D Bohrtiefe

Katalog-Nr.	71116 71119 L	71115	71300	71117	71124 71126 L	71305	71128 71129 L	61116	61124	61115	61223
Schneidstoff	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS-Co
Oberfläche	blank	bl./dampf.	dampf.	blank	blank	blank	blank	TiN	TiN	TiN Kopfb.	TiN
DIN/Form	338	338	345	338	338	345	338	338	338	338	338
Typ	N	N	N	H	V70	V70	V72	N	V70	N	V66 Ti
Katalogseite	212/214	215	298	226	239/241	302	248/250	218	243	220	236

v_c m/min	Vorschubreihen-Code							v_c m/min	Vorschubreihen-Code		v_c m/min	VR-Code	v_c m/min	VR-Code
27	F	**F**	**F**		**F**	**F**	**F**	30	**F**	**F**	30	**F**		
22	**E**	**E**	**E**		**E**	**E**	**E**	24	**E**	**E**	24	**E**		
30	F	**F**	**F**		**F**	**F**	**F**	33	**F**	**F**	33	**F**		
30	E	E	E		**E**	**E**	E	33	E	E	33	E		
25	E	**E**	**E**		**E**	**E**	**E**	28	**E**	**E**	28	**E**		
25	E	E	**E**		**E**	**E**	**E**	28	**E**	**E**	28	**E**		
								25	D	D	25	D		
								22	D	D	22	D		
													22	C
30	F	F	F		**F**	**F**	F	33	**F**	**F**	33	**F**		
								20	D	D	20	D		
								14	D	D	14	D		
16		D	D		D	D		18	D	D	18	D		
													14	C
													9	**B**
													20	D
													15	**C**
													18	**C**
30	F	**F**	**F**		G	G	F	33	F	G	33	F		
30	F	F	F		F	F	F	33	F	F	33	F		
25	F	F	F		F	F	F	28	**F**	F	28	**F**		
25	F	F	F		F	F	F	22	F	F	22	F		
													12	**C**
													6	**B**
													11	**B**
													7	**B**
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	80	F	**F**	80	F		
50	E	E	E		**F**	**F**	**E**	65	E	**E**	65	E		
70				**F**				75	E	E	75	E		
40	E	E	E		**F**	**F**	**E**	45	E	**E**	45	E		
30	D	D	D	D			D	33	**D**	**D**	33	**D**		
25	D	D	D				D	27	**D**	**D**	27	**D**		
15	D	D	D		D	D	D	16	**D**	**D**	16	**D**		
								15	**D**	**D**	15	**D**	17	D
18	D	D	D	D	**D**	**D**	**D**	22	D	D	22	D		
28	E	E	E	**E**			E	36	E		36	E		

Arbeitsrichtwerte für Spiralbohrer

Vorschubreihen

Werkzeug-Ø mm \ Code-Buchstabe	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

Vorschübe f (mm/U)

Werkzeuge mit fett gedruckten Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

≤5×D Bohrtiefe

Katalog-Nr.	71416	71149	71158	71123	71122	71312	71313	71148	71221	61221
Schneidstoff	HSS-Co	HSS-Co	HSS-Co	HSS-Co	HSS-Co	HSS-Co	HSS-Co	M42	HSS-Co	HSS-Co
Oberfläche	dampf.	bl./dampf.	Fas. nitr.	bl./Fas.nitr.	blank	blank	blank	blank	blank	TiN
DIN/Form	345	338	338	338	338	345	346	338	338	338
Typ	N	N	V70	V66	V66 Ti	V66 Ti	V66 Ti	N	NX	NX
Katalogseite	301	222	245	232	234	303	304	224	228	230

v_c m/min	Vorschubreihen-Code								v_c m/min	VR-Code	v_c m/min	VR-Code
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

Arbeitsrichtwerte für Spiralbohrer

Vorschubreihen

Werkzeug-Ø mm \ Code-Buchstabe	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

Vorschübe f (mm/U)

Werkzeuge mit fett gedruckten Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

≤5×D Bohrtiefe

≤10×D

Katalog-Nr.	61121	61158	61232	51132	51158	51122	71222	61222
Schneidstoff	HSS-Co	HSS-Co	HSS-E-PM	HSS-E-PM	HSS-Co	HSS-Co	HSS-Co	HSS-Co
Oberfläche	TiN	TiN	TiN	TiAlN	TiAlN	TiAlN	blank	TiN
DIN/Form	WN	338	338	WN	338	338	340	340
Typ	NX	V70	V-PM	V-PM	V97	V66 Ti	NX	NX
Katalogseite	259	247	253	261	251	238	270	272

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	v_c m/min	VR-Code
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

Arbeitsrichtwerte für Spiralbohrer

Vorschubreihen

Werkzeug-Ø mm (Code-Buchstabe)	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

Vorschübe f (mm/U)

Werkzeuge mit fett gedruckten Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

R rechtsschneidend
(Bestell-Nr. ohne Schneidrichtungssymbol sind grundsätzlich rechtsschneidend)

L linksschneidend

Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

≤10×D Bohrtiefe

Katalog-Nr.	71136	71130	71135	71320	71150 71152 L	71322	71154	71584	61136	61150	71225	71156	71550 71553
Schneidstoff	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS-Co		HSS-Co
Oberfläche	blank	blank/dampf.		dampf.	blank	blank	Fas. nitr.	blank	TiN	TiN	blank	Fas. nitr.	dampf.
DIN/Form	340	339	340	341	340	341	340	WN	340	340	340	340	WN
Typ	N	N	N	N	V70	V70	V73	V73-IK	N	V70	V66	V73	V70-IK
Katalogseite	265	264	266	305	275/276	306	278	290	268	277	274	280	310/311

v_c m/min	Vorschubreihen-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
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

Arbeitsrichtwerte für Spiralbohrer

Vorschubreihen

Werkzeug-Ø mm \ Code-Buchstabe	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

Vorschübe f (mm/U)

Werkzeuge mit fett gedruckten Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

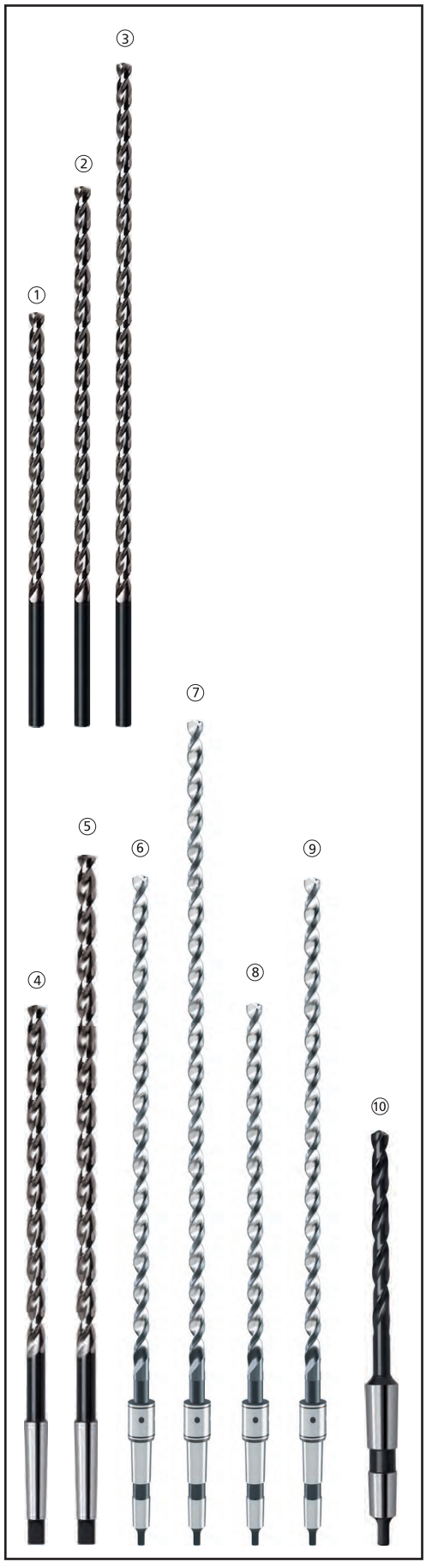
Kühlmitteleinsatz:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
ohne Schmiermittel □
nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

≥10×D Bohrtiefe

Katalog-Nr.	71145① 71146② 71147③	71195① 71196②	71325④ 71326⑤	71192① 71193②	71565⑥ 71566⑦ 71567⑧ 71568⑨	71554⑩
Schneidstoff	HSS	HSS	HSS	HSS-Co	HSS-Co	HSS
Oberfläche	bl./Fas. nitr.	Fas. nitr.	Fas.n./da.	Fas. nitr.	dampf.	dampf.
DIN/Form	1869	WN	1870	1869	WN	WN
Typ	V63	V63	V63	V63	V63-IK	N-IK
Katalogseite	282/285/287	288/289	307/308	284/286	312/314/313/315	309

v_c m/min	Vorschubreihen-Code			v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code
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



Spiralbohrer mit Zylinderschaft

Spiralbohrer extra kurz

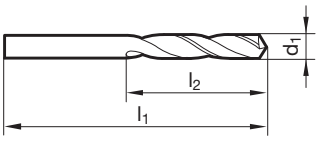
Katalog-Nr. 71110

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

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 176

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- für Automaten/Revolverbänke
- auch für Handbohrmaschinen geeignet



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 mm	inch	l1 mm	l2 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 mm	inch	l1 mm	l2 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

Spiralbohrer mit Zylinderschaft

Spiralbohrer extra kurz

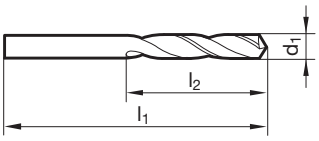
Katalog-Nr. 71111

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

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 176

- Ausspitzung ≥ Ø 14,300
- Kegelmantelanschliff
- für Automaten/Revolverbänke
- auch für Handbohrmaschinen geeignet



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer extra kurz

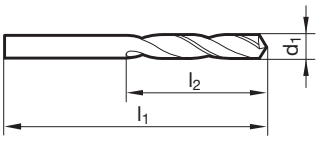
Katalog-Nr. 71108

N | ~3xD | DIN 1897 | HSS | dampf-behan-delt | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 176

- Ausspitzung ≥ Ø 2,000
- Kegelmantelanschliff
- für Automaten/Revolverbänke
- auch für Handbohrmaschinen geeignet
- blank < 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

Spiralbohrer mit Zylinderschaft

Spiralbohrer extra kurz

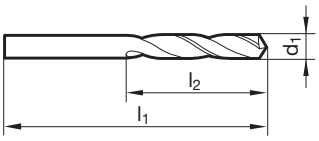
Katalog-Nr. 71109

N | ~3xD | DIN 1897 | HSS | dampfbe-handelt | 118° | h8 | L | Cyl

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 176

- Ausspitzung ≥ Ø 14,500
- Kegelmantelanschliff
- für Automaten/Revolverbänke
- blank < 6,0 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

Spiralbohrer mit Zylinderschaft

Spiralbohrer extra kurz

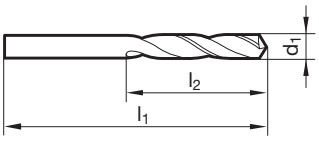
Katalog-Nr. 61118

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

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 176

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- für Automaten/Revolverbänke
- auch für Handbohrmaschinen geeignet
- höherer Verschleißschutz



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

d1 mm	inch	l1 mm	l2 mm
13,000		102,000	51,000
13,100	33/64	102,000	51,000

Spiralbohrer mit Zylinderschaft

Spiralbohrer extra kurz

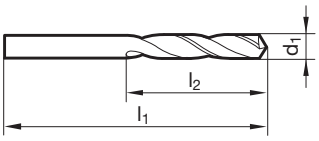
Katalog-Nr. 71106

N | ~3xD | DIN 1897 | M42 | blank | 135° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	●	●	○

Arbeitsrichtwerte Seite 176

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- hoher Co- und Mo-Anteil
- besonders hohe Verschleißfestigkeit



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer extra kurz

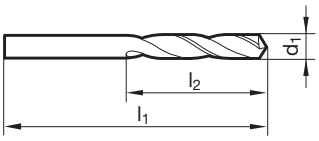
Katalog-Nr. 71220

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

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 178

- Ausspitzung ≥ Ø 1,000
- Flächenanschliff
- geringe Vorschubkraft notwendig
- geringes Drehmoment notwendig
- universell einsetzbar



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer extra kurz

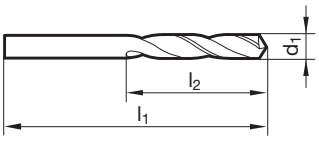
Katalog-Nr. 61220

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

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 178

- Ausspitzung ≥ Ø 1,000
- Flächenanschliff
- geringe Vorschubkraft notwendig
- geringes Drehmoment notwendig
- universell einsetzbar
- höherer Verschleißschutz



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer extra kurz

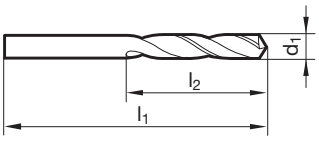
Katalog-Nr. 51159

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

P	M	K	N	S	H
●	●	○	○		

Arbeitsrichtwerte Seite 178

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- höhere Verschleißfestigkeit



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer extra kurz

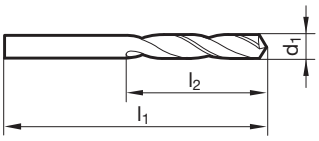
Katalog-Nr. 61131

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

P	M	K	N	S	H
●	●	●	○		

Arbeitsrichtwerte Seite 178

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- weite Spannuten
- besonders hohe Verschleißfestigkeit
- besonders hohe Stabilität



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
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2,300		40,000	13,000
2,400		43,000	14,000
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2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
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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
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7,000		74,000	34,000
7,100		74,000	34,000
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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

Spiralbohrer mit Zylinderschaft

Spiralbohrer extra kurz

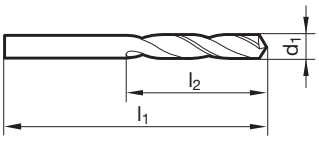
Katalog-Nr. 71112

vx | ~3xD | DIN 1897 | HSS-Co | dampf-behan-delt | 118° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 176

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- blank < 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

Spiralbohrer mit Zylinderschaft

Spiralbohrer extra kurz

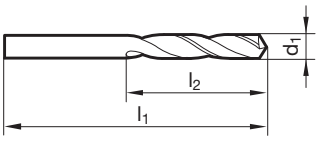
Katalog-Nr. 61112

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

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 178

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- höhere Verschleißfestigkeit



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer extra kurz

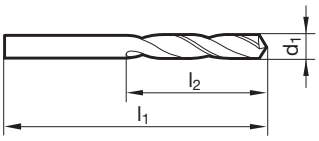
Katalog-Nr. 71114

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

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 176

- ohne Ausspitzung
- Kegelmantelanschliff
- optimal für Drehautomaten



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer extra kurz

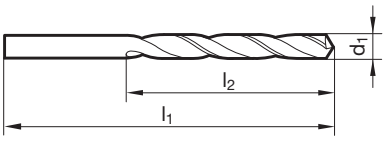
Katalog-Nr. 71113

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

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 176

- ohne Ausspitzung
- Kegelmantelanschliff
- optimal für Drehautomaten



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

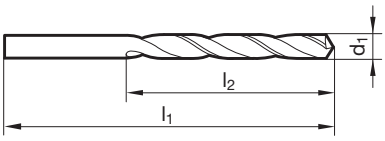
Katalog-Nr. 71116

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

P	M	K	N	S	H
•		•	•		

Arbeitsrichtwerte Seite 180

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

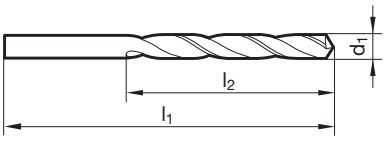
Katalog-Nr. 71119

N | ~5xD | DIN 338 | HSS | blank | 118° | h8 | L | Cyl

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 180

- Ausspitzung ≥ Ø 14,010
- Kegelmantelanschliff



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

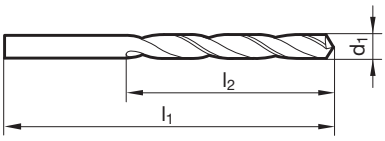
Katalog-Nr. 71115

N | ~5xD | DIN 338 | HSS | dampf-behan-delt | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 180

- Ausspitzung ≥ Ø 2,180
- Kegelmantelanschliff
- blank < 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

d1 mm	inch	l1 mm	l2 mm
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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

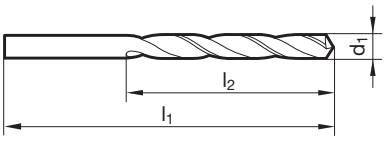
Katalog-Nr. 61116

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

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 180

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- höhere Verschleißfestigkeit



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

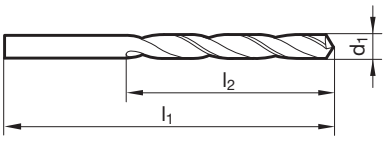
Katalog-Nr. 61115

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

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 180

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

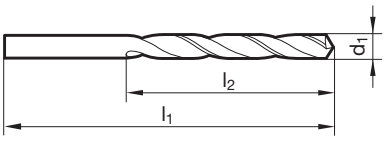
Katalog-Nr. 71149

N | ~5xD | DIN 338 | HSS-Co | dampf-behan-delt | 118° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	○		

Arbeitsrichtwerte Seite 182

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- blank < 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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

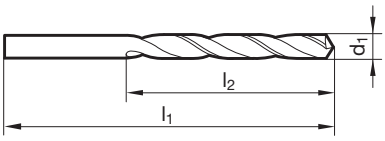
Katalog-Nr. 71148

N | ~5xD | DIN 338 | M42 | blank | 135° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	●	●	○

Arbeitsrichtwerte Seite 182

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- hoher Co- und Mo-Anteil
- besonders hohe Verschleißfestigkeit



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

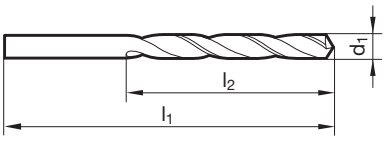
Katalog-Nr. 71117

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

P	M	K	N	S	H
			○		

Arbeitsrichtwerte Seite 180

- Kegelmantelanschliff
- für harte und spröde Werkstoffe



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

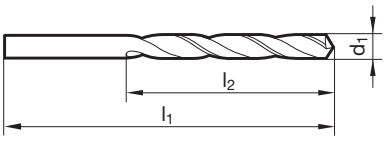
Katalog-Nr. 71221

NX | ~5xD | DIN 338 | HSS-Co | blank | 118° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 182

- Ausspitzung ≥ Ø 1,000
- Flächenanschliff
- geringe Vorschubkraft notwendig
- geringes Drehmoment notwendig
- universell einsetzbar



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

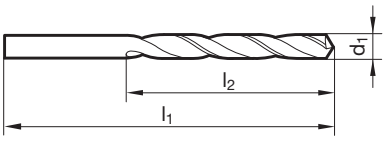
Katalog-Nr. 61221

NX | ~5xD | DIN 338 | HSS-Co | TiN | 118° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 182

- Ausspitzung ≥ Ø 1,000
- Flächenanschliff
- geringe Vorschubkraft notwendig
- geringes Drehmoment notwendig
- höhere Verschleißfestigkeit
- universell einsetzbar



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
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		l1	l2
mm	inch	mm	mm
14,000		160,000	108,000

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

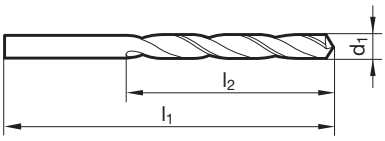
Katalog-Nr. 71123

V66 | ~5xD | DIN 338 | HSS-Co | Fasen nitriert | 130° | h8 | R | Cyl

P	M	K	N	S	H
●	○			○	

Arbeitsrichtwerte Seite 182

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- blank < 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		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
10,500		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		l1	l2
mm	inch	mm	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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

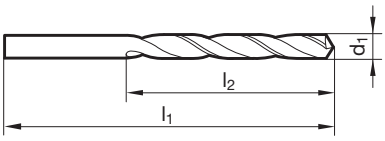
Katalog-Nr. 71122

V66 Ti | ~5xD | DIN 338 | HSS-Co | blank | 130° | h8 | R | Cyl

P	M	K	N	S	H
○	●			●	

Arbeitsrichtwerte Seite 182

- Ausspitzung ≥ Ø 4,600
- Kegelmantelanschliff



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

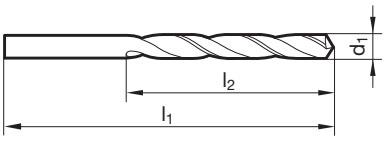
Katalog-Nr. 61223

V66 Ti | ~5xD | DIN 338 | HSS-Co | TiN | 130° | h8 | R | Cyl

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 180

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- höhere Verschleißfestigkeit



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		l1	l2
mm	inch	mm	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		l1	l2
mm	inch	mm	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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

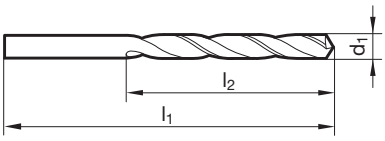
Katalog-Nr. 51122

V66 Ti | ~5xD | DIN 338 | HSS-Co | TiAlN nano | 130° | h8 | R | Cyl

P	M	K	N	S	H
○	●			○	

Arbeitsrichtwerte Seite 184

- Ausspitzung ≥ Ø 2,000
- Kegelmantelanschliff
- höhere Verschleißfestigkeit



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

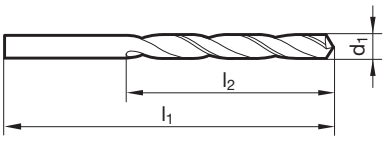
Katalog-Nr. 71124

V70 | ~5xD | DIN 338 | HSS | blank | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		○	●		

Arbeitsrichtwerte Seite 180

- Ausspitzung ≥ Ø 1,500
- Kegelmantelanschliff
- weite Spannuten



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

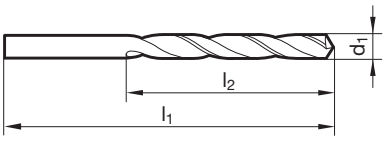
Katalog-Nr. 71126

V70 | ~5xD | DIN 338 | HSS | blank | 130° | h8 | L | Cyl

P	M	K	N	S	H
●		○	●		

Arbeitsrichtwerte Seite 180

- Ausspitzung ≥ Ø 1,500
- Kegelmantelanschliff
- weite Spannuten



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		l1	l2
mm	inch	mm	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		l1	l2
mm	inch	mm	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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

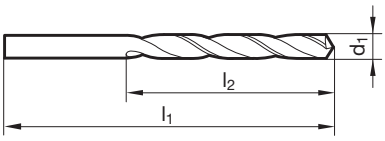
Katalog-Nr. 61124

V70 | ~5xD | DIN 338 | HSS | TiN | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 180

- Ausspitzung ≥ Ø 1,500
- Kegelmantelanschliff
- weite Spannuten
- höherer Verschleißschutz



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

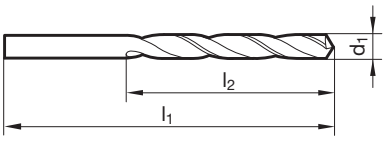
Katalog-Nr. 71158

V70 | ~5xD | DIN 338 | HSS-Co | Fasen nitriert | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 182

- Ausspitzung ≥ Ø 1,500
- Kegelmantelanschliff
- weite Spannuten
- blank < 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 mm	inch	l1 mm	l2 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 mm	inch	l1 mm	l2 mm
12,700	1/2	151,000	101,000
13,000		151,000	101,000

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

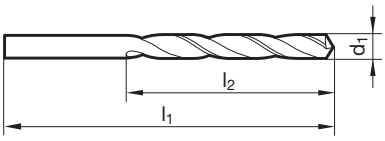
Katalog-Nr. 61158

V63 | ~5xD | DIN 338 | HSS-Co | TiN | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 184

- Ausspitzung ≥ Ø 1,500
- Kegelmantelanschliff
- weite Spannuten
- höhere Verschleißfestigkeit
- besonders für Bohrtiefen über 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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

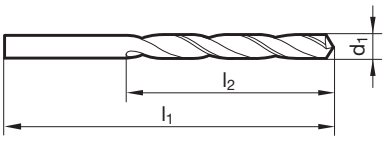
Katalog-Nr. 71128

V72 | ~5xD | DIN 338 | HSS | blank | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		○	●		

Arbeitsrichtwerte Seite 180

- Kegelmantelanschliff
- optimal für Drehautomaten



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

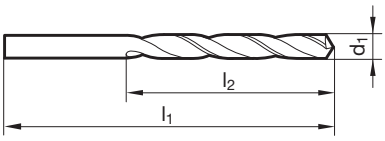
Katalog-Nr. 71129

V72 | ~5xD | DIN 338 | HSS | blank | 118° | h8 | L | Cyl

P	M	K	N	S	H
●		○	●		

Arbeitsrichtwerte Seite 180

- Kegelmantelanschliff
- optimal für Drehautomaten



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

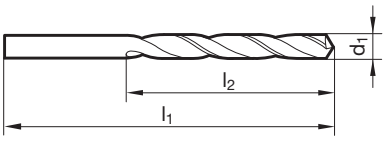
Katalog-Nr. 51158

V97 | ~5xD | DIN 338 | HSS-Co | TiAlN nano | 130° | h8 | R | Cyl

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 184

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- weite Spannuten
- höhere Verschleißfestigkeit
- besonders für Bohrtiefen über 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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz

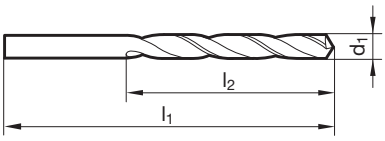
Katalog-Nr. 61232

V-PM | ~5xD | DIN 338 | HSS-E-PM | TiN | 130° | h8 | R | Cyl

P	M	K	N	S	H
○	○	●	○		

Arbeitsrichtwerte Seite 184

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- weite Spannuten
- besonders hohe Stabilität
- besonders hohe Verschleißfestigkeit



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer-Sätze

Katalog-Nr. 79012

NX | ~5xD | DIN 338 | HSS-Co | blank | 118° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	●		

- in Kunststoffbox
- bestehend aus Katalog-Nr. 71221
- Flächenanschliff
- ideal für den Werkstatteinsatz auf stationären Maschinen

Code-Nr.	d1 mm	steigend um mm	Stück pro Satz
7,014	1,0-13,0	0,5	25
7,018	1,0-10,5	0,5	24

Spiralbohrer mit Zylinderschaft

Spiralbohrer-Sätze

Katalog-Nr. 78879

N | ~5xD | DIN 338 | HSS | dampfbe-handelt | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

- in Kunststoffbox
- bestehend aus Katalog-Nr. 71115
- Kegelmantelanschliff
- blank < 2,36 mm
- Für Monteure und Handwerker stehen Sätze mit den gebräuchlichsten Bohrerabmessungen zur Verfügung, die mit Bakelitständer und Kassetten geliefert werden können. Auf Wunsch sind andere Satz-Zusammenstellungen möglich.

Code-Nr.	d1 mm	steigend um mm	Stück pro Satz
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

Spiralbohrer mit Zylinderschaft

Spiralbohrer-Sätze

Katalog-Nr. 78880

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

P	M	K	N	S	H
○		●	○		

- in Kunststoffbox
- bestehend aus Katalog-Nr. 61115
- Kegelmantelanschliff
- Für Monteure und Handwerker stehen Sätze mit den gebräuchlichsten Bohrerabmessungen zur Verfügung, die mit Bakelitständer und Kassetten geliefert werden können. Auf Wunsch sind andere Satz-Zusammenstellungen möglich.

Code-Nr.	d1 mm	steigend um mm	Stück pro Satz
6,013	1,0-10,0	0,5	19
6,014	1,0-13,0	0,5	25

Spiralbohrer mit Zylinderschaft

Spiralbohrer-Sätze

WN

- Bakelitständer

Katalog-Nr. 78877

Code-Nr.	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

Spiralbohrer mit Zylinderschaft

Spiralbohrer-Sätze

WN

- Kassette

Katalog-Nr. 78878

Code-Nr.	d1 mm	steigend um mm	Stück pro Satz
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

Spiralbohrer mit Zylinderschaft

Spiralbohrer mit verst. Zylinderschaft

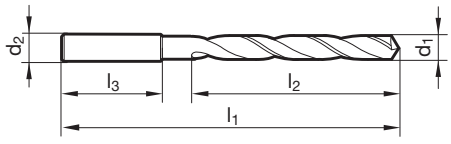
Katalog-Nr. 61120

NX | ~3xD | WN | HSS-Co | TiN | 118° | h8 | R | HA

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 178

- Ausspitzung ≥ Ø 2,000
- Flächenanschliff
- geringe Vorschubkraft notwendig
- geringes Drehmoment notwendig
- höhere Verschleißfestigkeit
- universell einsetzbar
- mit abgesetztem Schaft



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer mit verst. Zylinderschaft

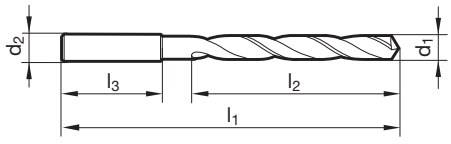
Katalog-Nr. 61121

NX | ~5xD | WN | HSS-Co | TiN | 118° | h8 | R | HA

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 184

- Ausspitzung ≥ Ø 2,000
- Flächenanschliff
- geringe Vorschubkraft notwendig
- geringes Drehmoment notwendig
- höhere Verschleißfestigkeit
- universell einsetzbar
- mit abgesetztem Schaft



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer mit verst. Zylinderschaft

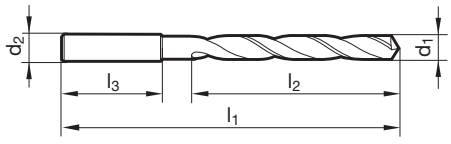
Katalog-Nr. 51132

V-PM | ~5xD | WN | HSS-E-PM | TiAlN nano | 130° | h8 | R | HA

P	M	K	N	S	H
●		●		○	

Arbeitsrichtwerte Seite 184

- Ausspitzung ≥ Ø 2,000
- Kegelmantelanschliff
- besonders hohe Stabilität
- besonders hohe Verschleißfestigkeit
- mit abgesetztem Schaft



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz, Schaft-Ø 16,0 mm

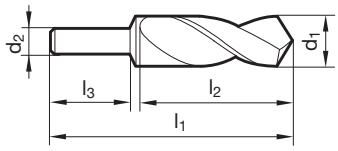
Katalog-Nr. 71168

V72 | WN | HSS-Co | blank | 118° | h8 | R | Cyl

P	M	K	N	S	H

Arbeitsrichtwerte Seite 176

- mit Einheitsschaft
- für Umarbeiten wie z. B. Durchmesserkorrektur, Stufenanschliff, Formanschliff
- ohne Spitzenanschliff, nicht schneidend



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer kurz, Schaft-Ø 25,4 mm

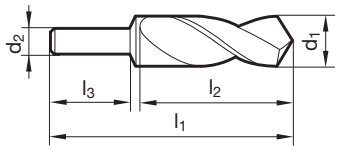
Katalog-Nr. 71169

V72 | WN | HSS-Co | blank | 118° | h8 | R | Cyl

P	M	K	N	S	H

Arbeitsrichtwerte Seite 176

- mit Einheitsschaft
- für Umarbeiten wie z. B. Durchmesserkorrektur, Stufenanschliff, Formanschliff
- ohne Spitzenanschliff, nicht schneidend



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			

Spiralbohrer mit Zylinderschaft

Bohrbuchsenbohrer

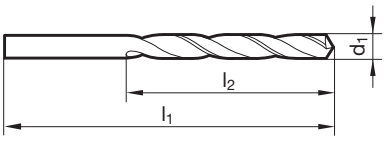
Katalog-Nr. 71130

N | ~10xD | DIN 339 | HSS | dampf-behan-delt | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 186

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- zum Bohren durch Bohrbuchsen
- ab Ø 3 mm mit Mitnehmer nach DIN 1809
- blank < 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
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

Spiralbohrer mit Zylinderschaft

Spiralbohrer lang

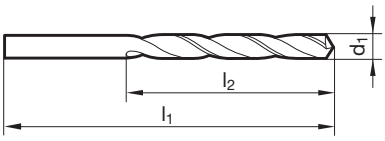
Katalog-Nr. 71136

N | ~10xD | DIN 340 | HSS | blank | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 186

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- für tiefe Bohrungen
- zum Bohren durch Bohrbuchsen



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer lang

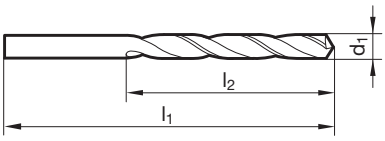
Katalog-Nr. 71135

N | ~10xD | DIN 340 | HSS | dampf-behan-delt | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 186

- Ausspitzung ≥ Ø 1,800
- Kegelmantelanschliff
- für tiefe Bohrungen
- zum Bohren durch Bohrbuchsen
- blank < 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 mm	inch	l1 mm	l2 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 mm	inch	l1 mm	l2 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

Spiralbohrer mit Zylinderschaft

Spiralbohrer lang

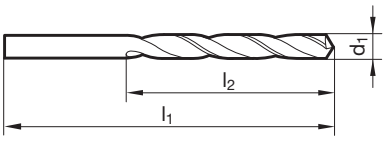
Katalog-Nr. 61136

N | ~10xD | DIN 340 | HSS | TiN | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 186

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- für tiefe Bohrungen
- zum Bohren durch Bohrbuchsen
- höhere Verschleißfestigkeit



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer lang

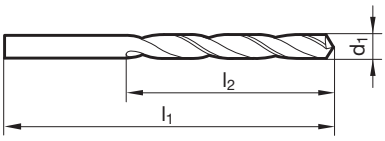
Katalog-Nr. 71222

NX | ~10xD | DIN 340 | HSS-Co | blank | 118° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 184

- Ausspitzung ≥ Ø 1,000
- Flächenanschliff
- geringe Vorschubkraft notwendig
- geringes Drehmoment notwendig
- universell einsetzbar



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
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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
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8,300		165,000	109,000
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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
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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

Spiralbohrer mit Zylinderschaft

Spiralbohrer lang

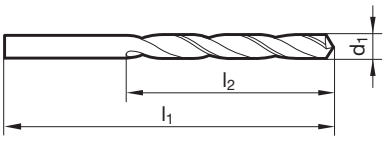
Katalog-Nr. 61222

NX | ~10xD | DIN 340 | HSS-Co | TiN | 118° | h8 | R | Cyl

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 184

- Ausspitzung ≥ Ø 1,000
- Flächenanschliff
- geringes Drehmoment notwendig
- geringe Vorschubkraft notwendig
- höhere Verschleißfestigkeit
- universell einsetzbar



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
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4,000		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
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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

Spiralbohrer mit Zylinderschaft

Spiralbohrer lang

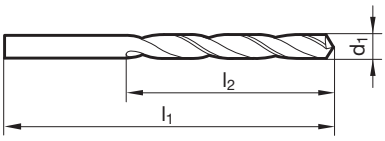
Katalog-Nr. 71225

V66 | ~10xD | DIN 340 | HSS-Co | blank | 130° | h8 | R | Cyl

P	M	K	N	S	H
●	●		●	●	

Arbeitsrichtwerte Seite 186

- Ausspitzung ≥ Ø 1,000
- Kegelmantelanschliff
- höhere Verschleißfestigkeit
- vorzugsweise für Titan und Titanlegierungen
- bedingt für 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
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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
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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

Spiralbohrer mit Zylinderschaft

Spiralbohrer lang

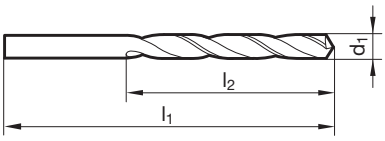
Katalog-Nr. 71150

V70 | ~10xD | DIN 340 | HSS | blank | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 186

- Ausspitzung ≥ Ø 1,500
- Kegelmantelanschliff
- weite Spannuten



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
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3,400		112,000	73,000
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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
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6,800		156,000	102,000
6,900		156,000	102,000
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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

Spiralbohrer mit Zylinderschaft

Spiralbohrer lang

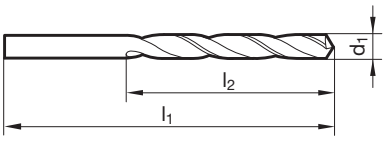
Katalog-Nr. 71152

V70 | ~10xD | DIN 340 | HSS | blank | 130° | h8 | L | Cyl

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 186

- Ausspitzung ≥ Ø 1,500
- Kegelmantelanschliff
- weite Spannuten



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer lang

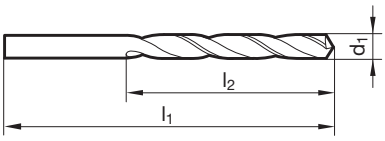
Katalog-Nr. 61150

V70 | ~10xD | DIN 340 | HSS | TiN | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 186

- Ausspitzung ≥ Ø 2,000
- Kegelmantelanschliff
- weite Spannuten
- höherer Verschleißschutz



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer lang

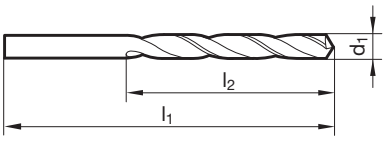
Katalog-Nr. 71154

V73 | ~10xD | DIN 340 | HSS | Fasen nitriert | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 186

- Ausspitzung ≥ Ø 1,500
- Kegelmantelanschliff
- weite Spannuten
- besonders hohe Stabilität



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

d1 mm	inch	l1 mm	l2 mm
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

Spiralbohrer mit Zylinderschaft

Spiralbohrer lang

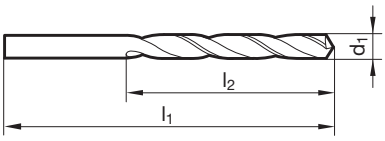
Katalog-Nr. 71156

V73 | ~10xD | DIN 340 | HSS-Co | Fasen nitriert | 130° | h8 | R | Cyl

P	M	K	N	S	H
●	○	●	○		

Arbeitsrichtwerte Seite 186

- Ausspitzung ≥ Ø 1,500
- Kegelmantelanschliff
- weite Spannuten
- besonders hohe Stabilität
- höhere Verschleißfestigkeit



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

d1 mm	inch	l1 mm	l2 mm
13,000		205,000	134,000

Spiralbohrer mit Zylinderschaft

Spiralbohrer überlang, Reihe 1

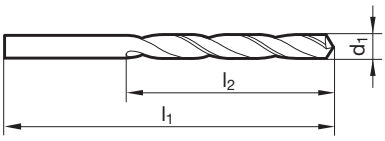
Katalog-Nr. 71145

V63 | ~15xD | DIN 1869 | HSS | Fasen nitriert | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 188

- Ausspitzung ≥ Ø 2,000
- Kegelmantelanschliff
- weite Spannuten
- für extrem tiefe Bohrungen
- zur Verbesserung der Spanabfuhr
- blank < 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

Spiralbohrer mit Zylinderschaft

Spiralbohrer überlang, Reihe 1

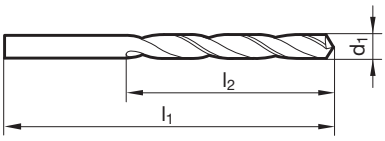
Katalog-Nr. 71192

V63 | ~15xD | DIN 1869 | HSS-Co | Fasen nitriert | 130° | h8 | R | Cyl

P	M	K	N	S	H
●	○	●	●		

Arbeitsrichtwerte Seite 188

- Ausspitzung ≥ Ø 3,000
- Kegelmantelanschliff
- weite Spannuten
- höhere Verschleißfestigkeit
- für extrem tiefe Bohrungen
- zur Verbesserung der Spanabfuhr



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer überlang, Reihe 2

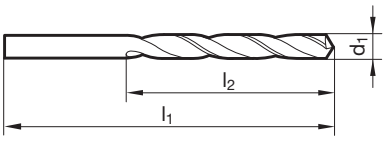
Katalog-Nr. 71146

V63 | ~20xD | DIN 1869 | HSS | Fasen nitriert | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 188

- Ausspitzung ≥ Ø 13,000
- Kegelmantelanschliff
- weite Spannuten
- für extrem tiefe Bohrungen
- zur Verbesserung der Spanabfuhr



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer überlang, Reihe 2

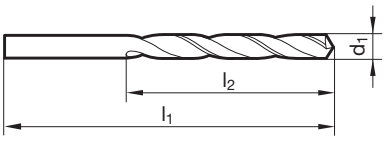
Katalog-Nr. 71193

V63 | ~20xD | DIN 1869 | HSS-Co | Fasen nitriert | 130° | h8 | R | Cyl

P	M	K	N	S	H
●	○	●	●		

Arbeitsrichtwerte Seite 188

- Ausspitzung ≥ Ø 3,000
- Kegelmantelanschliff
- weite Spannuten
- höhere Verschleißfestigkeit
- für extrem tiefe Bohrungen
- zur Verbesserung der Spanabfuhr



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer überlang, Reihe 3

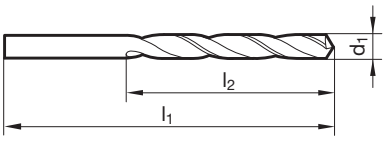
Katalog-Nr. 71147

V63 | ~25xD | DIN 1869 | HSS | Fasen nitriert | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 188

- Ausspitzung ≥ Ø 3,500
- Kegelmantelanschliff
- weite Spannuten
- für extrem tiefe Bohrungen
- zur Verbesserung der Spanabfuhr



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

d1 mm	inch	l1 mm	l2 mm
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

Spiralbohrer mit Zylinderschaft

Spiralbohrer extra lang

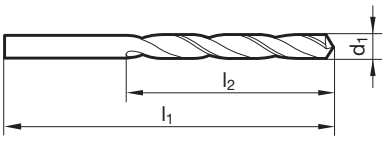
Katalog-Nr. 71195

V63 | ~7xD | WN | HSS | Fasen nitriert | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 188

- Ausspitzung ≥ Ø 6,000
- Kegelmantelanschliff
- weite Spannuten
- für extrem tiefe Bohrungen
- zur Verbesserung der Spanabfuhr



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

Spiralbohrer mit Zylinderschaft

Spiralbohrer extra lang

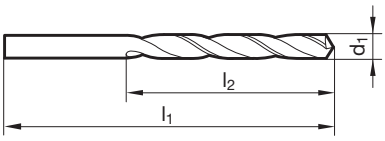
Katalog-Nr. 71196

V63 | ~7xD | WN | HSS | blank | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 188

- Ausspitzung ≥ Ø 8,000
- Kegelmantelanschliff
- weite Spannuten
- für extrem tiefe Bohrungen
- zur Verbesserung der Spanabfuhr



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

Spiralbohrer mit Zylinderschaft

Kühlkanalbohrer

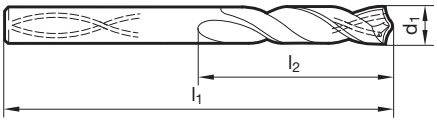
Katalog-Nr. 71584

V73-IK | ~10xD | WN | HSS | blank | 130° | h8 | R | Cyl

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 186

- Ausspitzung ≥ Ø 3,000
- Kegelmantelanschliff
- weite Spannuten



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

Spiralbohrer mit Zylinderschaft

Kleinstbohrer

Katalog-Nr. 71187

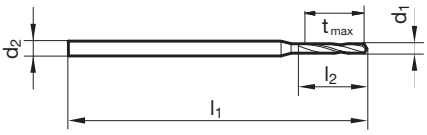
N | ~5xD | DIN 1899 | HSS-E-PM | blank | 118° | -0,004 | R | Cyl

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 178

- Flächenanschliff
- mit verstärktem Schaft

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



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

Spiralbohrer mit Zylinderschaft

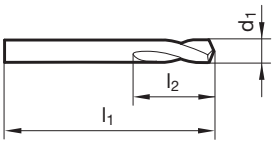
NC-Anbohrer

Katalog-Nr. 71175

N | WN | HSS | blank | 90° | h6 | R | Cyl

P	M	K	N	S	H
•	•	•	•	•	

- Kegelmantelanschliff
- nur zum Anbohren geeignet



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

Spiralbohrer mit Zylinderschaft

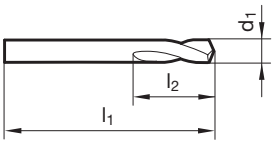
NC-Anbohrer

Katalog-Nr. 61175

N	WN	HSS	TiN	90°	h6	R	Cyl

P	M	K	N	S	H
●	●	●	●	●	

- Kegelmantelanschliff
- nur zum Anbohren geeignet
- höherer Verschleißschutz



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

Spiralbohrer mit Zylinderschaft

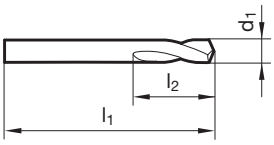
NC-Anbohrer

Katalog-Nr. 71176

N | WN | HSS | blank | 120° | h6 | R | Cyl

P	M	K	N	S	H
•	•	•	•	•	

- Kegelmantelanschliff
- nur zum Anbohren geeignet



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

Spiralbohrer mit Morsekegel

Spiralbohrer kurz

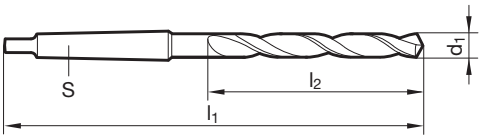
Katalog-Nr. 71303

N | WN | HSS-Co8 | blank | 130° | h8 | R | MK

P	M	K	N	S	H
●	●	○		○	○

Arbeitsrichtwerte Seite 176

- Ausspitzung ≥ Ø 10,000
- Kegelmantelanschliff
- besonders stabil und widerstandsfähig



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

Spiralbohrer mit Morsekegel

Spiralbohrer kurz

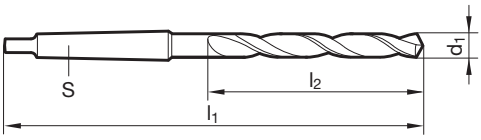
Katalog-Nr. 71304

N | WN | HSS-Co8 | blank | 130° | h8 | R | MK

P	M	K	N	S	H
●	●	○		○	○

Arbeitsrichtwerte Seite 176

- Ausspitzung ≥ Ø 12,000
- Kegelmantelanschliff
- besonders stabil und widerstandsfähig
- mit übergroßem Morsekegel



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

Spiralbohrer mit Morsekegel

Spiralbohrer

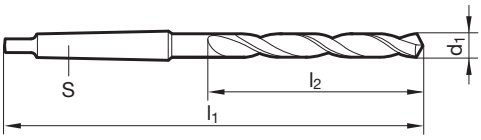
Katalog-Nr. 71300

N | ~5xD | DIN 345 | HSS | dampfbe-handelt | 118° | h8 | R | MK

P	M	K	N	S	H
•		•	•		

Arbeitsrichtwerte Seite 180

- Ausspitzung ≥ Ø 14,100
- Kegelmantelanschliff



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

Spiralbohrer mit Morsekegel

Spiralbohrer

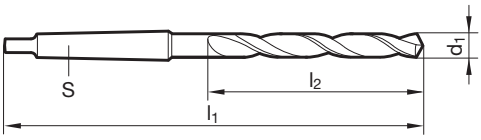
Katalog-Nr. 71416

N | ~5xD | DIN 345 | HSS-Co | dampfbehandelt | 118° | h8 | R | MK

P	M	K	N	S	H
●	○	●			

Arbeitsrichtwerte Seite 182

- Ausspitzung ≥ Ø 5,000
- Kegelmantelanschliff
- höhere Verschleißfestigkeit



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

Spiralbohrer mit Morsekegel

Spiralbohrer

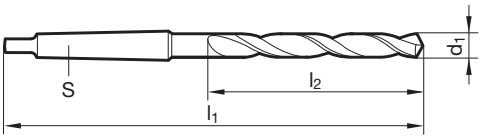
Katalog-Nr. 71305

V70 | ~5xD | DIN 345 | HSS | blank | 130° | h8 | R | MK

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 180

- Ausspitzung ≥ Ø 7,940
- Kegelmantelanschliff
- weite Spannuten



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

Spiralbohrer mit Morsekegel

Spiralbohrer

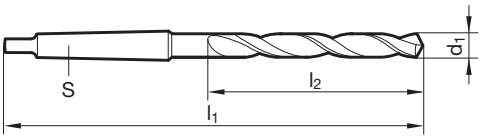
Katalog-Nr. 71312

V66 Ti | ~5xD | DIN 345 | HSS-Co | blank | 130° | h8 | R | MK

P	M	K	N	S	H
●	●	●		●	

Arbeitsrichtwerte Seite 182

- Ausspitzung ≥ Ø 8,500
- Kegelmantelanschliff
- hohe Stabilität



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

Spiralbohrer mit Morsekegel

Spiralbohrer

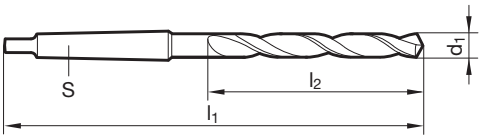
Katalog-Nr. 71313

V66 Ti | ~5xD | DIN 346 | HSS-Co | blank | 130° | h8 | R | MK

P	M	K	N	S	H
●	●	●		●	

Arbeitsrichtwerte Seite 182

- Ausspitzung ≥ Ø 11,000
- Kegelmantelanschliff
- hohe Stabilität
- mit größerem Morsekegel



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

d1 mm	S	l1 mm	l2 mm
27,000	MK-4	319,000	170,000
29,000	MK-4	324,000	175,000

Spiralbohrer mit Morsekegel

Bohrbuchsenbohrer

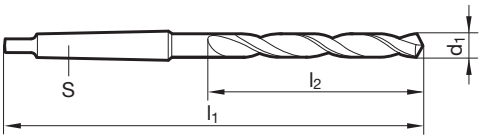
Katalog-Nr. 71320

N | ~10xD | DIN 341 | HSS | dampfbehandelt | 118° | h8 | R | MK

P	M	K	N	S	H
●		●			

Arbeitsrichtwerte Seite 186

- Ausspitzung ≥ Ø 14,500
- Kegelmantelanschliff
- auch zum Bohren durch Bohrbuchsen



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

Spiralbohrer mit Morsekegel

Bohrbuchsenbohrer

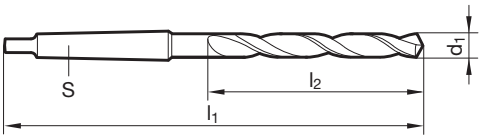
Katalog-Nr. 71322

V70 | ~10xD | DIN 341 | HSS | blank | 130° | h8 | R | MK

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 186

- Ausspitzung ≥ Ø 8,000
- Kegelmantelanschliff
- weite Spannuten



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

Spiralbohrer mit Morsekegel

Spiralbohrer überlang, Reihe 1

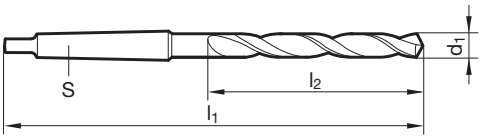
Katalog-Nr. 71325

V63 | ~15xD | DIN 1870 | HSS | Fasen nit-riert | 130° | h8 | R | MK

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 188

- Ausspitzung ≥ Ø 8,000
- Kegelmantelanschliff
- weite Spannuten
- für extrem tiefe Bohrungen
- zur Verbesserung der Spanabfuhr
- dampfbehandelt > 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

Spiralbohrer mit Morsekegel

Spiralbohrer überlang, Reihe 2

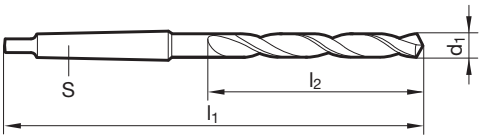
Katalog-Nr. 71326

V63 | ~20xD | DIN 1870 | HSS | Fasen nit-riert | 130° | h8 | R | MK

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 188

- Ausspitzung ≥ Ø 8,000
- Kegelmantelanschliff
- weite Spannuten
- für extrem tiefe Bohrungen
- zur Verbesserung der Spanabfuhr
- dampfbehandelt > 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

Spiralbohrer mit Morsekegel

Kühlkanalbohrer

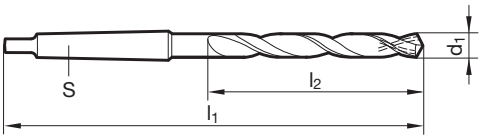
Katalog-Nr. 71554

N-IK | ~10xD | WN | HSS | dampfbe-handelt | 118° | h8 | R | MK

P	M	K	N	S	H
●	○	●	○		

Arbeitsrichtwerte Seite 188

- Ausspitzung ≥ Ø 10,000
- Kegelmantelanschliff
- auch zum Bohren durch Bohrbuchsen



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

Spiralbohrer mit Morsekegel

Mehrbereichs-Spiralbohrer mit Kühlkanal, lang

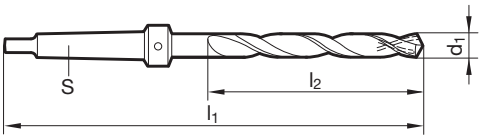
Katalog-Nr. 71550

V70-IK | WN | HSS-Co | dampfbehandelt | 130° | h8 | R | MK

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 186

- Ausspitzung ≥ Ø 14,500
- Kegelmantelanschliff
- Kühlung über Kühlmittelzuführring, Katalog-Nr. 71560 (separat erhältlich)



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

Spiralbohrer mit Morsekegel

Mehrbereichs-Spiralbohrer mit Kühlkanal, lang

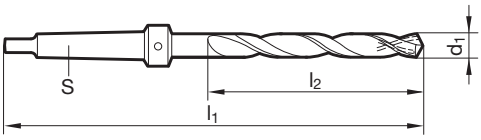
Katalog-Nr. 71553

V70-IK | WN | HSS-Co | dampfbehandelt | 130° | h8 | R | MK

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 186

- Ausspitzung ≥ Ø 8,000
- Kegelmantelanschliff
- Kühlung über Kühlmittelzuführring, Katalog-Nr. 71560 (separat erhältlich)



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

Spiralbohrer mit Morsekegel

Tiefloch-Spiralbohrer mit Kühlkanal, überlang

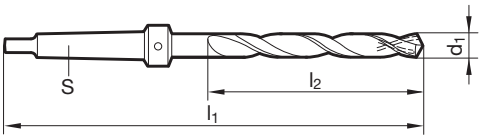
Katalog-Nr. 71565

V63-IK | WN | HSS-Co | dampfbe-handelt | 130° | h8 | R | MK

P	M	K	N	S	H
●	○	●	○	○	

Arbeitsrichtwerte Seite 188

- Ausspitzung ≥ Ø 14,500
- Kegelmantelanschliff
- Kühlung über Kühlmittelzuführring, Katalog-Nr. 71560 (separat erhältlich)



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

Spiralbohrer mit Morsekegel

Tiefloch-Spiralbohrer mit Kühlkanal, überlang

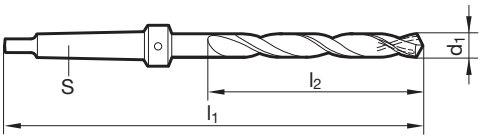
Katalog-Nr. 71567

V63-IK | WN | HSS-Co | dampfbe-handelt | 130° | h8 | R | MK

P	M	K	N	S	H
●	○	●	○	○	

Arbeitsrichtwerte Seite 188

- Ausspitzung ≥ Ø 8,000
- Kegelmantelanschliff
- Kühlung über Kühlmittelzuführring, Katalog-Nr. 71560 (separat erhältlich)



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

Spiralbohrer mit Morsekegel

Tiefloch-Spiralbohrer mit Kühlkanal, überlang

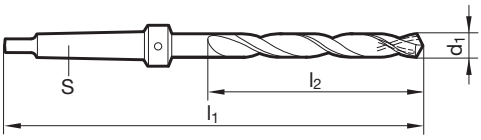
Katalog-Nr. 71566

V63-IK | WN | HSS-Co | dampfbe-handelt | 130° | h8 | R | MK

P	M	K	N	S	H
●	○	●	○	○	

Arbeitsrichtwerte Seite 188

- Ausspitzung ≥ Ø 14,500
- Kegelmantelanschliff
- Kühlung über Kühlmittelzuführring, Katalog-Nr. 71560 (separat erhältlich)



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

Spiralbohrer mit Morsekegel

Tiefloch-Spiralbohrer mit Kühlkanal, überlang

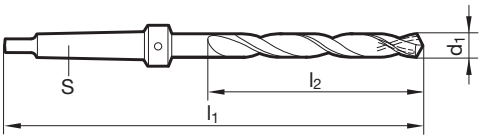
Katalog-Nr. 71568

V63-IK | WN | HSS-Co | dampfbe-handelt | 130° | h8 | R | MK

P	M	K	N	S	H
●	○	●	○	○	

Arbeitsrichtwerte Seite 188

- Ausspitzung ≥ Ø 8,000
- Kegelmantelanschliff
- Kühlung über Kühlmittelzuführring, Katalog-Nr. 71560 (separat erhältlich)



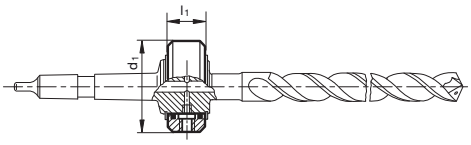
d1 mm	S	l1 mm	l2 mm
8,000	MK-2	360,000	210,000
8,500	MK-2	360,000	210,000
9,000	MK-2	370,000	220,000
10,000	MK-2	385,000	235,000
10,500	MK-2	385,000	235,000
11,000	MK-2	400,000	250,000
11,500	MK-2	400,000	250,000
13,000	MK-2	410,000	260,000
14,000	MK-2	425,000	275,000
19,000	MK-3	478,000	310,000
19,500	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

Kühlmittelzuführringe

Kühlmittelzuführringe

Katalog-Nr. 71560



Größe	Code-Nr.	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

Stufenbohrer

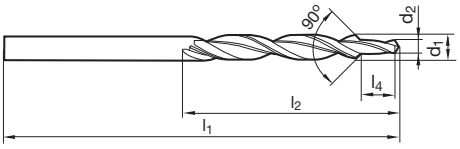
Mehrfasenstufenbohrer mit Zylinderschaft

Katalog-Nr. 71501

N	DIN 8374	HSS	dampfbe-handelt	118°	h8	R	Cyl

P	M	K	N	S	H
●		●			

- Ausspitzung ≥ Ø 6,000
- Kegelmantelanschliff
- für Durchgangsbohrungen nach DIN EN 20273, Reihe fein
- für Schraubenkopfsenkungen 90°
- f richtet sich nach kleinem Durchmesser
- vc richtet sich nach großem Durchmesser



d1 mm	d2 mm	l1 mm	l2 mm	l4 mm	Größe
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**

Stufenbohrer

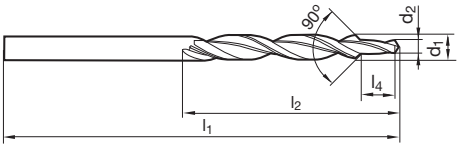
Mehrfasenstufenbohrer mit Zylinderschaft

Katalog-Nr. 71503

N	DIN 8378	HSS	dampfbe-handelt	118°	h8	R	Cyl

P	M	K	N	S	H
●		●			

- Ausspitzung ≥ Ø 3,400
- Kegelmantelanschliff
- für Gewindekernbohrungen nach DIN 336
- für Freisenkungen 90° entsprechend den Durchgangsbohrungen nach DIN EN 20273, Reihe mittel
- f richtet sich nach kleinem Durchmesser
- vc richtet sich nach großem Durchmesser



d1 mm	d2 mm	l1 mm	l2 mm	l4 mm	Größe
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**

Stufenbohrer

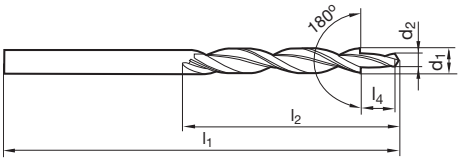
Mehrfasenstufenbohrer mit Zylinderschaft

Katalog-Nr. 71500

N | DIN 8376 | HSS | dampfbe-handelt | 118° | h8 | R | Cyl

P	M	K	N	S	H
●		●			

- Ausspitzung ≥ Ø 6,000
- Kegelmantelanschliff
- für Durchgangsbohrungen nach DIN EN 20273, Reihe mittel
- für Schraubenkopfsenkungen 180° nach DIN 974-1, Reihe 1
- für Schrauben nach DIN 6912, 7984, 34821, DIN EN ISO 1207, 4762, 14579, 14580 und DIN 7513, 7516, 7500-1
- f richtet sich nach kleinem Durchmesser
- vc richtet sich nach großem Durchmesser



d1 mm	d2 mm	l1 mm	l2 mm	l4 mm	Größe
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**

Stufenbohrer

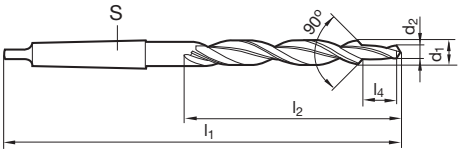
Mehrfasenstufenbohrer mit Morsekegel

Katalog-Nr. 71523

N | DIN 8379 | HSS | dampfbe-handelt | 118° | h8 | R | MK

P	M	K	N	S	H
●		●			

- Ausspitzung ≥ Ø 9,000
- Kegelmantelanschliff
- für Gewindekernbohrungen nach DIN 336
- für Freisenkungen 90° entsprechend den Durchgangsbohrungen nach DIN EN 20273, Reihe mittel
- f richtet sich nach kleinem Durchmesser
- vc richtet sich nach großem Durchmesser



d1 mm	d2 mm	S	l1 mm	l2 mm	l4 mm	Größe
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

Stufenbohrer

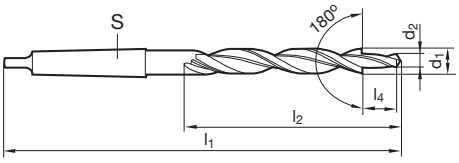
Mehrfasenstufenbohrer mit Morsekegel

Katalog-Nr. 71520

N | DIN 8377 | HSS | dampfbe-handelt | 118° | h8 | R | MK

P	M	K	N	S	H
●		●			

- Ausspitzung ≥ Ø 11,000
- Kegelmantelanschliff
- für Durchgangsbohrungen nach DIN EN 20273, Reihe mittel
- für Schraubenkopfsenkungen 180° nach DIN 974-1, Reihe 1
- für Schrauben nach DIN 6912, 7984, 34821, DIN EN ISO 1207, 4762, 14579, 14580 und DIN 7513, 7516, 7500-1
- f richtet sich nach kleinem Durchmesser
- vc richtet sich nach großem Durchmesser



d1 mm	d2 mm	S	l1 mm	l2 mm	l4 mm	Größe
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

Zentrierbohrer

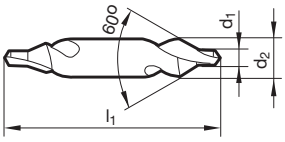
Zentrierbohrer ohne Fläche

Katalog-Nr. 71600

N	DIN 333	HSS	blank	118°	R	Cyl

P	M	K	N	S	H
●	●	●	●	○	

- Ausspitzung ≥ Ø 2,000
- Kegelmantelanschliff
- für Zentrierbohrungen nach DIN 332 Teil 1, Form A
- d1 ≤ 0,8 mm: einseitig mit Spitze



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

d1 mm	d2 mm	l1 mm
10,000	25,000	100,000
12,500	31,500	125,000

Zentrierbohrer

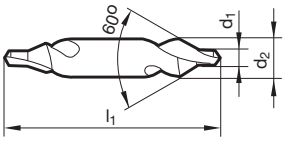
Zentrierbohrer ohne Fläche

Katalog-Nr. 71601

N | DIN 333 | HSS | blank | 118° | L | Cyl

P	M	K	N	S	H
●	●	●	●	○	

- Ausspitzung ≥ Ø 2,000
- Kegelmantelanschliff
- für Zentrierbohrungen nach DIN 332 Teil 1, Form A
- d1 ≤ 0,8 mm: einseitig mit Spitze



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

Zentrierbohrer

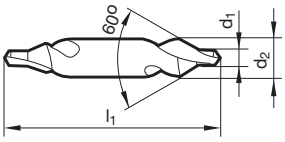
Zentrierbohrer ohne Fläche

Katalog-Nr. 71602

N	DIN 333	HSS	blank	118°	R	Cyl

P	M	K	N	S	H
●	●	●	●	○	

- Ausspitzung ≥ Ø 2,000
- Kegelmantelanschliff
- korrekte Anlage zwischen Körnerspitzen
- für Zentrierbohrungen nach DIN 332 Teil 1, Form R
- d1 ≤ 0,8 mm: einseitig mit Spitze



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

d1 mm	d2 mm	l1 mm
10,000	25,000	100,000

Zentrierbohrer

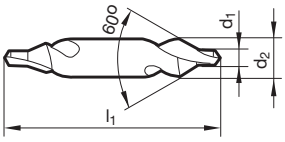
Zentrierbohrer ohne Fläche

Katalog-Nr. 61602

N | DIN 333 | HSS | TiN | 118° | R | Cyl

P	M	K	N	S	H
●	●	●	●	●	

- Ausspitzung ≥ Ø 2,000
- Kegelmantelanschliff
- korrekte Anlage zwischen Körnerspitzen
- für Zentrierbohrungen nach DIN 332 Teil 1, Form R
- höherer Verschleißschutz
- d1 ≤ 0,8 mm: einseitig mit Spitze



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

Zentrierbohrer

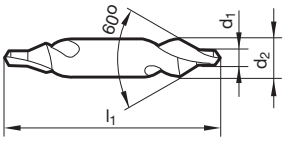
Zentrierbohrer ohne Fläche

Katalog-Nr. 71605

N | DIN 333 | HSS | blank | 118° | R

P	M	K	N	S	H
●	●	●	●	○	

- Ausspitzung ≥ Ø 2,000
- Kegelmantelanschliff
- mit Wulst für besonders hohe Bruchsicherheit
- Vertiefung am Übergang Senkung/Bohrung für zusätzlichen Schmierstoffraum
- für Zentrierbohrungen nach DIN 332 Teil 1, Form 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

Zentrierbohrer

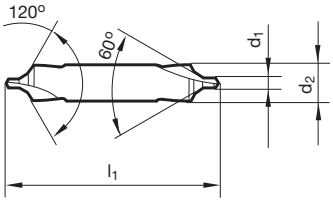
Zentrierbohrer ohne Fläche

Katalog-Nr. 71604

N | DIN 333 | HSS | blank | 118° | R | Cyl

P	M	K	N	S	H
●	●	●	●	○	

- Ausspitzung ≥ Ø 2,000
- Kegelmantelanschliff
- für Zentrierbohrungen nach DIN 332 Teil 1, Form B
- mit Schutzsenkung 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

Zentrierbohrer

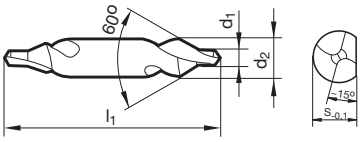
Zentrierbohrer mit Fläche

Katalog-Nr. 71607

N | DIN 333 | HSS | blank | 118° | R

P	M	K	N	S	H
●	●	●	●	○	

- Ausspitzung ≥ Ø 2,000
- Kegelmantelanschliff
- für Zentrierbohrungen nach DIN 332 Teil 1, Form 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

Zentrierbohrer

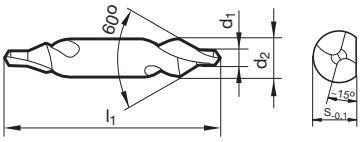
Zentrierbohrer mit Fläche

Katalog-Nr. 71609

N | DIN 333 | HSS | blank | 118° | R

P	M	K	N	S	H
●	●	●	●	○	

- Ausspitzung ≥ Ø 2,000
- Kegelmantelanschliff
- korrekte Anlage zwischen Körnerspitzen
- für Zentrierbohrungen nach DIN 332 Teil 1, Form R



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
8,000	20,000	80,000

Aufbohrer

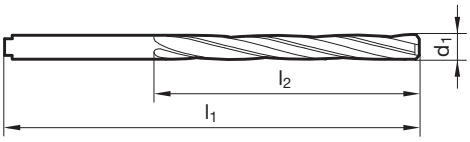
Aufbohrer mit Zylinderschaft

Katalog-Nr. 72200

N | DIN 344 | HSS | dampfbehandelt | 120° | h8 | R | Cyl

P	M	K	N	S	H
●		●			

- Kegelmantelanschliff
- besonders hohe Stabilität
- mit Mitnehmer nach DIN 1809
- für vorgebohrte/vorgegossene/vorgestanzte Löcher
- korrigiert Fluchtungsungenauigkeit
- korrigiert Unrundheit
- verbessert Bohrungsoberfläche
- Anschnitt-Ø < aufzubohrendes Loch
- daher kleinsten Ø „d0“ der vorgefertigten Bohrung beachten



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

Aufbohrer

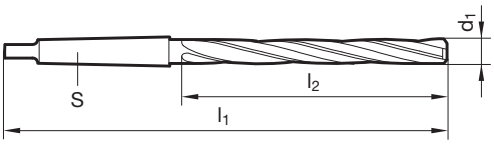
Aufbohrer mit Morsekegel

Katalog-Nr. 72210

N | DIN 343 | HSS | dampfbehandelt | 120° | h8 | R | MK

P	M	K	N	S	H
●		●			

- Kegelmantelanschliff
- besonders hohe Stabilität
- für vorgebohrte/vorgegossene/vorgestanzte Löcher
- korrigiert Fluchtungsungenauigkeit
- korrigiert Unrundheit
- verbessert Bohrungsoberfläche
- Anschnitt-Ø < aufzubohrendes Loch
- daher kleinsten Ø „d0“ der vorgefertigten Bohrung beachten



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

GEWINDEWERKZEUGE

ISO-CODES

P	Stahl, hochlegierter Stahl
M	Rostfreier Stahl
K	Grauguss, Sphäroguss und Temperguss
N	Aluminium und andere Nichteisenmetalle
S	Sonder-, Super- und Titanlegierungen
H	Gehärteter Stahl und Hartguss

Auf den Produktseiten finden Sie zu jedem Werkzeug Empfehlungen zur Eignung für die Anwendungsgruppen bzw. die Angaben von max. Zugfestigkeit und Härte:

● optimal geeignet
○ bedingt geeignet
nicht geeignet

PIKTOGRAMME

SCHNEIDSTOFF	VHM			HSS	HSS-E	HSS-E-PM						
	Vollhartmetall											
BESCHICHTUNG	blank	nit-riert	dampfbe-handelt		TiCN	Al-TiZrN	TiAlN	TiN	Al-TiN	Al-CrN		
TOLERANZKLASSE	ISO2/6H	6HX	ISO3/6G	2B	6GX	6g						
FORM	B	C	D	E								
SCHNEIDRICHTUNG	R		L									
	rechts		links									
SCHAFTFORM	HA											
GEWINDETIEFE	1xD	2xD										
NORM	DIN 371	DIN 376	DIN 374	DIN 371/6	~DIN 371	~DIN 376	~DIN 371/6	~DIN 374	DIN 5156			
	DIN 40432	DIN 2180	DIN 352	~DIN 352	DIN 357	DIN 5157	DIN EN 22568	WN				
								Werksnorm				
TYP	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

Unsere Gewindewerkzeuge

Gewindewerkzeuge gehören neben den Bohr- und Fräswerkzeugen zu der wichtigsten Produktgruppe im STOCK-Werkzeugprogramm. Die Typenvielfalt in Verbindung mit den verschiedensten Gewindearten in unterschiedlicher Toleranzlage nach DIN oder Werksnorm bietet eine große Auswahl an Lösungsmöglichkeiten für die meisten Probleme in der Gewindeherstellung. Die Qualität der Gewindekernbohrung in Hinsicht auf Bohrungstoleranz, Rundheit, Parallelität und Oberflächenbeschaffenheit, die meistens mit Bohrwerkzeugen erzielt wird, hat großen Einfluss auf die Qualität des erzeugten Gewindes. Um ganz sicher zu gehen, sollten STOCK-Bohrwerkzeuge zum Einsatz kommen. Fordern Sie unseren Gesamtkatalog an oder lassen Sie sich einfach von uns das geeignete Werkzeug empfehlen.

STOCK-
Gewindewerkzeuge
Maschinen-Gewindebohrer
Maschinen-Gewindeformer
Gewindefräser
Hand-Gewindebohrer
Schneideisen

STOCK-
Schneidstoffe
HSS
HSS-E
HSS-E-PM
Vollhartmetall

STOCK-
Gewindearten
M, MF
UNC, UNF
BSW, G
PG, NPT

STOCK-
Basistypen
PRODUKTIV
Typen N, W, H, HD, HDX, HX, N-X und Synchro Gewindebohrer mit geraden Nuten und Schälanschnitt Form B oder Form C für Durchgangsgewinde

INTENSIV
Typen N, W, H, HD, HDX, HX, HCX, N-X und Synchro Gewindebohrer mit 10°, 15°, 25°, 40°, 45° und 50° Rechtsdrall für Grundgewinde

MASSIV
Typ N
Gewindebohrer mit Kurznuten und Schälanschnitt Form B für die Bearbeitung von Blechen und dünnwandigen Teilen

DURATIV
Typ N
Unsere Bezeichnung für Gewindeformer mit und ohne Schmiernuten

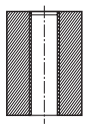
STOCK-
Problemlösungen
Wir produzieren auf Ihren Wunsch auch Sonderanfertigungen für das Gewinde-Schneiden, -Formen und -Fräsen sowie Werkzeuge mit Kühlkanälen, für die Hartbearbeitung und die Minimalmengenschmierung.
Als blanke Ausführung oder oberflächenbehandelt wie z. B.: nitriert, dampfbehandelt, hartstoffbeschichtet oder mit Gleitschicht (MoS_2-Basis).

STOCK-
Werkstoffbezogene Farbringkennzeichnung
- Allgemeine Stähle ≤ 800 N/mm²
- Hochfeste Stähle > 1100...1400 N/mm²
- Rost- und säurebeständige Stähle
- Universelle Anwendung > 1100 N/mm²
- Aluminium und Al-Legierungen
- Gusswerkstoffe

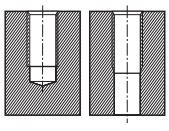
Erläuterung der Piktogramme
Bohrungsart

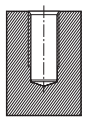
= Durchgangsgewinde, kurz

= Durchgangsgewinde 1 x D


= Durchgangsgewinde 2 x D

= Grundgewinde 1 x D


= Grundgewinde 2 x D


= Grundgewinde bis Bohrungsgrund

Gewindebohrer für Metrische ISO-Gewinde

P	M	K	N	S	H	Typ	Form	Toleranz-klasse	Schneidstoff	Oberfläche	Norm	d1	Katalog-Nr.	Progr. Seite
●					●	H	D	ISO2/6H	VHM	TiCN	~DIN 371	M 3 - M12	**63010**	411
		●	○			GG	C	6HX	HSS-E	AlTiN	DIN 371	M 3 - M10	**63201**	428
		●				GG	C	6HX	HSS-E	nitriert	DIN 371	M 3 - M10	**73201**	429
			●			H	C	6HX	VHM	blank	DIN 371	M 3 - M10	**73011**	384
●		●	○	○	○	HCX	C	6HX	HSS-E-PM	TiCN	DIN 371	M 5 - M10	**53670**	383
●		○				Intensiv H	C	ISO2/6H	HSS-E	TiCN	DIN 371	M 2 - M10	**53661**	404
●						Intensiv H	C	ISO2/6H	HSS-E	TiN	DIN 371	M 3 - M10	**63674**	405
●		○				Intensiv H	C	ISO2/6H	HSS-E	blank	DIN 371	M 3 - M10	**73661**	407
	●			○		Intensiv HD	C	ISO2/6H	HSS-E	dampfbe-handelt	DIN 371	M 3 - M10	**73660**	422
	●		○	○		Intensiv HD	C	ISO2/6H	HSS-E-PM	TiN	DIN 371	M 3 - M10	**63662**	421
	●		○	○		Intensiv HD	C	ISO2/6H	HSS-E-PM	blank	DIN 371	M 3 - M10	**73662**	423
●	○	○	○			Intensiv N	C	ISO2/6H	HSS-E	TiN	DIN 371	M 3 - M10	**63046**	371
●			○			Intensiv N	C	ISO2/6H	HSS-E	TiN	DIN 371	M 3 - M10	**63146**	390
●	○	○	○			Intensiv N	C	ISO2/6H	HSS-E	dampfbe-handelt	DIN 371	M 3 - M10	**73046**	372
●			○			Intensiv N	C	ISO2/6H	HSS-E	blank	DIN 371	M 2 - M10	**73146**	392
●			○			Intensiv N	C	ISO2/6H	HSS-E	blank	DIN 371	M 2 - M10	**73221**	393

Gewindebohrer für Metrische ISO-Gewinde

P	M	K	N	S	H	Typ	Form	Toleranz-klasse	Schneidstoff	Oberfläche	Norm	d1	Katalog-Nr.	Progr. Seite
●			○			Intensiv N	C	ISO3/6G	HSS-E	blank	DIN 371	M 3 - M10	**73145**	391
●	○	○	○			Intensiv N	E	ISO2/6H	HSS-E	blank	DIN 371	M 4 - M10	**73047**	375
			●			Intensiv W	C	ISO2/6H	HSS-E	blank	DIN 371	M 2 - M10	**73156**	433
●			○			Massiv N	B	ISO2/6H	HSS-E	blank	DIN 371	M 2,3 - M10	**73126**	380
●			○			N	C	ISO2/6H	HSS-E	blank	DIN 371	M 1 - M10	**73185**	378
●		○				Produktiv H	B	ISO2/6H	HSS-E	TiCN	DIN 371	M 2 - M10	**53642**	398
●		○				Produktiv H	B	ISO2/6H	HSS-E	nitriert	DIN 371	M 2 - M10	**73642**	401
●		○				Produktiv H	B	ISO2/6H	HSS-E-PM	TiN	DIN 371	M 3 - M10	**63641**	399
●		○				Produktiv H	B	ISO2/6H	HSS-E-PM	blank	DIN 371	M 3 - M10	**73640**	400
	●			○		Produktiv HD	B	ISO2/6H	HSS-E	TiN	DIN 371	M 3 - M10	**63176**	413
	●			○		Produktiv HD	B	ISO2/6H	HSS-E	dampfbe-handelt	DIN 371	M 3 - M10	**73176**	414
	●			○		Produktiv HD	B	ISO2/6H	HSS-E-PM	blank	DIN 371	M 3 - M10	**73641**	415
●	○	○	○			Produktiv N	B	ISO2/6H	HSS-E	TiN	DIN 371	M 3 - M10	**63033**	365
●			○			Produktiv N	B	ISO2/6H	HSS-E	TiN	DIN 371	M 3 - M10	**63133**	385
●	○	○	○			Produktiv N	B	ISO2/6H	HSS-E	dampfbe-handelt	DIN 371	M 3 - M10	**73033**	366
●			○			Produktiv N	B	ISO2/6H	HSS-E	blank	DIN 371	M 2 - M10	**73133**	387

Gewindebohrer für Metrische ISO-Gewinde

P	M	K	N	S	H	Typ	Form	Toleranz-klasse	Schneidstoff	Oberfläche	Norm	d1	Katalog-Nr.	Progr. Seite
●			○			Produktiv N	B	ISO3/6G	HSS-E	blank	DIN 371	M 2,5 - M10	**73132**	386
			●			Produktiv W	B	ISO2/6H	HSS-E	blank	DIN 371	M 2 - M10	**73131**	431
	●			●		Intensiv HDX	C	6HX	HSS-E-PM	TiCN	DIN 371/ DIN 376	M 3 - M16	**53666**	382
		○		●	●	Intensiv HX	C	6HX	HSS-E-PM	AlTiN	DIN 371/ DIN 376	M 3 - M16	**53668**	381
	●			●		Produktiv HDX	B	6HX	HSS-E-PM	TiCN	DIN 371/ DIN 376	M 3 - M16	**53667**	377
		○		●	●	Produktiv HX	B	6HX	HSS-E-PM	AlTiN	DIN 371/ DIN 376	M 3 - M16	**53669**	376
		●				GG	C	6HX	HSS-E	nitriert	DIN 376	M12 - M20	**73211**	430
●		○				H R15	C	ISO2/6H	HSS-E-PM	blank	DIN 376	M12 - M20	**73666**	410
●		○				Intensiv H	C	ISO2/6H	HSS-E	TiN	DIN 376	M12 - M20	**63675**	408
●		○				Intensiv H	C	ISO2/6H	HSS-E	blank	DIN 376	M12 - M20	**73664**	409
	●			○		Intensiv HD	C	ISO2/6H	HSS-E	dampfbe-handelt	DIN 376	M12 - M20	**73659**	426
	●			○		Intensiv HD	C	ISO2/6H	HSS-E-PM	TiN	DIN 376	M12 - M16	**63665**	425
	●		○	○		Intensiv HD	C	ISO2/6H	HSS-E-PM	blank	DIN 376	M12 - M24	**73665**	427
●	○	○	○			Intensiv N	C	ISO2/6H	HSS-E	TiN	DIN 376	M12 - M20	**63048**	373
●			○			Intensiv N	C	ISO2/6H	HSS-E	TiN	DIN 376	M12 - M20	**63148**	394
●			○			Intensiv N	C	ISO2/6H	HSS-E	blank	DIN 376	M 3 - M30	**73148**	395

Gewindebohrer für Metrische ISO-Gewinde

P	M	K	N	S	H	Typ	Form	Toleranz-klasse	Schneidstoff	Oberfläche	Norm	d1	Katalog-Nr.	Progr. Seite
●			○			Intensiv N	C	ISO2/6H	HSS-E	blank	DIN 376	M 3 - M20	**73227**	396
			●			Intensiv W	C	ISO2/6H	HSS-E	blank	DIN 376	M12 - M20	**73136**	434
●			○			N	C	ISO2/6H	HSS-E	blank	DIN 376	M 6 - M22	**73191**	379
●		○				Produktiv H	B	ISO2/6H	HSS-E	nitriert	DIN 376	M12 - M20	**73645**	403
●		○				Produktiv H	B	ISO2/6H	HSS-E-PM	TiN	DIN 376	M12 - M20	**63643**	402
	●		○	○		Produktiv HD	B	ISO2/6H	HSS-E	TiN	DIN 376	M12 - M16	**63177**	417
	●			○		Produktiv HD	B	ISO2/6H	HSS-E	dampfbe-handelt	DIN 376	M12 - M20	**73177**	418
	●		○	○		Produktiv HD	B	ISO2/6H	HSS-E-PM	blank	DIN 376	M12 - M22	**73643**	419
●			○			Produktiv N	B	ISO2/6H	HSS-E	TiN	DIN 376	M12 - M20	**63138**	388
●			○			Produktiv N	B	ISO2/6H	HSS-E	blank	DIN 376	M 2 - M24	**73138**	389
			●			Produktiv W	B	ISO2/6H	HSS-E	blank	DIN 376	M12 - M20	**73189**	432
●		○				H R15	C	ISO2/6H	HSS-E-PM	blank	DIN 371	M 3 - M10	**73619**	406
●		○				Produktiv H	B	ISO2/6H	HSS-E-PM	TiCN	DIN 371	M 3 - M10	**53640**	397
	●		○	○		Intensiv HD	C	ISO2/6H	HSS-E-PM	TiCN	DIN 371	M 3 - M10	**53662**	420
	●			○		Produktiv HD	B	ISO2/6H	HSS-E-PM	TiCN	DIN 371	M 3 - M10	**53641**	412
	●			○		Intensiv HD	C	ISO2/6H	HSS-E-PM	TiCN	DIN 376	M12 - M16	**53665**	424

Gewindebohrer für Metrische ISO-Gewinde

P	M	K	N	S	H	Typ	Form	Toleranz-klasse	Schneidstoff	Oberfläche	Norm	d1	Katalog-Nr.	Progr. Seite
	●			○		Produktiv HD	B	ISO2/6H	HSS-E-PM	TiCN	DIN 376	M12 - M16	**53643**	416
●	●	●	○	○		Intensiv N-X	C	6HX	HSS-E	TiAlN	~DIN 371/~DIN 376	M 2 - M30	**53746**	370
●	●	●	○	●		Produktiv N-X	B	6HX	HSS-E	AlTiZrN	~DIN 371/~DIN 376	M 2 - M30	**53733**	364
●	●	●	●	○		Intensiv Synchro	C	6HX	HSS-E-PM	TiCN	DIN 371	M 5 - M10	**53050**	368
●	●	●	●	○		Produktiv Synchro	B	ISO2/6H	HSS-E-PM	TiCN	DIN 371	M 2 - M10	**53053**	362
●	○	○	○			Intensiv N	C	ISO2/6H	HSS-E	dampfbe-handelt	DIN 376	M12 - M24	**73048**	374
●	●	●	●	○		Intensiv Synchro	C	6HX	HSS-E-PM	TiCN	DIN 376	M12 - M20	**53051**	369
●	○	○	○			Produktiv N	B	ISO2/6H	HSS-E	dampfbe-handelt	DIN 376	M12 - M24	**73038**	367
●	●	●	●	○		Produktiv Synchro	B	ISO2/6H	HSS-E-PM	TiCN	DIN 376	M12 - M20	**53054**	363

Gewindebohrer für Metrische ISO-Feingewinde

P	M	K	N	S	H	Typ	Form	Toleranz-klasse	Schneidstoff	Oberfläche	Norm	d1	Katalog-Nr.	Progr. Seite
		●				GG	C	6HX	HSS-E	nitriert	DIN 374	M 8 X1 - M20 X1,5	**73194**	448
	●			○		Intensiv HD	C	ISO2/6H	HSS-E	dampfbe-handelt	DIN 374	M 8 X1 - M20 X1,5	**73180**	447
●			○			Intensiv N	C	ISO2/6H	HSS-E	TiN	DIN 374	M 8 X1 - M20 X1,5	**63173**	444
●			○			Intensiv N	C	ISO2/6H	HSS-E	blank	DIN 374	M 3 X0,35 - M30 X2	**73173**	443
●	○	○	○			Intensiv N	C	ISO2/6H	HSS-E	dampfbe-handelt	DIN 374	M 6 X0,75 - M20 X1,5	**73187**	440
●			○			N	C	ISO2/6H	HSS-E	blank	DIN 374	M 8 X0,75 - M24 X1,5	**73237**	441

Gewindebohrer für Metrische ISO-Feingewinde

P	M	K	N	S	H	Typ	Form	Toleranz-klasse	Schneidstoff	Oberfläche	Norm	d1	Katalog-Nr.	Progr. Seite
●		○				Produktiv H	B	ISO2/6H	HSS-E	nitriert	DIN 374	M 3 X0,35 - M22 X1,5	**73646**	445
	●			○		Produktiv HD	B	ISO2/6H	HSS-E	dampfbe-handelt	DIN 374	M 5 X0,5 - M20 X1,5	**73178**	446
●	○	○	○			Produktiv N	B	ISO2/6H	HSS-E	dampfbe-handelt	DIN 374	M 6 X0,75 - M20 X1,5	**73183**	439
●			○			Produktiv N	B	ISO2/6H	HSS-E	blank	DIN 374	M 4 X0,5 - M36 X1,5	**73250**	442
●	●	●	○	○		Intensiv N-X	C	6HX	HSS-E	TiAlN	DIN 374	M 6 X0,75 - M24 X1,5	**53780**	435
●	●	●	●	○		Intensiv Synchro	C	6HX	HSS-E-PM	TiCN	DIN 374	M 8 X1 - M20 X1,5	**53052**	438
●	●	●	○	○		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

Gewindebohrer für UNC-Gewinde

		●				GG	C	2B	HSS-E	nitriert	~DIN 371	8 -32 - 3/8 -16	**73326**	457
	●			○		Intensiv HD	C	2B	HSS-E	dampfbe-handelt	~DIN 371	4 -40 - 3/8 -16	**73304**	455
●	○	○	○			Intensiv N	C	2B	HSS-E	dampfbe-handelt	~DIN 371	4 -40 - 3/8 -16	**73322**	451
	●			○		Produktiv HD	B	2B	HSS-E	dampfbe-handelt	~DIN 371	4 -40 - 3/8 -16	**73297**	453
●	○	○	○			Produktiv N	B	2B	HSS-E	dampfbe-handelt	~DIN 371	4 -40 - 3/8 -16	**73308**	449
		●				GG	C	2B	HSS-E	nitriert	~DIN 376	1/2 -13 - 1 - 8	**73327**	458
	●			○		Intensiv HD	C	2B	HSS-E	dampfbe-handelt	~DIN 376	1/2 -13 - 3/4 -10	**73305**	456

P	M	K	N	S	H	Typ	Form	Toleranz-klasse	Schneidstoff	Oberfläche	Norm	d1	Katalog-Nr.	Progr. Seite
Gewindebohrer für UNC-Gewinde														
●	○	○	○			Intensiv N	C	2B	HSS-E	dampfbe-handelt	~DIN 376	1/2 -13 - 3/4 -10	**73323**	452
	●			○		Produktiv HD	B	2B	HSS-E	dampfbe-handelt	~DIN 376	1/2 -13 - 1 - 8	**73298**	454
●	○	○	○			Produktiv N	B	2B	HSS-E	dampfbe-handelt	~DIN 376	1/2 -13 - 3/4 -10	**73309**	450
Gewindebohrer für UNF-Gewinde														
	●			○		Intensiv HD	C	2B	HSS-E	dampfbe-handelt	~DIN 374	10 -32 - 3/4 -16	**73306**	462
●	○	○	○			Intensiv N	C	2B	HSS-E	dampfbe-handelt	~DIN 374	10 -32 - 5/8 -18	**73324**	460
	●			○		Produktiv HD	B	2B	HSS-E	dampfbe-handelt	~DIN 374	10 -32 - 5/8 -18	**73299**	461
●	○	○	○			Produktiv N	B	2B	HSS-E	dampfbe-handelt	~DIN 374	10 -32 - 5/8 -18	**73310**	459
Gewindebohrer für NPT-Gewinde														
○	●	○		○		VA	C		HSS-E	dampfbe-handelt	Werksnorm	1/8 - 3/4	**73293**	463
Gewindebohrer für Whitworth-Rohrgewinde														
		●				GG	C		HSS-E	nitriert	DIN 5156	G 1/8 - G1	**73345**	470
	●			○		Intensiv HD	C		HSS-E	dampfbe-handelt	DIN 5156	G 1/8 - G1	**73288**	469
●			○			Intensiv N	C		HSS-E	blank	DIN 5156	G 1/8 - G1 1/2	**73286**	467
●	○	○	○			Intensiv N	C		HSS-E	dampfbe-handelt	DIN 5156	G 1/8 - G1	**73325**	465
	●			○		Produktiv HD	B		HSS-E	dampfbe-handelt	DIN 5156	G 1/8 - G1	**73300**	468

Gewindebohrer für Whitworth-Rohrgewinde

P	M	K	N	S	H	Typ	Form	Toleranz-klasse	Schneidstoff	Oberfläche	Norm	d1	Katalog-Nr.	Progr. Seite
●	○	○	○			Produktiv N	B		HSS-E	dampfbe-handelt	DIN 5156	G 1/8 - G1	**73321**	464
●	●	●	○	○		Intensiv N-X	C	X	HSS-E	TiAlN	DIN 5156	G 1/16 - G1	**53788**	466
●	●	●	○	○		Produktiv N-X	B	X	HSS-E	AlTiZrN	DIN 5156	G 1/16 - G1	**53787**	471

Kurze Gewindebohrer für Panzerrohrgewinde

P	M	K	N	S	H	Typ	Form	Toleranz-klasse	Schneidstoff	Oberfläche	Norm	d1	Katalog-Nr.	Progr. Seite
●		○	○			N	B		HSS-E	blank	DIN 40432	PG 7 - PG16	**73296**	472

Kurze Gewindebohrer für NPT-Gewinde

P	M	K	N	S	H	Typ	Form	Toleranz-klasse	Schneidstoff	Oberfläche	Norm	d1	Katalog-Nr.	Progr. Seite
●		○	○			N	C		HSS-E	blank	Werksnorm	1/16 - 1	**73295**	473

Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde

P	M	K	N	S	H	Typ	Form	Toleranz-klasse	Schneidstoff	Oberfläche	Norm	d1	Katalog-Nr.	Progr. Seite
●	●		●			Durativ	C	6HX	HSS-E	TiN	~DIN 371	M 3 - M10	**63120**	475
●	●		●			Durativ	C	6HX	HSS-E	blank	~DIN 371	M 3 - M10	**73120**	474
●	●		●			Durativ	C	6HX	HSS-E-PM	AlCrN	~DIN 371	M 3 - M10	**53620**	478
●	●		●			Durativ	C	6GX	HSS-E	TiN	~DIN 371	M 3 - M10	**63119**	476
●	●		●			Durativ	C	6GX	HSS-E-PM	AlCrN	~DIN 371	M 3 - M10	**53621**	479
●	●		●			Durativ	C	6HX	HSS-E	TiN	~DIN 376	M12 - M16	**63122**	477
●	●		●			Durativ	C	6HX	HSS-E-PM	AlCrN	~DIN 376	M12 - M20	**53622**	480

P	M	K	N	S	H	Typ	Form	Toleranz-klasse	Schneidstoff	Oberfläche	Norm	d1	Katalog-Nr.	Progr. Seite

Kühlkanal-Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde

•	•		•			Durativ	C	6HX	VHM	TiCN	~DIN 371	M 3 - M10	**63013**	481

Gewindeformer ohne Schmiernuten für Metr. ISO-Gewinde

•	•		•			Durativ	C	6HX	HSS-E	TiN	~DIN 376	M12 - M20	**63123**	484

•	•		•			Durativ	C	6HX	HSS-E	TiN	DIN 371	M 2 - M10	**63121**	483

•	•		•			Durativ	C	6HX	HSS-E	blank	DIN 371	M 2 - M10	**73121**	482

Gewindefräser mit Senkfase für Metr. ISO-Gewinde

•	•	•	•	•	○	TMC SP			VHM	TiCN	Werksnorm	M 3 - M20	**53810**	486

•	•	•	•	•		TMC SP			VHM	blank	Werksnorm	M 3 - M20	**73810**	485

Gewindefräser mit Senkfase für Metr. ISO-Feingewinde

•	•	•	•	•	○	TMC SP			VHM	TiCN	Werksnorm	M 4 X0,5 - M16 X1,5	**53820**	487

•	•	•	•	•		TMC SP			VHM	blank	Werksnorm	M 4 X0,5 - M16 X1,5	**73820**	488

Gewindefräser ohne Senkfase für Metr. ISO-Gewinde

•	•	•	•	•	○	TM SP			VHM	TiCN	Werksnorm	M 6 - M20 X1,5	**53830**	490

•	•	•	•	•		TM SP			VHM	blank	Werksnorm	M 6 - M20 X1,5	**73830**	489

P	M	K	N	S	H	Typ	Form	Toleranz-klasse	Schneidstoff	Oberfläche	Norm	d1	Katalog-Nr.	Progr. Seite

Hand-Gewindebohrer für Metr. ISO-Gewinde, Satz, rechtsschneidend

●	○	●	●			N	A/D/C	ISO2/6H	HSS	blank	DIN 352	M 1 - M24	**73531**	491

Hand-Gewindebohrer für Metr. ISO-Gewinde, Satz, linksschneidend

●	○	●	●			N	A/D/C	ISO2/6H	HSS	blank	DIN 352	M 4 - M16	**73532**	492

Hand-Gewindebohrer für Metr. ISO-Feingewinde, Satz

●	○	●	●			N	D/C	ISO2/6H	HSS	blank	DIN 2181	M 5 X0,5 - M18 X1,5	**73521**	493

Hand-Gewindebohrer für UNC-Gewinde, Satz

●	○	●	●			N	A/D/C	2B	HSS	blank	~DIN 352	4 -40 - 3/4 -10	**73535**	494

Hand-Gewindebohrer für BSW-Gewinde, Satz

●	○	●	●			N	A/D/C		HSS	blank	~DIN 352	W 1/8 - W 3/4	**73534**	495

P	M	K	N	S	H	Typ	Form	Toleranz-klasse	Schneidstoff	Oberfläche	Norm	d1	Katalog-Nr.	Progr. Seite

Hand-Gewindebohrer für Rohrgewinde, Satz

●	○	●	●			N	D/C		HSS	blank	DIN 5157	G 1/8 - G 1/2	**73522**	496

Kombibohrer für Metrische ISO-Gewinde

●	○	●	●			N	D	ISO2/6H	HSS-E	blank	Werksnorm	M 3 - M12	**73248**	497

Maschinen-Muttergewindebohrer für Metrische ISO-Gewinde

●	○	●	●			N		ISO2/6H	HSS-E	blank	DIN 357	M 3 - M18	**73243**	498

Schneideisen für Metrische ISO-Gewinde

●	○		●				B	6g	HSS	blank	DIN EN 22568	M 1 - M30	**73400**	499

●		○	●				B	6g	HSS	blank	DIN EN 22568	M 3 - M18	**73410**	500

●	●		●				B	6g	HSS-E	nitriert	DIN EN 22568	M 2,5 - M20	**73413**	501

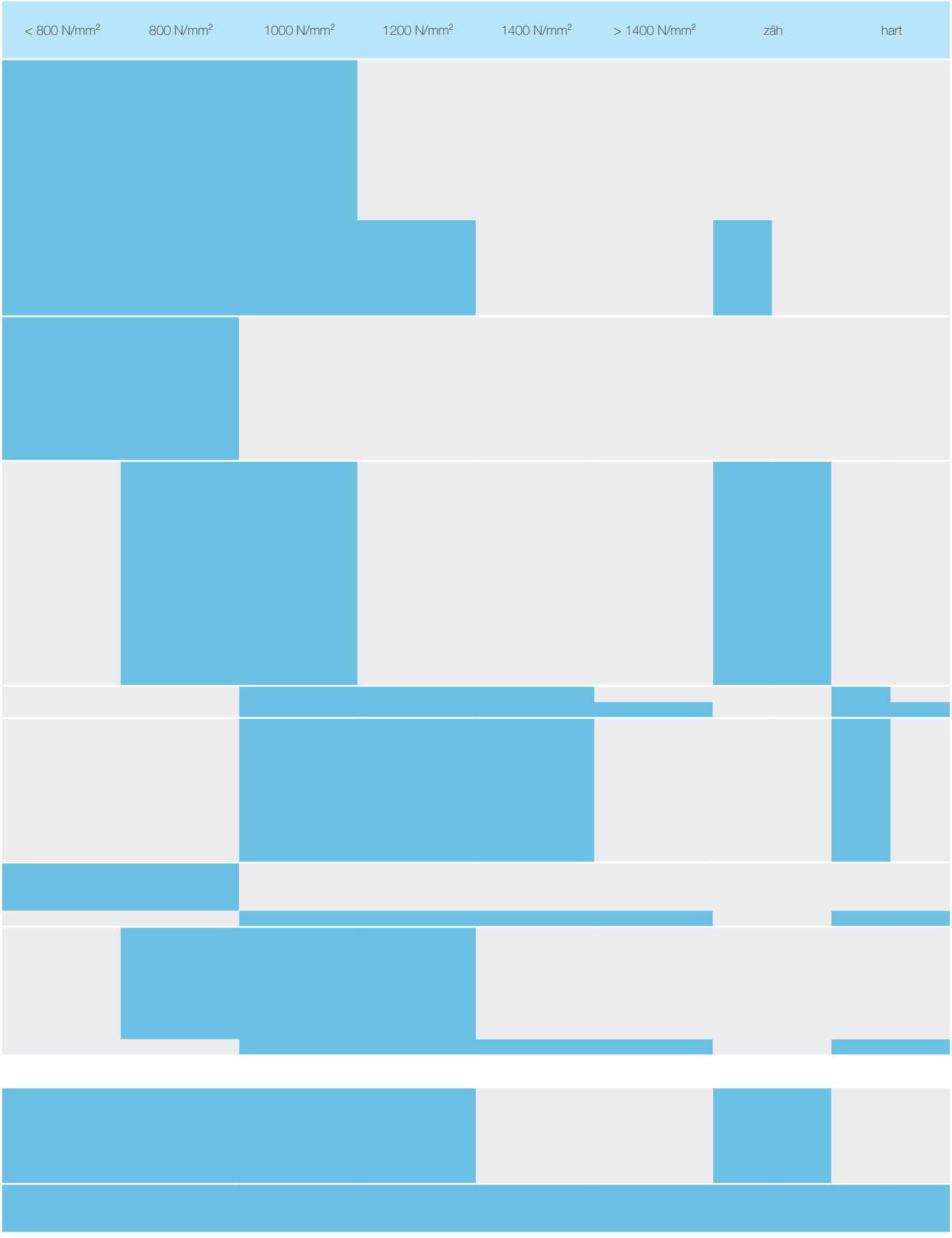
Anwendung

Zuordnung nach Werkstoffen

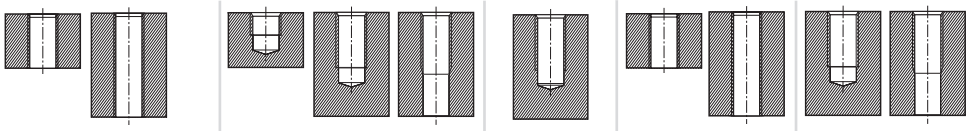
Farbring	Katalog-Nr. Produktiv	Katalog-Nr. Intensiv	Nichteisenmetalle, Aluminium	Stähle	GG, GGG	rost- und säure-beständige Stähle	Nickel, Titan-Legierungen	Gehärtete Stähle
Grün	73033	73046						
	73038	73048						
	73183	73187						
	73308	73322						
	73309	73323						
	73310	73324						
	73321	73325						
	63033	63046						
		63048						
		73047						
	53733	53746						
	53778	53780						
	53787	53788						
Grün Synchro	53053	53050						
	53054	53051						
	53055	53052						
Gelb	73133	73146						
	73132	73145						
	73138	73148						
	73250	73173						
		73227						
		73286						
	63133	63146						
	63138	63148						
		63173						
Blau	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						
Rot	73642	53661						
	73645	73619						
	73646	73661						
	53642	73664						
	73640	73666						
	63641	63010						
	63643	63674						
	53640	63675						
	53670	53670						
Schwarz	73131	73156						
	73189	73136						
	73011	73011						
	53670	53670						
Weiss	73201	73201						
	73211	73211						
	73194	73194						
	73326	73326						
	73327	73327						
	73345	73345						
	63201	63201						
	53670	53670						
	für Durchgangs- und Grundgewinde							
Gewinde-former	73121	63122						
	63121	53620						
	63123	53621						
	73120	53622						
	63120	63013						
	63119							
Gewinde-fräser	73810	53820						
	73820	73830						
	53810	53830						

optimal gut geeignet

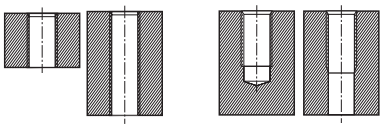
Zuordnung nach Zugfestigkeit



Auswahlempfehlungen für Gewindebohrer

		Werkstoffbeispiele	für universelle Anwendung bei Werkstoffen <1100 N/mm², z.B.: Baustähle, Automatenstähle Einsatzstähle, Vergütungsstähle Nitrierstähle Kugelgraphitguss					für Synchronbearbeitung universelle Anwendung bei Werkstoffen bis 1100 N/mm²	
		Bohrungsart							
		Schneidstoff	HSS-E					HSS-E-PM	HSS-E-PM
		Typ	Produktiv N		Intensiv N		Intensiv N	Produktiv-Synchro	Intensiv-Synchro
		Form	B		C		E	B	C
		Oberfläche	dampfbeh.	TiN	dampfbeh.	TiN	blank	TiCN	TiCN
		v_c m/min	**≤ 15**	**≤ 20**	**≤ 15**	**≤ 20**	**≤ 15**	**≤ 20**	**≤ 20**
Gewinde-art	Baumaße nach DIN 2184-1	Toleranz-feld	**Katalog-Nr./Ø-Bereich/Seite**						
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				

Allround-Anwendung
Stähle bis 1300 N/mm²
inkl. rost- und säurebeständige Stähle,
Guss, NE-Metalle



HSS-E	HSS-E
ProduktivN-X	IntensivN-X
B	C
AlTiZrN	TiAlN
≤ 20	**≤ 20**
Katalog-Nr./Ø-Bereich/Seite	
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

STOCK ProduktivN-X

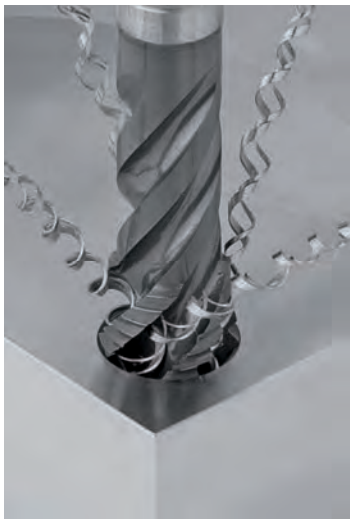
Durchgangs-Gewindebohrer, Form B,
mit Schälanschnitt, HSS-E, AlTiZrN

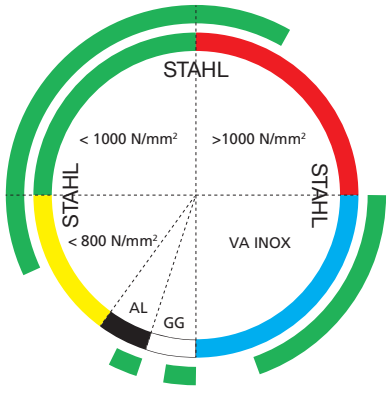
STOCK IntensivN-X

Grund-Gewindebohrer, Form C,
45°-Spirale, HSS-E, TiAlN

Die Allrounder für Innengewindeherstellung mit extrem großem Einsatzgebiet. Von Automaten-, Kohlenstoff-, Einsatz-, Vergütungs- und rost- und säurebeständigen Stählen, über Gusswerkstoffe bis hin zu diversen Nichteisenmetallen in einem Zugfestigkeitsspektrum von < 600 N/mm² bis 1300 N/mm², bei prozesssicherer Spanabfuhr, langer Standzeit und hoher Maßgenauigkeit der zu fertigenden Innengewinde.

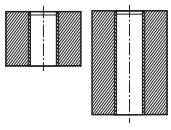
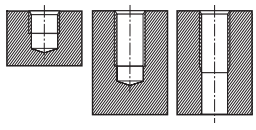
Die neuartige Schneidengeometrie in Verbindung mit dem kontrollierten Auftrag der Verschleißschutzschicht und der damit verbundenen Einhaltung der Innengewindetoleranzen, ohne zu Verschneiden und ohne Vorweiten, erlaubt die Herstellung des Flankendurchmessers in der Fertigungstoleranz nach 6HX, für mehr Wirtschaftlichkeit durch höhere Leistung, für noch größere Universalität und absolute Prozesssicherheit.





Einsatzbereiche

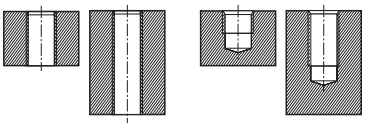
Auswahlempfehlungen für Gewindebohrer

		Werkstoffbeispiele	für rost- und säurebeständige Stähle z.B.: geschwefelte Stähle austenitische Stähle martensitische Stähle ferritische Stähle				für rost- und säurebeständige Stähle z.B.: geschwefelte Stähle austenitische Stähle martensitische Stähle ferritische Stähle			
		Bohrungsart								
		Schneidstoff	HSS-E		HSS-E-PM		HSS-E	HSS-E-PM		
		Typ	Produktiv HD				Intensiv HD			
		Form	B				C			
		Oberfläche	dampfbeh.	TiN	blank	TiCN	dampfbeh.	blank	TiCN	TiN
		v_c m/min	**≤ 15**	**≤ 20**	**≤ 15**	**≤ 20**	**≤ 15**	**≤ 15**	**≤ 20**	**≤ 20**
Gewinde-art	Baumaße nach DIN 2184-1	Toleranz-feld	**Katalog-Nr./Ø-Bereich/Seite**							
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	**Werks-norm**	**–**	73293 1/8 - 3/4 463							

Standfest in schwierigen Materialien.

Speziell für die prozesssichere Bearbeitung vonTitan und Titanlegierungen ergänzen die Gewindebohrer vom Typ HDX unser Programm.

fürTitan und Titanlegierungen

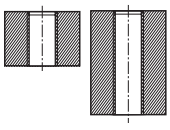
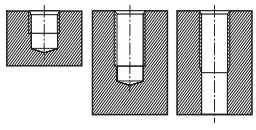


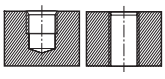
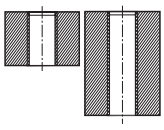
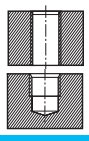
HSS-E-PM	
Produktiv HDX	Intensiv HDX
B	C
TiCN	TiCN
≤ 20	**≤ 20**
Katalog-Nr./Ø-Bereich/Seite	
53667 M3 - M10 377	53666 M3 - M10 382
53667 M12 - M16 377	53666 M12 - M16 382

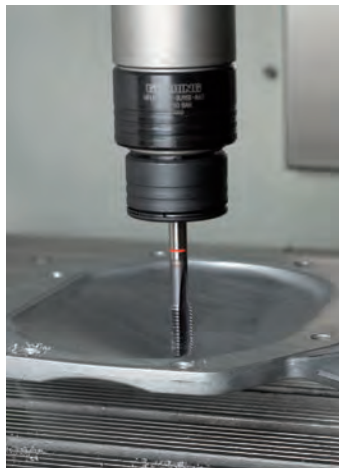
Vorteile:

- absolut maßgenaue Gewinde
- optimale Spanabfuhr
- kein Klemmen
- geringer Verschleiß
- hohe Standwege
- maximale Prozesssicherheit

Auswahlempfehlungen für Gewindebohrer

		Werkstoffbeispiele	für hochfeste Stähle ≥ 1100…1400 N/mm², z.B.: Vergütungsstähle Legierte Kaltarbeitsstähle Schnellarbeitsstähle					für hochfeste Stähle ≥ 1100…1400 N/mm², z.B.: Vergütungsstähle Legierte Kaltarbeitsstähle Schnellarbeitsstähle			
		Bohrungsart									
		Schneidstoff	HSS-E		HSS-E-PM			HSS-E			HSS-E-PM
		Typ	Produktiv H					Intensiv H			HR 15
		Form	B					C			C
		Oberfläche	nitriert	TiCN	blank	TiN	TiCN	blank	TiCN	TiN	blank
		v_c m/min	**≤ 15**	**≤ 20**	**≤ 15**	**≤ 20**	**≤ 20**	**≤ 15**	**≤ 20**	**≤ 20**	**≤ 15**
Gewinde-art	Baumaße nach DIN 2184-1	Toleranz-feld	**Katalog-Nr./Ø-Bereich/Seite**								
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		
	Werks-norm	**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**	**–**									

für hochfeste Werkstoffe ≥ 1400 N/mm²	für hochfeste Sonderlegierungen ≥ 1400 N/mm², z.B.: Inconel		für gehärtete Stähle 54-60 HRC
			
HSS-E-PM	HSS-E-PM		VHM
HCX	Produktiv HX	Intensiv HX	H
C	B	B	D
TiCN	AlTiN	AlTiN	TiCN
≤ 20	**≤ 20**	**≤ 20**	**≤ 2**
Katalog-Nr./Ø-Bereich/Seite			
53670 M5 - M10 383	53669 M3 - M10 376	53668 M3 - M10 381	
	53669 M12 - M16 376	53668 M12 - M16 381	
			63010 M3 - M12 411



Für harte Fälle.

Mit den Gewindebohrern vom Typ HX und HCX bietet Stock spezielle Lösungen für die Bearbeitung hochfester Werkstoffe an. Ihre spezielle Hartstoff-Beschichtung gibt ihnen die hohe Verschleißfestigkeit für die hohen Anforderungen bei der Hartbearbeitung.

Anwendungsgebiet **HX**:

- Inconel
- Hastelloy
- Waspalloy
- Ni-Basislegierungen

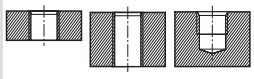
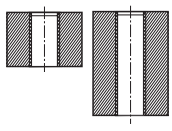
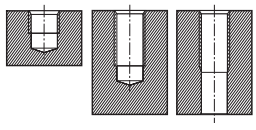
Anwendungsgebiet **HCX**:

- Werkzeugstähle
- leg. Vergütungsstähle
- Schnellarbeitsstähle
- Temperguss
- Guss mit Vermikulargraphit
- Guss mit Kugelgraphit
- Bronze, hart
- Sonderwerkstoffe, hart
- Ampco >21

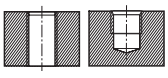
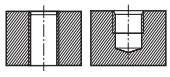
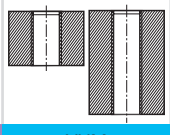
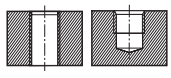
Vorteile:

- prozesssicheres Gewindeschneiden
- hohe Standzeiten
- Maßgenauigkeit

Auswahlempfehlungen für Gewindebohrer

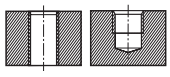
		Werkstoffbeispiele	für allg. Stähle ≤ 800 N/mm², und Bunt-metalle	für allg. Stähle ≤ 800 N/mm², z.B.: Baustähle Automatenstähle Einsatzstähle Vergütungsstähle	für allg. Stähle ≤ 800 N/mm², z.B.: Baustähle Automatenstähle Einsatzstähle Vergütungsstähle		für allg. Stähle ≤ 800 N/mm², und Bunt-metalle	für allg. Stähle ≤ 800 N/mm², z.B.: Baustähle Automatenstähle Einsatzstähle Vergütungsstähle	
		Bohrungsart							
		Schneidstoff	HSS-E						
		Typ	Massiv N	N	Produktiv N		Intensiv N		
		Form	B	C	B		C		
		Oberfläche	blank	blank	blank	TiN	blank	blank	TiN
		v_c m/min	**≤ 15**	**≤ 15**	**≤ 15**	**≤ 20**	**≤ 15**	**≤ 15**	**≤ 20**
Gewinde-art	Baumaße nach DIN 2184-1	Toleranz-feld	**Katalog-Nr./Ø-Bereich/Seite**						
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	

Auswahlempfehlungen für Gewindebohrer

Werkstoffbeispiele	für kurzspanende NE-Legierungen, z.B.: AlSi > 10% Si	für Al und Al-Legierungen, z.B.: Reinaluminium-Legierungen Al-Knetlegierungen < 10% Si		für kurzspanendes Al und Al-Legierungen Buntmetalle Kunststoffe	für Gusswerkstoffe, z.B.: Grauguss Temperguss Kugelgraphitguss Gusseisen		
Bohrungsart							
Schneidstoff	HSS-E-PM	HSS-E		VHM	HSS-E-PM	**HSS-E**	
Typ	HCX	Produktiv W	Intensiv W	H	HCX	GG	
Form	C	B	C		C	C	
Oberfläche	TICN	blank	blank	blank	TICN	nitriert	AlTiN
v_c m/min	**≤ 20**	**≤ 15**	**≤ 15**	**≤ 15**	**≤ 20**	**≤ 20**	**≤ 30**

Gewinde-art	Baumaße nach DIN 2184-1	Toleranz-feld	Katalog-Nr./Ø-Bereich/Seite						
M	**DIN 371**	**ISO 2 6H**		73131 M2 - M10 431	73156 M2 - M10 433				
		6HX	53670 M5 - M10 483			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	

Auswahlempfehlungen für Hand-Gewindebohrer, kurze Maschinen- und Sonder-Gewindebohrer

Werkstoffbeispiele	für allg. Stähle ≤ 800 N/mm², z.B.: Baustähle, Automatenstähle, Einsatzstähle, Vergütungsstähle Die Sätze 73531 und 73532 sind auch für hochfeste, rost- und säurebeständige Stähle geeignet		für allg. Stähle ≤ 800 N/mm², z.B.: Baustähle Automatenstähle Einsatzstähle Vergütungsstähle		
Bohrungsart					
Schneidstoff	HSS		**HSS-E**		
Typ	N			N	
Form	–		B	Kombi	-
Oberfläche	blank		blank	blank	blank
v_c m/min	–		**≤ 15**	**≤ 15**	**≤ 15**

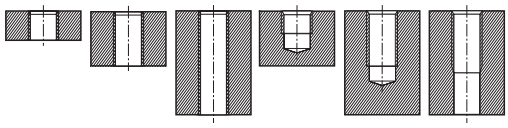
Gewinde-art	Baumaße nach DIN 2184-1	Toleranz-feld	Katalog-Nr./Ø-Bereich/Seite				
M	**DIN 352**	**ISO 2 6H**	73531 (Satz) RH: V 73101 M 73102 F 73103 M1 - M24 491	73532 (Satz) LH: V 73105 M 73106 F 73107 M4 - M16 492			73243 M3 - M18 498
	Werks-norm	**ISO 2 6H**				73248 M3 - M12 497	
MF	**DIN 2181**	**ISO 2 6H**	73521 (Satz): V 73110 / F 73111 M5x0,5 - M18x1,5 493				
UNC	**~DIN 352**	**2B**	73535 (Satz): V 73301 / M 73302 / F 73303 Nr.4-40 - 3/4-10 494				
BSW	**~DIN 352**	**–**	73534 (Satz): V 73311 / M 73312 / F 73313 W1/8 - W3/4 495				
G	**DIN 5157**	**–**	73522 (Satz): V 73315 / F 73316 G1/8 - G1/2 496				
Pg	**DIN 40432**	**–**			73296 Pg7 - PG16 472		
NPT	**Werks-norm**	**–**			73295 1 1/16 - 1 473		

auch bei STOCK erhältlich:

GEWINDESPANNFUTTER

Auswahlempfehlungen für Gewindeformer

Bohrungsart



Werkstoffbeispiele

für allg. Stähle ≥ 800…1000 N/mm²,
rost- und säurebeständige Stähle,
universelle Anwendung bei Werkstoffen < 1000 N/mm² und
Al und Al-Legierungen

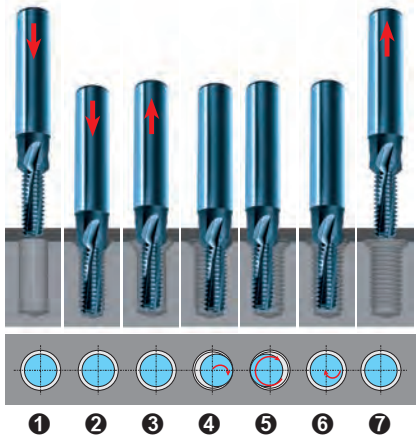
		Schneidstoff	HSS-E				HSS-E-PM	VHM
		Typ	Durativ					
		Form	C ohne Schmiernuten		C mit Schmiernuten			
		Oberfläche	blank	TiN	blank	TiN	AlCrN	TiCN
		v_c m/min	**4-50**	**4-50**	**4-50**	**4-50**	**4-50**	**4-50**
Gewinde-art	Baumaße nach DIN 2174	Toleranz-feld	**Katalog-Nr./Ø-Bereich/Seite**					
M	~ **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	

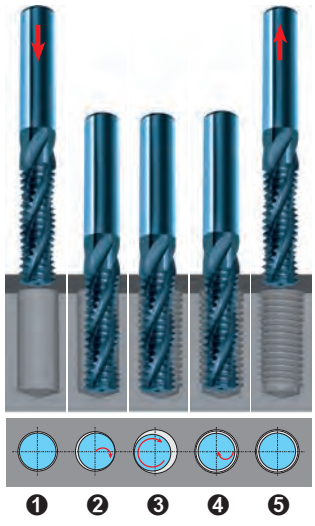
Auswahlempfehlungen für Gewindefräser

Bohrungsart

Werkstoffbeispiele: für universelle Anwendung:
Baustähle, Automatenstähle, Einsatzstähle,
Vergütungsstähle, Werkzeugstähle, Schnellarbeitsstähle, geschwefelte,
austenitische und martensitische Stähle, Sonderlegierungen,
Al und Al-Legierungen,
Gusswerkstoffe,
Buntmetalle, Kunststoffe, Mg-Legierungen, Titan

		Schneidstoff	VHM		VHM	
		Typ	TMC SP		TM SP	
		Form	-	-	-	-
		Oberfläche	blank	TiCN	blank	TiCN
		v_c m/min	**100 - 300 (Ti: 40-60)**	**50 - 200**	**100 - 300 (Ti: 40-60)**	**50 - 200**
Gewinde-art	Baumaße nach	Gewindetiefe	**Katalog-Nr./Ø-Bereich/Seite**			
M	**Werksnorm**	**2,0 x D**	73810 M3 - M20 485	53810 M3 - M20 486	73830 M6 - M20 489	53830 M6 - M20 490
MF	**Werksnorm**	**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





Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

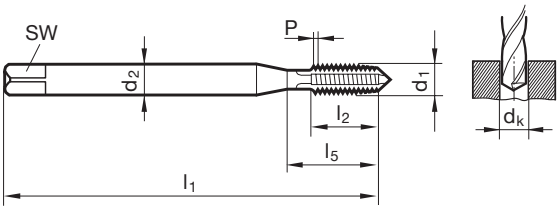
Katalog-Nr. 53053

Produktiv Synchro | DIN 371 | B | HSS-E-PM | TiCN | R | ISO2/6H

P	M	K	N	S	H
●	●	●	●	○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1200 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

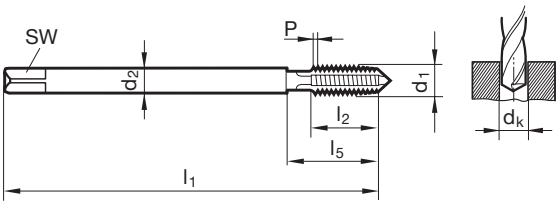
Katalog-Nr. 53054

Produktiv Synchro | DIN 376 | B | HSS-E-PM | TiCN | R | ISO2/6H

P	M	K	N	S	H
●	●	●	●	○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 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	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

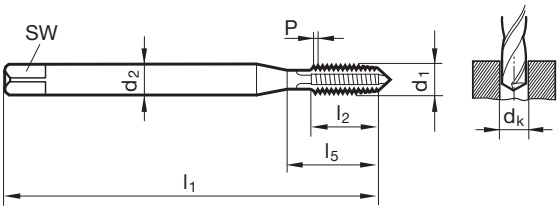
Katalog-Nr. 53733

Produktiv N-X | ~DIN 371/6 | B | HSS-E | Al-TiZrN | R | 6HX

P	M	K	N	S	H
●	●	●	○	●	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- universell einsetzbar
- Stahlwerkstoffe 600 bis 1300 N/mm²
- rost-/säurebest. Stähle
- NE-Metalle
- Gusswerkstoffe



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

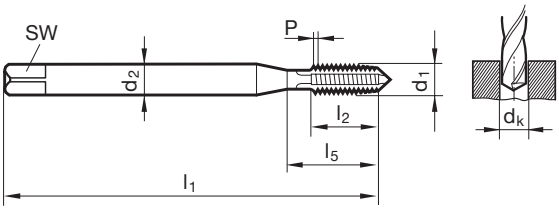
Katalog-Nr. 63033

Produktiv N | DIN 371 | B | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 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	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	18,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

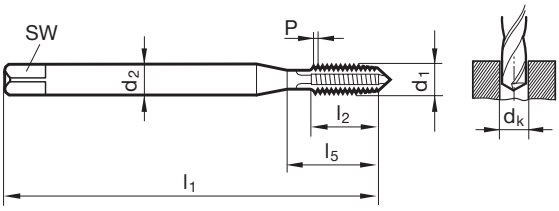
Katalog-Nr. 73033

Produktiv	DIN					
N	371	B	HSS-E	dampfbe-handelt	R	ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 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	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	18,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

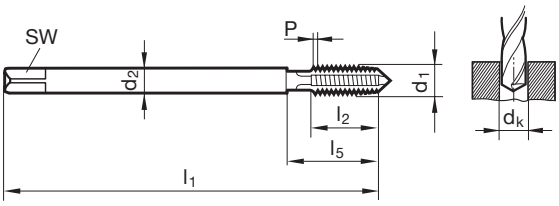
Katalog-Nr. 73038

Produktiv	DIN					
N	376	B	HSS-E	dampfbe-handelt	R	ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1100 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	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

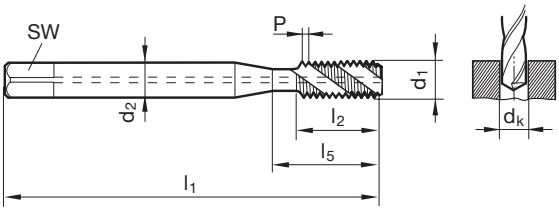
Katalog-Nr. 53050

Intensiv Synchro | DIN 371 | C | HSS-E-PM | TiCN | R | 6HX

P	M	K	N	S	H
●	●	●	●	○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 50° Rechtsdrall
- kurzes Schneidteil, nur mit Synchronführung verwendbar
- Spanförderung in Schaftrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1200 N/mm²



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	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

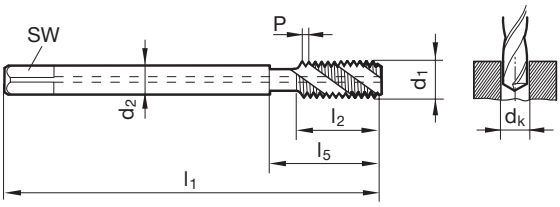
Katalog-Nr. 53051

Intensiv Synchro | DIN 376 | C | HSS-E-PM | TiCN | R | 6HX

P	M	K	N	S	H
●	●	●	●	○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 50° Rechtsdrall
- kurzes Schneidteil, nur mit Synchronführung verwendbar
- Spanförderung in Schaftrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

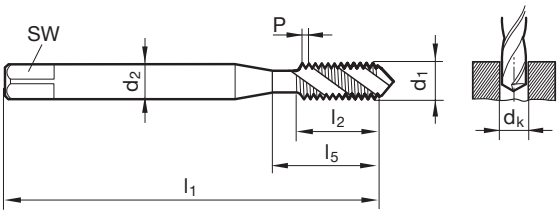
Katalog-Nr. 53746

Intensiv N-X | ~DIN 371/6 | C | HSS-E | TiAlN | R | 6HX

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 45° Rechtsdrall
- Spanförderung in Schaftrichtung
- universell einsetzbar
- Stahlwerkstoffe 600 bis 1300 N/mm²
- rost-/säurebest. Stähle
- NE-Metalle
- Gusswerkstoffe



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

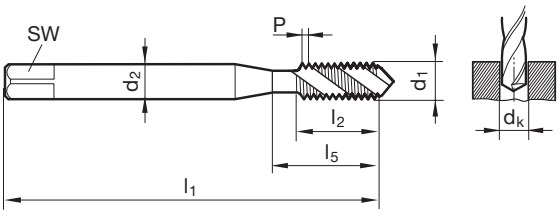
Katalog-Nr. 63046

Intensiv N | DIN 371 | C | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

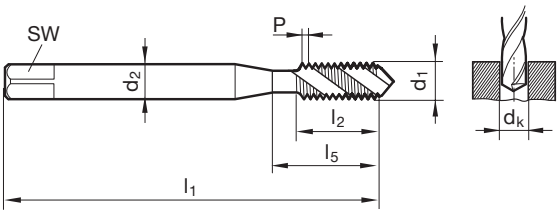
Katalog-Nr. 73046

Intensiv N | DIN 371 | C | HSS-E | dampfbe-handelt | R | ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

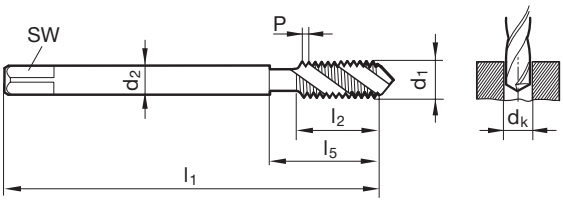
Katalog-Nr. 63048

Intensiv N | DIN 376 | C | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1100 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

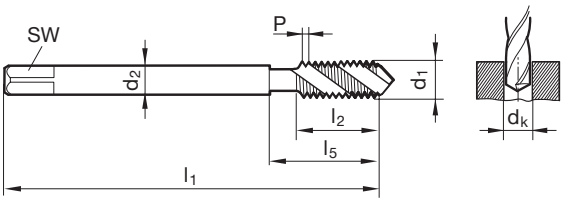
Katalog-Nr. 73048

Intensiv N	DIN 376	C	HSS-E	dampfbe-handelt	R	ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1100 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
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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

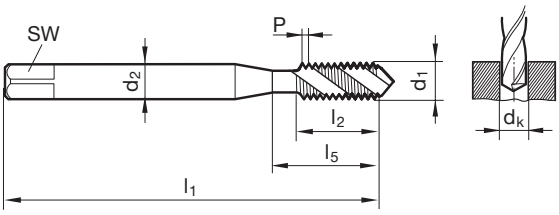
Katalog-Nr. 73047

Intensiv N | DIN 371 | E | HSS-E | blank | R | ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- universell einsetzbar
- kurzer Anschnitt für Gewindetiefen nahe Bohrungsgrund
- Stahlwerkstoffe bis 1100 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

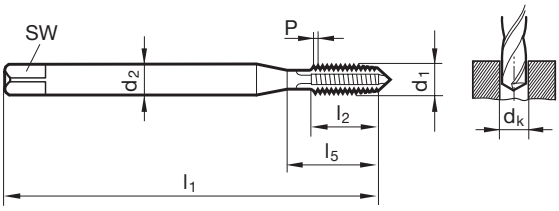
Katalog-Nr. 53669

Produktiv HX | DIN 371/6 | B | HSS-E-PM | Al-TiN | R | 6HX

P	M	K	N	S	H
		○		●	●

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- Sonderlegierungen, gehärtete Stähle
- Nickel und Ni-Basislegierungen
- Ampco > 21, Hartguss, Inconel



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
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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

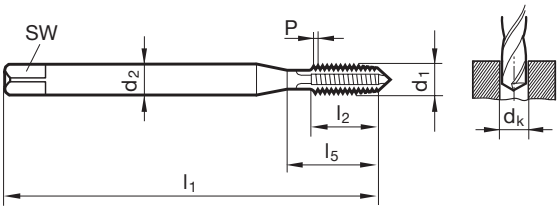
Katalog-Nr. 53667

Produktiv HDX | DIN 371/6 | B | HSS-E-PM | TiCN | R | 6HX

P	M	K	N	S	H
	•			•	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- Sonderlegierungen
- Titan und Titanlegierungen
- zähharte Werkstoffe bis 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
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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

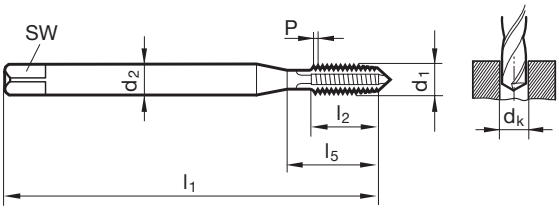
Katalog-Nr. 73185

N	1xD	DIN 371	C	HSS-E	blank	R	ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- für Gewindetiefen bis 1xD
- Stähle bis 800 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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	8,000	
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	2,10	50,000	9,000	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

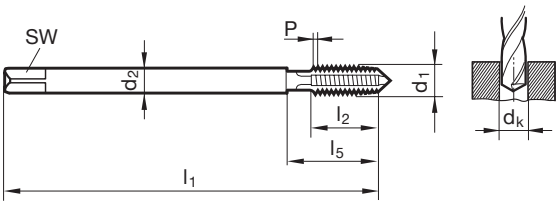
Katalog-Nr. 73191

N | 1xD | DIN 376 | C | HSS-E | blank | R | ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- für Gewindetiefen bis 1xD
- Stähle bis 800 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

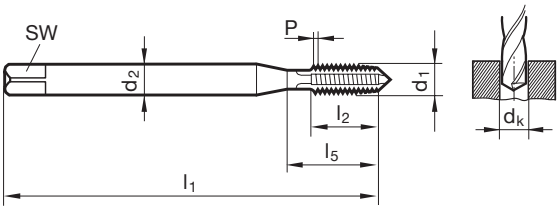
Katalog-Nr. 73126

Massiv N | 1xD | DIN 371 | B | HSS-E | blank | R | ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- für Gewindetiefen bis 1xD
- speziell für Bleche und Blechdurchzüge



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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	2,10	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	18,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

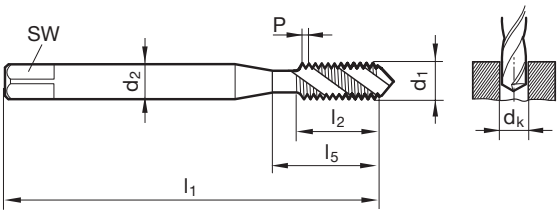
Katalog-Nr. 53668

Intensiv HX	DIN 371/6	C	HSS-E-PM	Al-TiN	R	6HX

P	M	K	N	S	H
		○		●	●

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 10° Rechtsdrall
- Spanförderung in Schaftrichtung
- Sonderlegierungen, gehärtete Stähle
- Nickel und Ni-Basislegierungen
- Ampco > 21, Hartguss, Inconel



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
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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

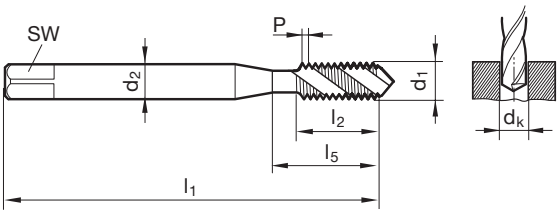
Katalog-Nr. 53666

Intensiv HDX | DIN 371/6 | C | HSS-E-PM | TiCN | R | 6HX

P	M	K	N	S	H
	•			•	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 15° Rechtsdrall
- Spanförderung in Schaftrichtung
- Sonderlegierungen
- Titan und Titanlegierungen
- zähharte Werkstoffe bis 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
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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

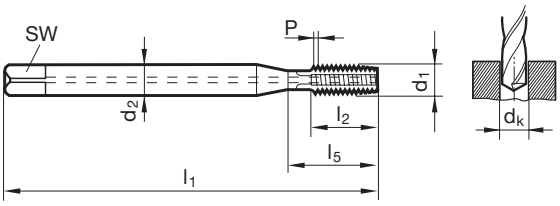
Katalog-Nr. 53670

HCX | DIN 371 | C | HSS-E-PM | TiCN | R | 6HX

P	M	K	N	S	H
●		●	○	○	○

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- mit innenliegendem Kühlkanal
- Kühlmittelaustritt stirnseitig
- hochfeste Stahlwerkstoffe bis 1600 N/mm²
- harte und kurzspanige Werkstoffe, wie Guss, Bronze, AlSi-Legierungen mit hohem Si-Gehalt



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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

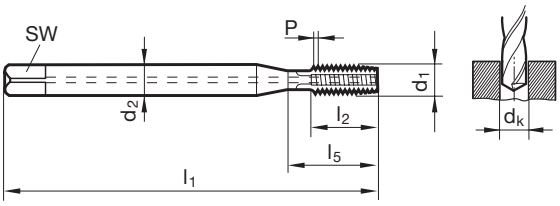
Katalog-Nr. 73011

H	DIN 371	C	VHM	blank	R	6HX

P	M	K	N	S	H
			•		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- mit innenliegendem Kühlkanal
- Kühlmittelaustritt stirnseitig
- IK ≥ M5
- kurzspanige Al- und Al-Legierungen, kurzspanige, spröde NE-Metalle



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	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

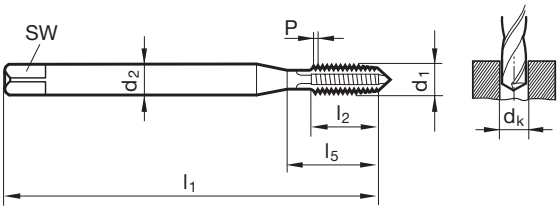
Katalog-Nr. 63133

Produktiv N | DIN 371 | B | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- allgemeine Anwendung
- Stähle bis 800 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	18,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

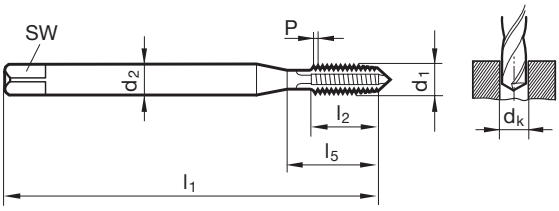
Katalog-Nr. 73132

Produktiv	DIN					
N	371	B	HSS-E	blank	R	ISO3/6G

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- allgemeine Anwendung
- Stähle bis 800 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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	18,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

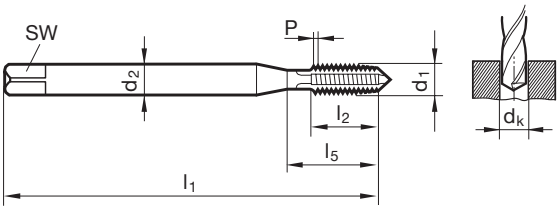
Katalog-Nr. 73133

Produktiv N | DIN 371 | B | HSS-E | blank | R | ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- allgemeine Anwendung
- Stähle bis 800 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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	18,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

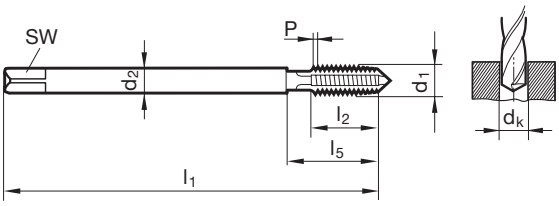
Katalog-Nr. 63138

Produktiv N | DIN 376 | B | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- allgemeine Anwendung
- Stähle bis 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	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

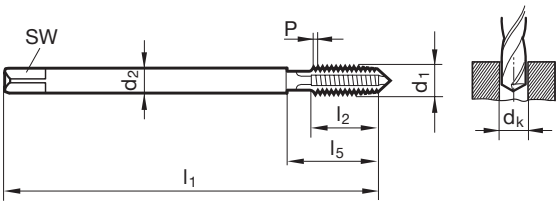
Katalog-Nr. 73138

Produktiv N	DIN 376	B	HSS-E	blank	R	ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- allgemeine Anwendung
- Stähle bis 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	18,000	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

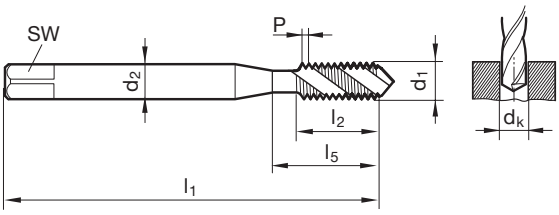
Katalog-Nr. 63146

Intensiv N | DIN 371 | C | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- allgemeine Anwendung
- Stähle bis 800 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

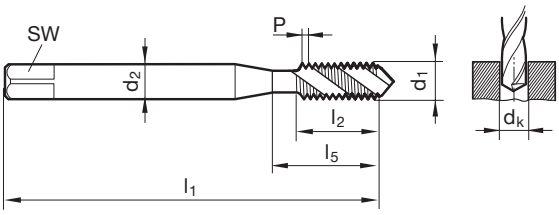
Katalog-Nr. 73145

Intensiv N	DIN 371	C	HSS-E	blank	R	ISO3/6G

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- allgemeine Anwendung
- Stähle bis 800 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

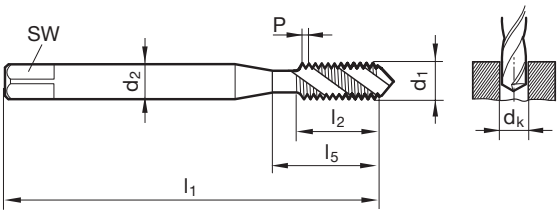
Katalog-Nr. 73146

Intensiv N | DIN 371 | C | HSS-E | blank | R | ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- allgemeine Anwendung
- Stähle bis 800 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

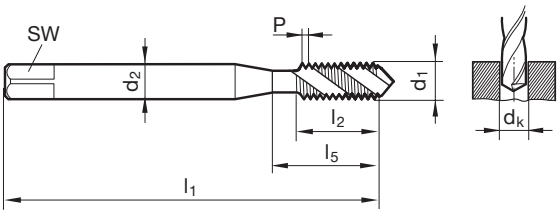
Katalog-Nr. 73221

Intensiv N	DIN 371	C	HSS-E	blank	R	ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 15° Rechtsdrall
- Spanförderung in Schaftrichtung
- allgemeine Anwendung
- Stähle bis 800 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

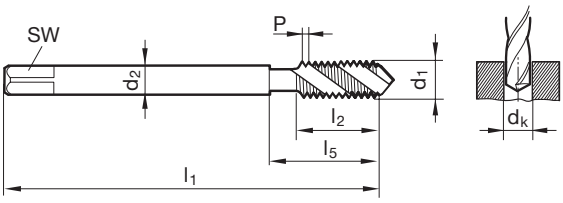
Katalog-Nr. 63148

Intensiv N | DIN 376 | C | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- allgemeine Anwendung
- Stähle bis 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

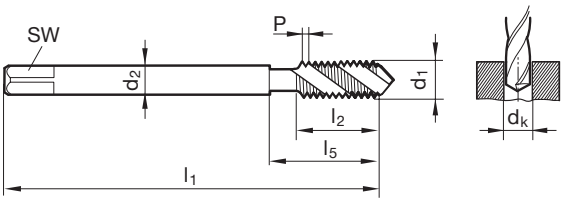
Katalog-Nr. 73148

Intensiv N	DIN 376	C	HSS-E	blank	R	ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- allgemeine Anwendung
- Stähle bis 800 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

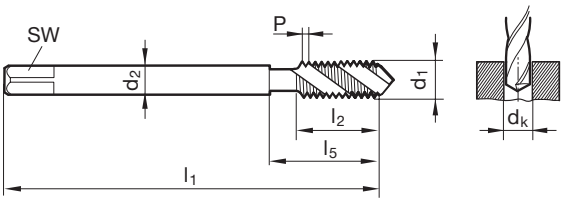
Katalog-Nr. 73227

Intensiv N	DIN 376	C	HSS-E	blank	R	ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 15° Rechtsdrall
- Spanförderung in Schaftrichtung
- allgemeine Anwendung
- Stähle bis 800 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

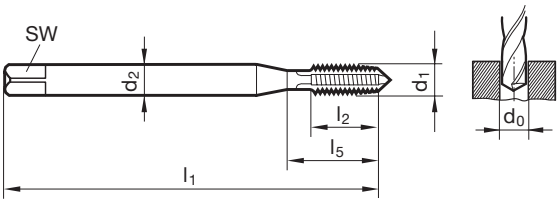
Katalog-Nr. 53640

Produktiv H | DIN 371 | B | HSS-E-PM | TiCN | R | ISO2/6H

P	M	K	N	S	H
●		○			

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- hochfeste Werkstoffe
- Stähle 1100 bis 1600 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

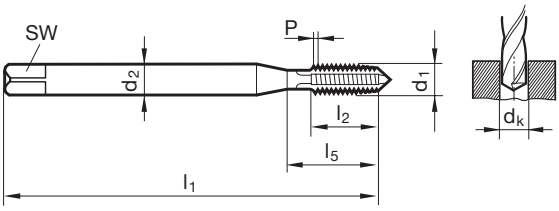
Katalog-Nr. 53642

Produktiv H | DIN 371 | B | HSS-E | TiCN | R | ISO2/6H

P	M	K	N	S	H
●		○			

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- Sonderlegierungen, Ni-Basislegierungen
- zähharte Werkstoffe bis 1400 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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	18,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

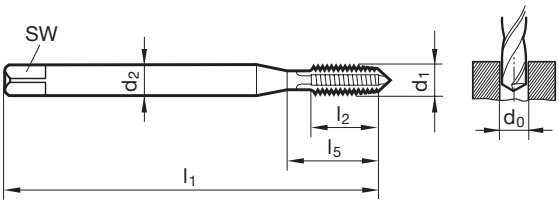
Katalog-Nr. 63641

Produktiv H | DIN 371 | B | HSS-E-PM | TiN | R | ISO2/6H

P	M	K	N	S	H
●		○			

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- Sonderlegierungen, Ni-Basislegierungen
- zähharte Werkstoffe bis 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	18,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

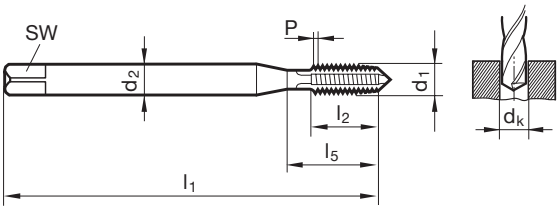
Katalog-Nr. 73640

Produktiv H	DIN 371	B	HSS-E-PM	blank	R	ISO2/6H

P	M	K	N	S	H
●		○			

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- hochfeste Werkstoffe
- Stähle 1100 bis 1600 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	18,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

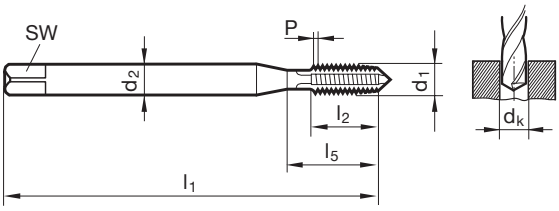
Katalog-Nr. 73642

Produktiv H	DIN 371	B	HSS-E	nit-riert	R	ISO2/6H

P	M	K	N	S	H
●		○			

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- hochfeste Werkstoffe
- Stähle 1100 bis 1600 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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	18,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

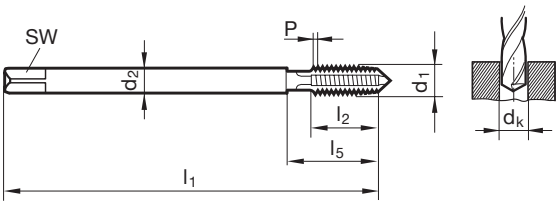
Katalog-Nr. 63643

Produktiv H | DIN 376 | B | HSS-E-PM | TiN | R | ISO2/6H

P	M	K	N	S	H
●		○			

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- hochfeste Werkstoffe
- Stähle 1100 bis 1600 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	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

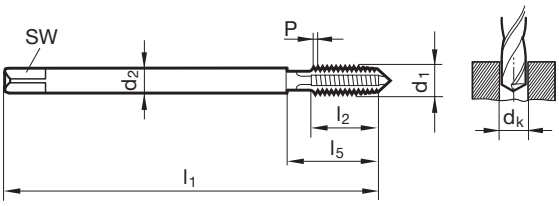
Katalog-Nr. 73645

Produktiv H | DIN 376 | B | HSS-E | nit-riert | R | ISO2/6H

P	M	K	N	S	H
●		○			

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- hochfeste Werkstoffe
- Stähle 1100 bis 1600 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	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

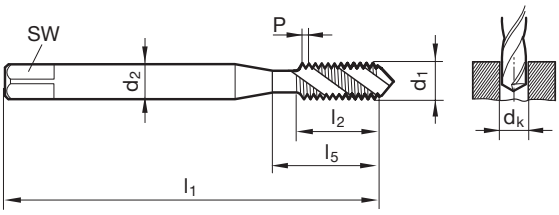
Katalog-Nr. 53661

Intensiv H | DIN 371 | C | HSS-E | TiCN | R | ISO2/6H

P	M	K	N	S	H
●		○			

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- hochfeste Werkstoffe
- Stähle 1100 bis 1600 N/mm²



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

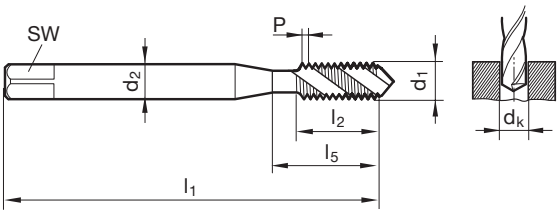
Katalog-Nr. 63674

Intensiv H | DIN 371 | C | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
•					

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- hochfeste Werkstoffe
- Stähle 1100 bis 1600 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

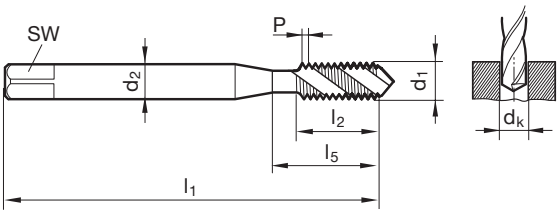
Katalog-Nr. 73619

HR15 | DIN 371 | C | HSS-E-PM | blank | R | ISO2/6H

P	M	K	N	S	H
●		○			

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 15° Rechtsdrall
- Spanförderung in Schaftrichtung
- hochfeste Werkstoffe
- Stähle 1100 bis 1600 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

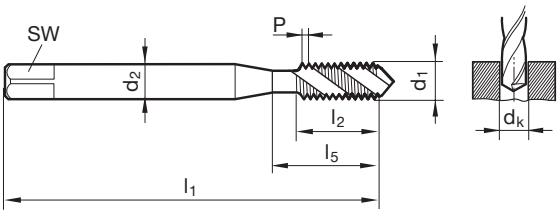
Katalog-Nr. 73661

Intensiv H | DIN 371 | C | HSS-E | blank | R | ISO2/6H

P	M	K	N	S	H
●		○			

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- hochfeste Werkstoffe
- Stähle 1100 bis 1600 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

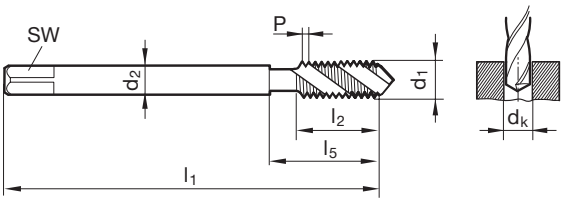
Katalog-Nr. 63675

Intensiv H | DIN 376 | C | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
●		○			

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- hochfeste Werkstoffe
- Stähle 1100 bis 1600 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

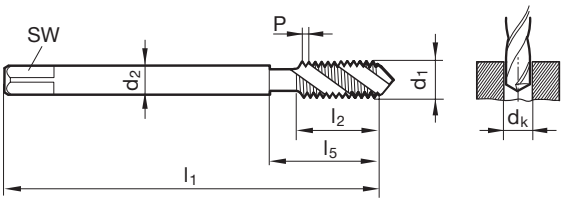
Katalog-Nr. 73664

Intensiv H | DIN 376 | C | HSS-E | blank | R | ISO2/6H

P	M	K	N	S	H
●		○			

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- hochfeste Werkstoffe
- Stähle 1100 bis 1600 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
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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

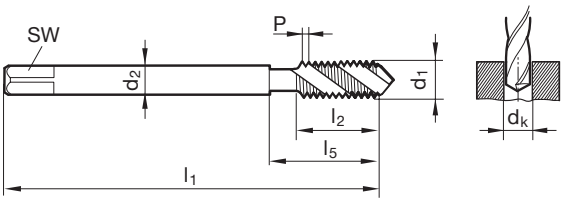
Katalog-Nr. 73666

HR15 | DIN 376 | C | HSS-E-PM | blank | R | ISO2/6H

P	M	K	N	S	H
●		○			

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 15° Rechtsdrall
- Spanförderung in Schaftrichtung
- hochfeste Werkstoffe
- Stähle 1100 bis 1600 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

Katalog-Nr. 63010

H | ~DIN 371 | D | VHM | TiCN | R | ISO2/6H

P	M	K	N	S	H
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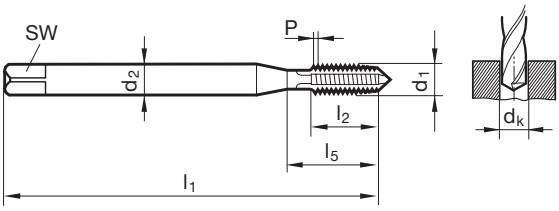
Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- für Gewindetiefen bis 1xD
- gehärtete Stähle von 54 bis 62 HRC



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

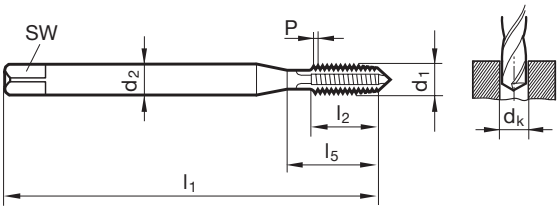
Katalog-Nr. 53641

Produktiv HD | DIN 371 | B | HSS-E-PM | TiCN | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

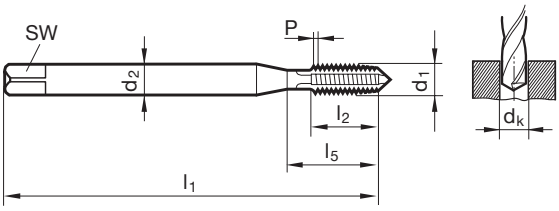
Katalog-Nr. 63176

Produktiv HD | DIN 371 | B | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



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	18,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

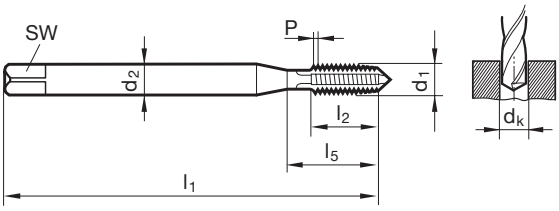
Katalog-Nr. 73176

Produktiv HD | DIN 371 | B | HSS-E | dampfbehandelt | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



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	18,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

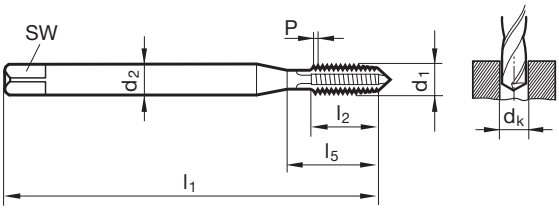
Katalog-Nr. 73641

Produktiv HD | DIN 371 | B | HSS-E-PM | blank | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



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	18,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

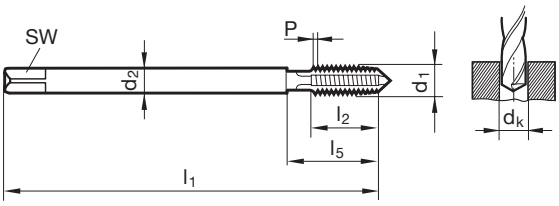
Katalog-Nr. 53643

Produktiv HD | DIN 376 | B | HSS-E-PM | TiCN | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

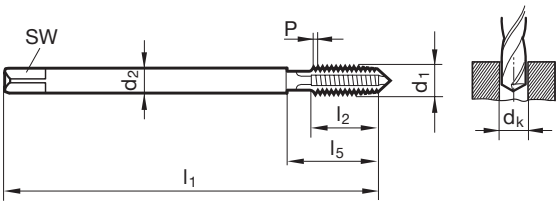
Katalog-Nr. 63177

Produktiv HD | DIN 376 | B | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
	●		○	○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

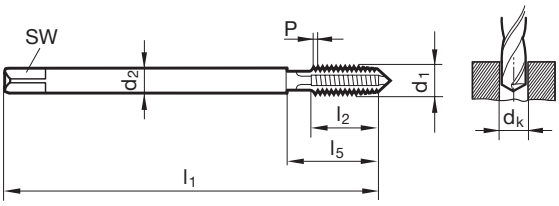
Katalog-Nr. 73177

Produktiv HD | DIN 376 | B | HSS-E | dampfbe-handelt | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



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
M20	2,500	16,000	12,000	17,50	140,000	32,000	62,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

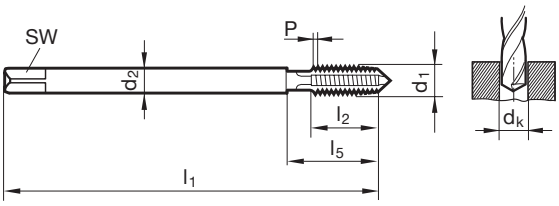
Katalog-Nr. 73643

Produktiv HD | DIN 376 | B | HSS-E-PM | blank | R | ISO2/6H

P	M	K	N	S	H
	●		○	○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



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
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	34,000	62,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

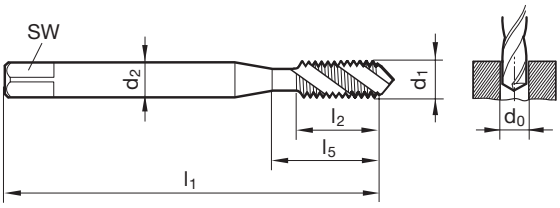
Katalog-Nr. 53662

Intensiv HD | DIN 371 | C | HSS-E-PM | TiCN | R | ISO2/6H

P	M	K	N	S	H
	●		○	○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

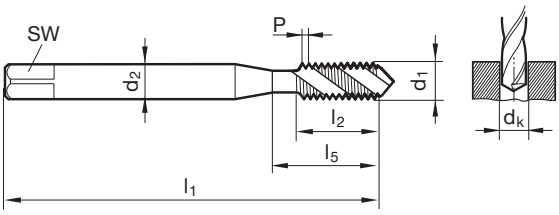
Katalog-Nr. 63662

Intensiv HD | DIN 371 | C | HSS-E-PM | TiN | R | ISO2/6H

P	M	K	N	S	H
	●		○	○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

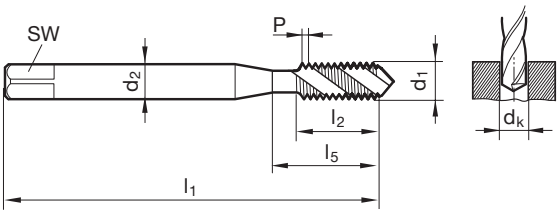
Katalog-Nr. 73660

Intensiv HD | DIN 371 | C | HSS-E | dampfbe-handelt | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

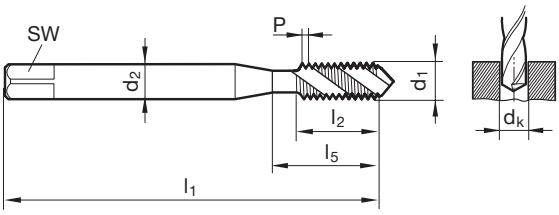
Katalog-Nr. 73662

Intensiv HD | DIN 371 | C | HSS-E-PM | blank | R | ISO2/6H

P	M	K	N	S	H
	●		○	○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



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 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

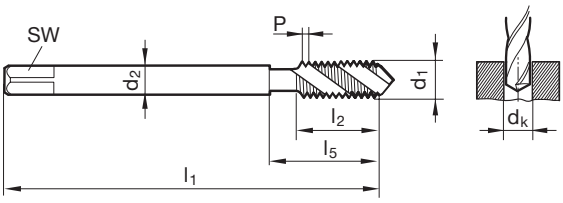
Katalog-Nr. 53665

Intensiv HD | DIN 376 | C | HSS-E-PM | TiCN | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

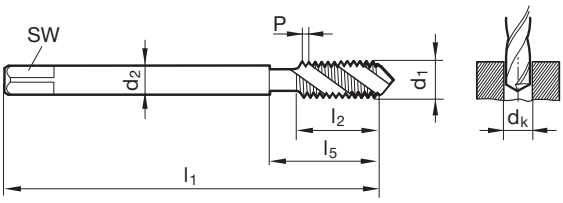
Katalog-Nr. 63665

Intensiv HD | DIN 376 | C | HSS-E-PM | TiN | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

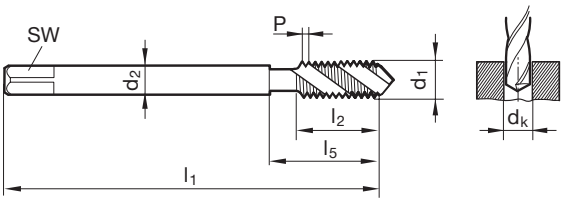
Katalog-Nr. 73659

Intensiv HD | DIN 376 | C | HSS-E | dampfbe-handelt | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



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
M20	2,500	16,000	12,000	17,50	140,000	25,000	62,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

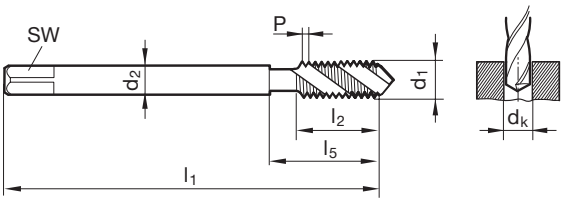
Katalog-Nr. 73665

Intensiv HD | DIN 376 | C | HSS-E-PM | blank | R | ISO2/6H

P	M	K	N	S	H
	●		○	○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



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
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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

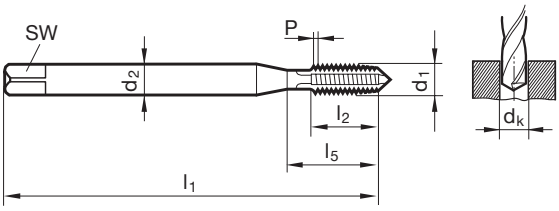
Katalog-Nr. 63201

GG | DIN 371 | C | HSS-E | Al-TiN | R | 6HX

P	M	K	N	S	H
		●	○		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- Gusswerkstoffe wie Grauguss, Temperguss, Kugelgraphitguss



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	18,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

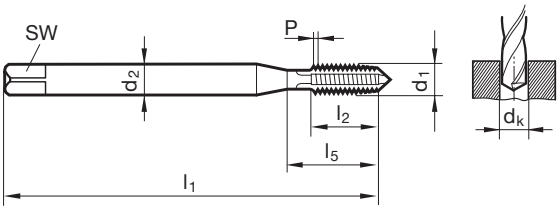
Katalog-Nr. 73201

GG | DIN 371 | C | HSS-E | nit-riert | R | 6HX

P	M	K	N	S	H
		•			

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- Gusswerkstoffe wie Grauguss, Temperguss, Kugelgraphitguss



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 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	18,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

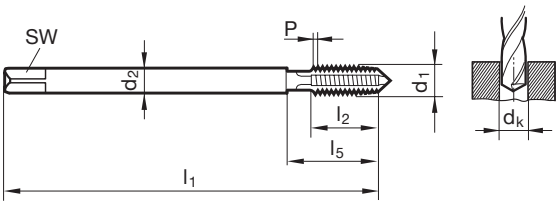
Katalog-Nr. 73211

GG | DIN 376 | C | HSS-E | nit-riert | R | 6HX

P	M	K	N	S	H
		•			

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- Gusswerkstoffe wie Grauguss, Temperguss, Kugelgraphitguss



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
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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

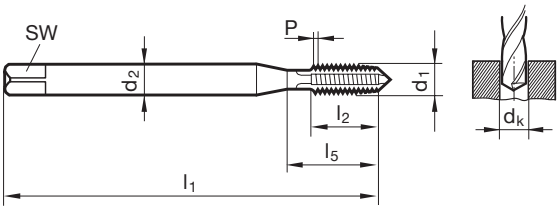
Katalog-Nr. 73131

Produktiv W | DIN 371 | B | HSS-E | blank | R | ISO2/6H

P	M	K	N	S	H
			•		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- weiche, langspanige Werkstoffe, wie Aluminium, Al-Legierungen, NE-Metalle



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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	2,10	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	18,000	35,000
M10	1,500	10,000	8,000	8,50	100,000	20,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

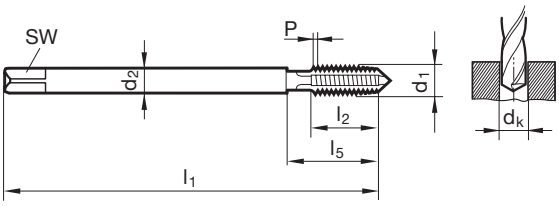
Katalog-Nr. 73189

Produktiv W | DIN 376 | B | HSS-E | blank | R | ISO2/6H

P	M	K	N	S	H
			•		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- weiche, langspanige Werkstoffe, wie Aluminium, Al-Legierungen, NE-Metalle



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
M20	2,500	16,000	12,000	17,50	140,000	32,000	62,000

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

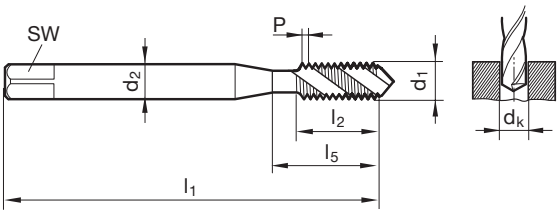
Katalog-Nr. 73156

Intensiv W | DIN 371 | C | HSS-E | blank | R | ISO2/6H

P	M	K	N	S	H
			•		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 45° Rechtsdrall
- Spanförderung in Schaftrichtung
- weiche, langspanige Werkstoffe, wie Aluminium, Al-Legierungen, NE-Metalle



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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 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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Gewinde

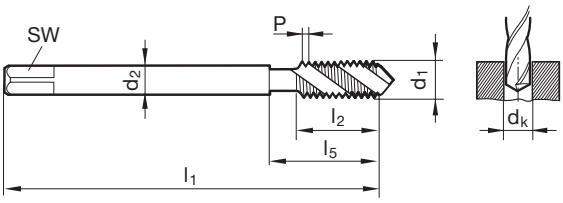
Katalog-Nr. 73136

Intensiv W | DIN 376 | C | HSS-E | blank | R | ISO2/6H

P	M	K	N	S	H
			•		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 45° Rechtsdrall
- Spanförderung in Schaftrichtung
- weiche, langspanige Werkstoffe, wie Aluminium, Al-Legierungen, NE-Metalle



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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Feingewinde

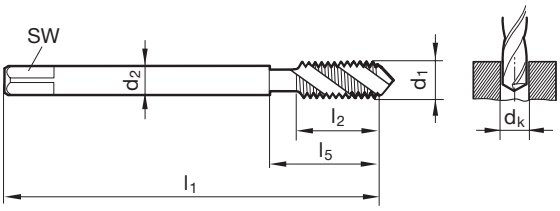
Katalog-Nr. 53780

Intensiv N-X | DIN 374 | C | HSS-E | TiAlN | R | 6HX

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 45° Rechtsdrall
- Spanförderung in Schaftrichtung
- universell einsetzbar
- Stahlwerkstoffe 600 bis 1300 N/mm²
- rost-/säurebest. Stähle
- NE-Metalle
- Gusswerkstoffe



Code-Nr.	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Feingewinde

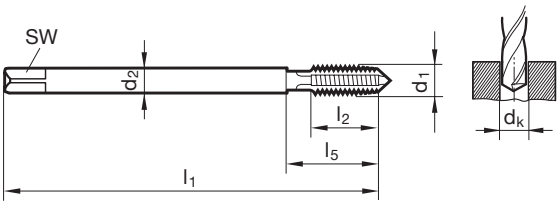
Katalog-Nr. 53778

Produktiv N-X | DIN 374 | B | HSS-E | Al-TiZrN | R | 6HX

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- universell einsetzbar
- Stahlwerkstoffe 600 bis 1300 N/mm²
- rost-/säurebest. Stähle
- NE-Metalle
- Gusswerkstoffe



Code-Nr.	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Feingewinde

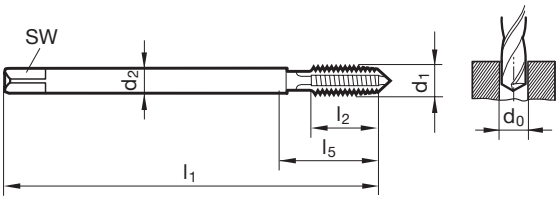
Katalog-Nr. 53055

Produktiv Synchro | DIN 374 | B | HSS-E-PM | TiCN | R | ISO2/6H

P	M	K	N	S	H
●	●	●	●	○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1200 N/mm²



Code-Nr.	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	17,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	17,000	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Feingewinde

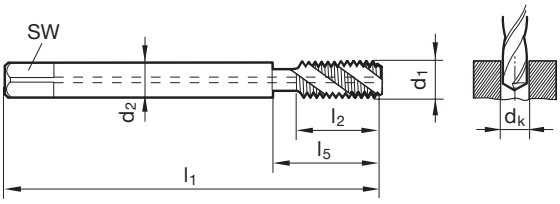
Katalog-Nr. 53052

Intensiv Synchro | DIN 374 | C | HSS-E-PM | TiCN | R | 6HX

P	M	K	N	S	H
●	●	●	●	○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 50° Rechtsdrall
- kurzes Schneidteil, nur mit Synchronführung verwendbar
- Spanförderung in Schaftrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1200 N/mm²



Code-Nr.	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Feingewinde

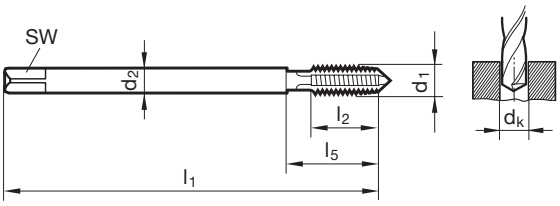
Katalog-Nr. 73183

Produktiv	DIN					
N	374	B	HSS-E	dampfbe-handelt	R	ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1100 N/mm²



Code-Nr.	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
6,004	M 6 X0,75	4,500	3,400	5,25	80,000	13,000	30,000
8,004	M 8 X0,75	6,000	4,900	7,25	80,000	14,000	30,000
8,005	M 8 X1	6,000	4,900	7,00	90,000	18,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	18,000	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Feingewinde

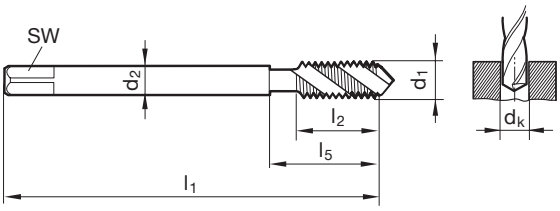
Katalog-Nr. 73187

Intensiv N	DIN 374	C	HSS-E	dampfbe-handelt	R	ISO2/6H

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1100 N/mm²



Code-Nr.	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
6,004	M 6 X0,75	4,500	3,400	5,25	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	15,000	40,000
12,007	M12 X1,5	9,000	7,000	10,50	100,000	15,000	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Feingewinde

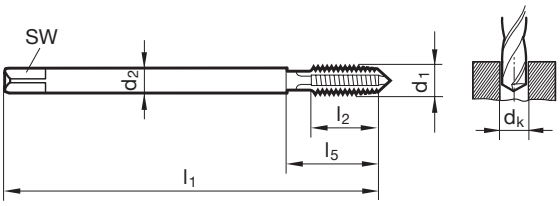
Katalog-Nr. 73237

N	DIN 374	C	HSS-E	blank	R	ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- Stähle bis 800 N/mm²



Code-Nr.	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
8,004	M 8 X0,75	6,000	4,900	7,25	80,000	14,000	30,000
10,005	M10 X1	7,000	5,500	9,00	90,000	18,000	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	15,000	40,000
12,007	M12 X1,5	9,000	7,000	10,50	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
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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Feingewinde

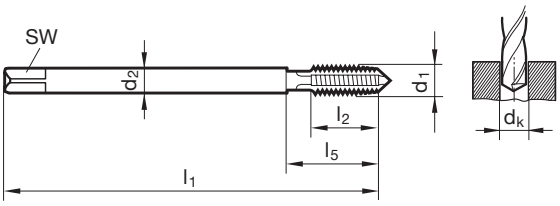
Katalog-Nr. 73250

Produktiv N | DIN 374 | B | HSS-E | blank | R | ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- allgemeine Anwendung
- Stähle bis 800 N/mm²



Code-Nr.	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	5,25	80,000	13,000	30,000
8,004	M 8 X0,75	6,000	4,900	7,25	80,000	14,000	30,000
8,005	M 8 X1	6,000	4,900	7,00	90,000	18,000	35,000
9,005	M 9 X1	7,000	5,500	8,00	90,000	18,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	18,000	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Feingewinde

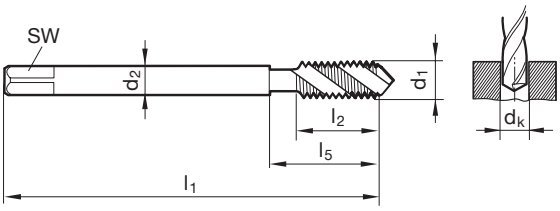
Katalog-Nr. 73173

Intensiv N	DIN 374	C	HSS-E	blank	R	ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1100 N/mm²



Code-Nr.	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	5,25	80,000	8,000	30,000
8,004	M 8 X0,75	6,000	4,900	7,25	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	15,000	40,000
12,007	M12 X1,5	9,000	7,000	10,50	100,000	15,000	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Feingewinde

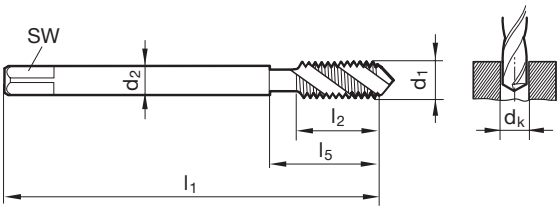
Katalog-Nr. 63173

Intensiv N | DIN 374 | C | HSS-E | TiN | R | ISO2/6H

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- allgemeine Anwendung
- Stähle bis 800 N/mm²



Code-Nr.	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	15,000	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Feingewinde

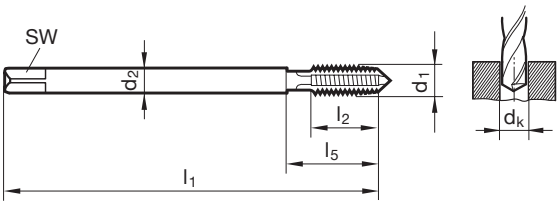
Katalog-Nr. 73646

Produktiv H	DIN 374	B	HSS-E	nit-riert	R	ISO2/6H

P	M	K	N	S	H
●		○			

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- hochfeste Werkstoffe
- Stähle 1100 bis 1600 N/mm²



Code-Nr.	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	5,25	80,000	13,000	30,000
8,004	M 8 X0,75	6,000	4,900	7,25	80,000	14,000	30,000
8,005	M 8 X1	6,000	4,900	7,00	90,000	18,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	18,000	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Feingewinde

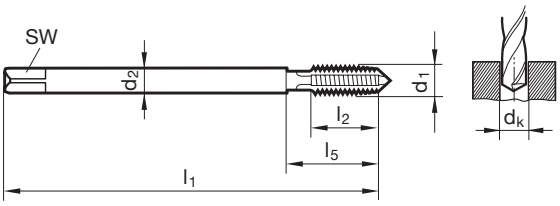
Katalog-Nr. 73178

Produktiv HD | DIN 374 | B | HSS-E | dampfbe-handelt | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



Code-Nr.	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	5,25	80,000	13,000	30,000
8,005	M 8 X1	6,000	4,900	7,00	90,000	18,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	18,000	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Feingewinde

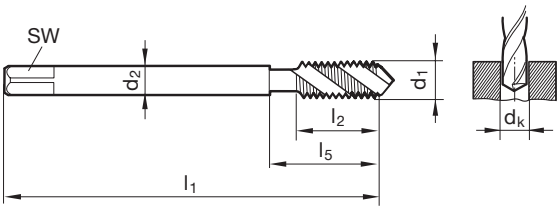
Katalog-Nr. 73180

Intensiv HD | DIN 374 | C | HSS-E | dampfbe-handelt | R | ISO2/6H

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



Code-Nr.	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	15,000	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

Maschinen-Gewindebohrer

Gewindebohrer für Metrische ISO-Feingewinde

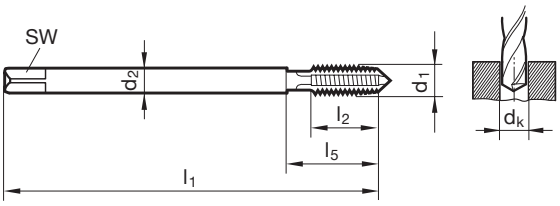
Katalog-Nr. 73194

GG | DIN 374 | C | HSS-E | nit-riert | R | 6HX

P	M	K	N	S	H
		•			

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- Gusswerkstoffe wie Grauguss, Temperguss, Kugelgraphitguss



Code-Nr.	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	18,000	35,000
10,005	M10 X1	7,000	5,500	9,00	90,000	18,000	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

Maschinen-Gewindebohrer

Gewindebohrer für UNC-Gewinde

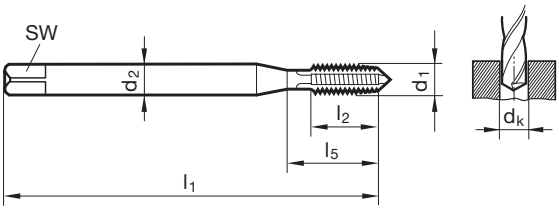
Katalog-Nr. 73308

Produktiv	~DIN					
N	371	B	HSS-E	dampfbe-handelt	R	2B

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1100 N/mm²



Code-Nr.	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	13,000	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

Maschinen-Gewindebohrer

Gewindebohrer für UNC-Gewinde

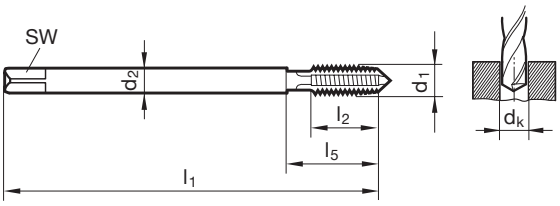
Katalog-Nr. 73309

Produktiv	~DIN	B	HSS-E	dampfbe-handelt	R	2B
N	376					

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1100 N/mm²



Code-Nr.	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

Maschinen-Gewindebohrer

Gewindebohrer für UNC-Gewinde

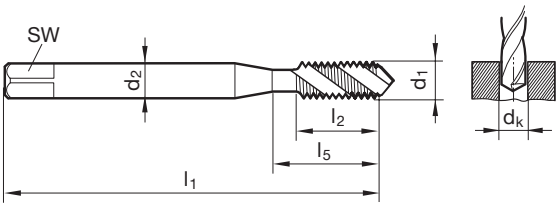
Katalog-Nr. 73322

Intensiv	~DIN					
N	371	C	HSS-E	dampfbe-handelt	R	2B

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1100 N/mm²



Code-Nr.	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	6,500	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

Maschinen-Gewindebohrer

Gewindebohrer für UNC-Gewinde

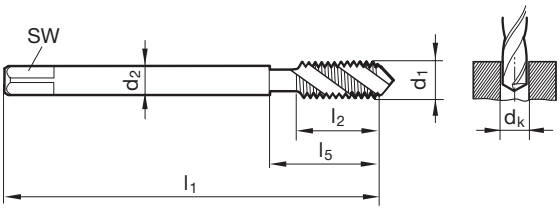
Katalog-Nr. 73323

Intensiv N	~DIN 376	C	HSS-E	dampfbe-handelt	R	2B

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1100 N/mm²



Code-Nr.	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

Maschinen-Gewindebohrer

Gewindebohrer für UNC-Gewinde

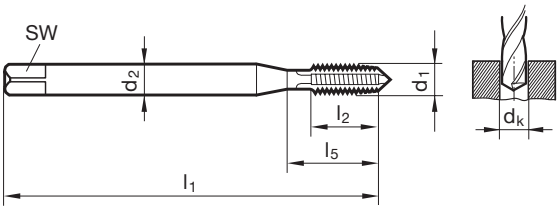
Katalog-Nr. 73297

Produktiv HD	~DIN 371	B	HSS-E	dampfbe-handelt	R	2B

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



Code-Nr.	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	13,000	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

Maschinen-Gewindebohrer

Gewindebohrer für UNC-Gewinde

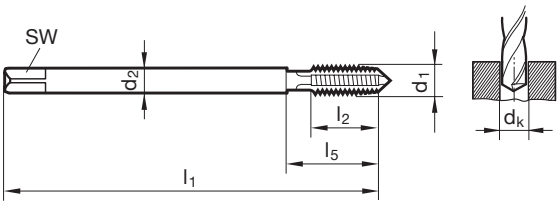
Katalog-Nr. 73298

Produktiv HD | ~DIN 376 | B | HSS-E | dampfbe-handelt | R | 2B

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



Code-Nr.	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

Maschinen-Gewindebohrer

Gewindebohrer für UNC-Gewinde

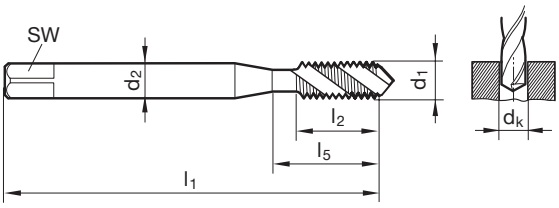
Katalog-Nr. 73304

Intensiv HD | ~DIN 371 | C | HSS-E | dampfbe-handelt | R | 2B

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



Code-Nr.	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	6,500	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

Maschinen-Gewindebohrer

Gewindebohrer für UNC-Gewinde

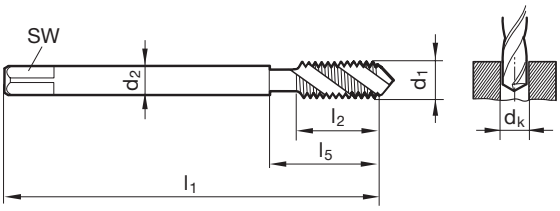
Katalog-Nr. 73305

Intensiv HD | ~DIN 376 | C | HSS-E | dampfbe-handelt | R | 2B

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



Code-Nr.	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

Maschinen-Gewindebohrer

Gewindebohrer für UNC-Gewinde

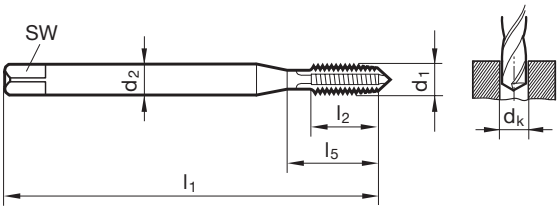
Katalog-Nr. 73326

GG | ~DIN 371 | C | HSS-E | nit-riert | R | 2B

P	M	K	N	S	H
		•			

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- Gusswerkstoffe wie Grauguss, Temperguss, Kugelgraphitguss



Code-Nr.	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	13,000	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	18,000	30,000
7,938	5/16-18	8,000	6,200	6,60	90,000	20,000	35,000
9,525	3/8 -16	10,000	8,000	8,00	100,000	22,000	39,000

Maschinen-Gewindebohrer

Gewindebohrer für UNC-Gewinde

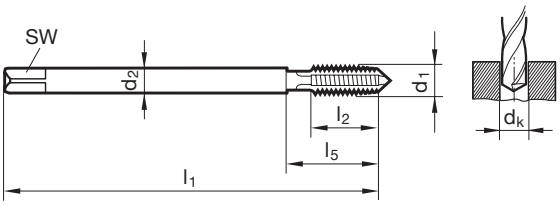
Katalog-Nr. 73327

GG | ~DIN 376 | C | HSS-E | nit-riert | R | 2B

P	M	K	N	S	H
		•			

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- Gusswerkstoffe wie Grauguss, Temperguss, Kugelgraphitguss



Code-Nr.	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

Maschinen-Gewindebohrer

Gewindebohrer für UNF-Gewinde

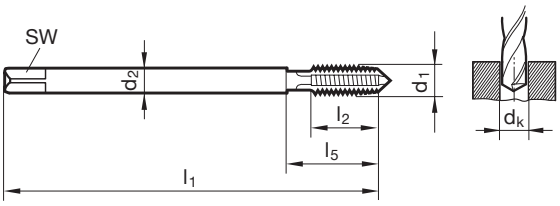
Katalog-Nr. 73310

Produktiv	~DIN	B	HSS-E	dampfbe-handelt	R	2B
N	374					

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1100 N/mm²



Code-Nr.	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

Maschinen-Gewindebohrer

Gewindebohrer für UNF-Gewinde

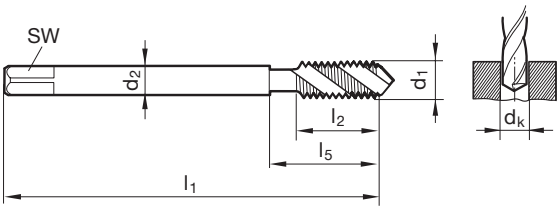
Katalog-Nr. 73324

Intensiv N	~DIN 374	C	HSS-E	dampfbe-handelt	R	2B

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1100 N/mm²



Code-Nr.	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

Maschinen-Gewindebohrer

Gewindebohrer für UNF-Gewinde

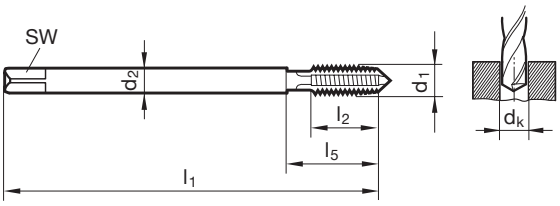
Katalog-Nr. 73299

Produktiv HD | ~DIN 374 | B | HSS-E | dampfbe-handelt | R | 2B

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



Code-Nr.	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

Maschinen-Gewindebohrer

Gewindebohrer für UNF-Gewinde

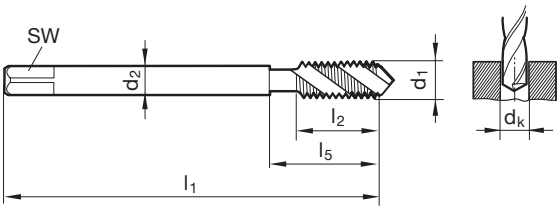
Katalog-Nr. 73306

Intensiv HD | ~DIN 374 | C | HSS-E | dampfbe-handelt | R | 2B

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



Code-Nr.	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

Maschinen-Gewindebohrer

Gewindebohrer für NPT-Gewinde

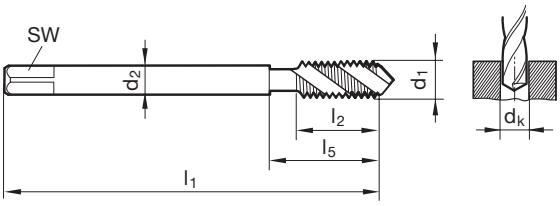
Katalog-Nr. 73293

VA | WN | C | HSS-E | dampfbe-handelt | R

P	M	K	N	S	H
○	●	○		○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 25° Rechtsdrall
- für Gewindetiefen bis 2xD
- Spanförderung in Schaftrichtung



Code-Nr.	d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
10,620	1/8	27	11,000	9,000	8,50	90,000	15,000	29,000
14,140	1/4	18	14,000	11,000	11,20	100,000	21,000	40,000
17,570	3/8	18	16,000	12,000	14,40	110,000	21,000	35,000
21,900	1/2	14	18,000	14,500	18,00	125,000	27,000	44,000
27,230	3/4	14	22,000	18,000	23,40	140,000	27,000	52,000

Maschinen-Gewindebohrer

Gewindebohrer für Whitworth-Rohrgewinde

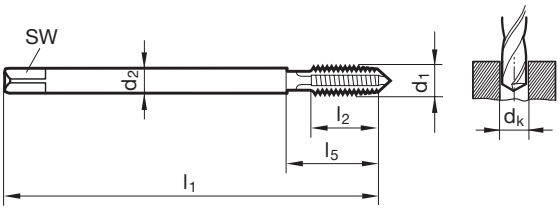
Katalog-Nr. 73321

Produktiv N | DIN 5156 | B | HSS-E | dampfbe-handelt | R

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1100 N/mm²



Code-Nr.	d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
9,728	G 1/8	28	7,000	5,500	8,80	90,000	18,000	35,000
13,157	G 1/4	19	11,000	9,000	11,80	100,000	20,000	40,000
16,662	G 3/8	19	12,000	9,000	15,25	100,000	22,000	44,000
20,955	G 1/2	14	16,000	12,000	19,00	125,000	25,000	44,000
26,441	G 3/4	14	20,000	16,000	24,50	140,000	28,000	53,000
33,249	G1	11	25,000	20,000	30,75	160,000	30,000	56,000

Maschinen-Gewindebohrer

Gewindebohrer für Whitworth-Rohrgewinde

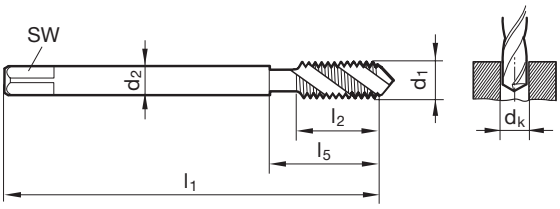
Katalog-Nr. 73325

Intensiv N | DIN 5156 | C | HSS-E | dampfbe-handelt | R

P	M	K	N	S	H
●	○	○	○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1100 N/mm²



Code-Nr.	d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
9,728	G 1/8	28	7,000	5,500	8,80	90,000	11,000	35,000
13,157	G 1/4	19	11,000	9,000	11,80	100,000	14,000	40,000
16,662	G 3/8	19	12,000	9,000	15,25	100,000	14,000	44,000
20,955	G 1/2	14	16,000	12,000	19,00	125,000	18,000	44,000
26,441	G 3/4	14	20,000	16,000	24,50	140,000	20,000	53,000
33,249	G1	11	25,000	20,000	30,75	160,000	24,000	56,000

Maschinen-Gewindebohrer

Gewindebohrer für Whitworth-Rohrgewinde

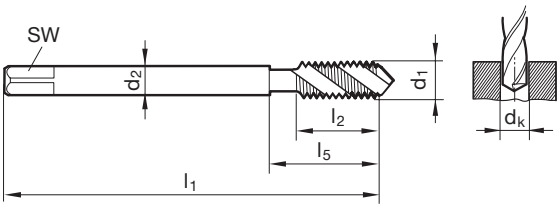
Katalog-Nr. 53788

Intensiv N-X | DIN 5156 | C | HSS-E | TiAlN | R

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 45° Rechtsdrall
- Spanförderung in Schaftrichtung
- universell einsetzbar
- Stahlwerkstoffe 600 bis 1300 N/mm²
- rost-/säurebest. Stähle
- NE-Metalle
- Gusswerkstoffe



Code-Nr.	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	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

Maschinen-Gewindebohrer

Gewindebohrer für Whitworth-Rohrgewinde

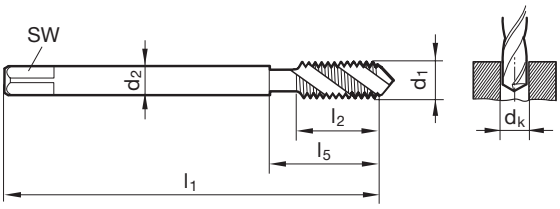
Katalog-Nr. 73286

Intensiv N | DIN 5156 | C | HSS-E | blank | R

P	M	K	N	S	H
●			○		

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- allgemeine Anwendung
- Stähle bis 800 N/mm²



Code-Nr.	d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
9,728	G 1/8	28	7,000	5,500	8,80	90,000	11,000	35,000
13,157	G 1/4	19	11,000	9,000	11,80	100,000	14,000	40,000
16,662	G 3/8	19	12,000	9,000	15,25	100,000	14,000	44,000
20,955	G 1/2	14	16,000	12,000	19,00	125,000	18,000	44,000
26,441	G 3/4	14	20,000	16,000	24,50	140,000	20,000	53,000
33,249	G1	11	25,000	20,000	30,75	160,000	24,000	56,000
41,910	G1 1/4	11	32,000	24,000	39,50	170,000	25,000	57,000
47,803	G1 1/2	11	36,000	29,000	45,25	190,000	27,000	60,000

Maschinen-Gewindebohrer

Gewindebohrer für Whitworth-Rohrgewinde

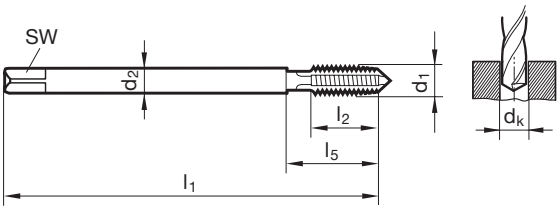
Katalog-Nr. 73300

Produktiv HD | DIN 5156 | B | HSS-E | dampfbehandelt | R

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



Code-Nr.	d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
9,728	G 1/8	28	7,000	5,500	8,80	90,000	18,000	35,000
13,157	G 1/4	19	11,000	9,000	11,80	100,000	20,000	40,000
16,662	G 3/8	19	12,000	9,000	15,25	100,000	22,000	44,000
20,955	G 1/2	14	16,000	12,000	19,00	125,000	25,000	44,000
26,441	G 3/4	14	20,000	16,000	24,50	140,000	28,000	53,000
33,249	G1	11	25,000	20,000	30,75	160,000	30,000	56,000

Maschinen-Gewindebohrer

Gewindebohrer für Whitworth-Rohrgewinde

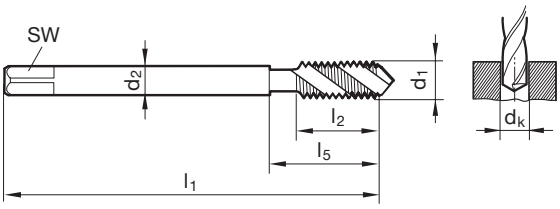
Katalog-Nr. 73288

Intensiv HD | DIN 5156 | C | HSS-E | dampfbe-handelt | R

P	M	K	N	S	H
	●			○	

Arbeitsrichtwerte Seite 348

- für Grundgewinde
- Nuten mit ca. 40° Rechtsdrall
- Spanförderung in Schaftrichtung
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



Code-Nr.	d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
9,728	G 1/8	28	7,000	5,500	8,80	90,000	11,000	35,000
13,157	G 1/4	19	11,000	9,000	11,80	100,000	14,000	40,000
16,662	G 3/8	19	12,000	9,000	15,25	100,000	14,000	44,000
20,955	G 1/2	14	16,000	12,000	19,00	125,000	18,000	44,000
26,441	G 3/4	14	20,000	16,000	24,50	140,000	20,000	53,000
33,249	G1	11	25,000	20,000	30,75	160,000	24,000	56,000

Maschinen-Gewindebohrer

Gewindebohrer für Whitworth-Rohrgewinde

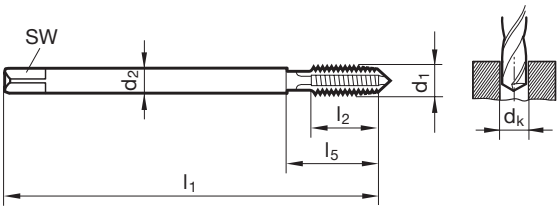
Katalog-Nr. 73345

GG | DIN 5156 | C | HSS-E | nit-riert | R

P	M	K	N	S	H
		•			

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- Gusswerkstoffe wie Grauguss, Temperguss, Kugelgraphitguss



Code-Nr.	d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
9,728	G 1/8	28	7,000	5,500	8,80	90,000	18,000	35,000
13,157	G 1/4	19	11,000	9,000	11,80	100,000	20,000	40,000
16,662	G 3/8	19	12,000	9,000	15,25	100,000	22,000	44,000
20,955	G 1/2	14	16,000	12,000	19,00	125,000	25,000	44,000
26,441	G 3/4	14	20,000	16,000	24,50	140,000	28,000	53,000
33,249	G1	11	25,000	20,000	30,75	160,000	30,000	56,000

Maschinen-Gewindebohrer

Gewindebohrer für Whitworth-Rohrgewinde

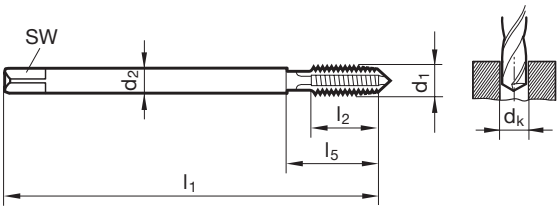
Katalog-Nr. 53787

Produktiv N-X | DIN 5156 | B | HSS-E | Al-TiZrN | R

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- universell einsetzbar
- Stahlwerkstoffe 600 bis 1300 N/mm²
- rost-/säurebest. Stähle
- NE-Metalle
- Gusswerkstoffe



Code-Nr.	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

Maschinen-Gewindebohrer

Kurze Gewindebohrer für Panzerrohrgewinde

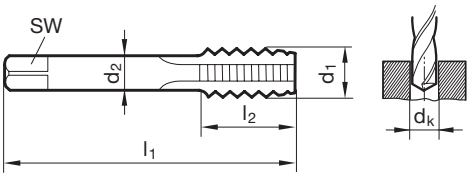
Katalog-Nr. 73296

N	DIN 40432	B	HSS-E	blank	R

P	M	K	N	S	H
●		○	○		

Arbeitsrichtwerte Seite 348

- für Durchgangsgewinde
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1100 N/mm²



Code-Nr.	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

Maschinen-Gewindebohrer

Kurze Gewindebohrer für NPT-Gewinde

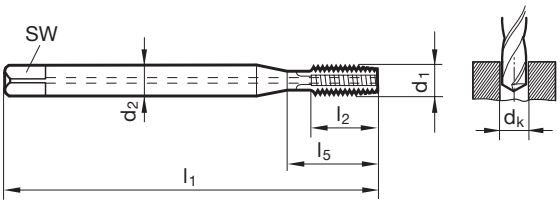
Katalog-Nr. 73295

N | WN | C | HSS-E | blank | R

P	M	K	N	S	H
●		○	○		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- für Gewindetiefen bis 1xD
- mit Schälanschnitt
- Spanförderung in Vorschubrichtung
- universell einsetzbar
- Stahlwerkstoffe bis 1100 N/mm²



Code-Nr.	d1	P G/inch	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
8,190	1/16	27	6,000	4,900	6,15	56,000	14,000	27,000
10,620	1/8	27	7,000	5,500	8,40	63,000	15,000	29,000
14,140	1/4	18	11,000	9,000	11,10	63,000	21,000	33,000
17,570	3/8	18	12,000	9,000	14,30	70,000	21,000	35,000
21,900	1/2	14	16,000	12,000	17,90	80,000	27,000	41,000
27,230	3/4	14	20,000	16,000	23,30	100,000	27,000	42,000
34,180	1	11,5	25,000	20,000	29,00	110,000	32,000	53,000

Gewindeformer

Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde

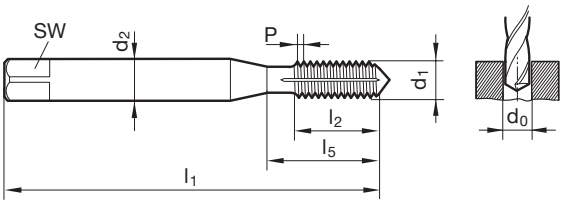
Katalog-Nr. 73120

Durativ | ~DIN 371 | C | HSS-E | blank | R | 6HX

P	M	K	N	S	H
•	•		•		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- für große Gewindetiefen
- universell einsetzbar
- Stahlwerkstoffe bis 1000 N/mm²
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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	18,000	35,000
M10	1,500	10,000	8,000	9,25	100,000	20,000	39,000

Gewindeformer

Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde

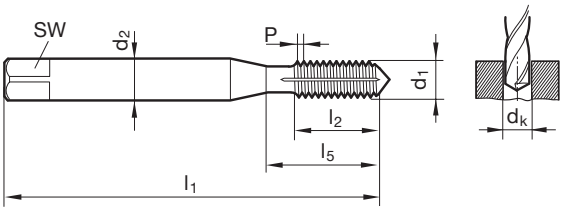
Katalog-Nr. 63120

Durativ | ~DIN 371 | C | HSS-E | TiN | R | 6HX

P	M	K	N	S	H
●	●		●		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- für große Gewindetiefen
- universell einsetzbar
- Stahlwerkstoffe bis 1000 N/mm²
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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	18,000	35,000
M10	1,500	10,000	8,000	9,25	100,000	20,000	39,000

Gewindeformer

Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde

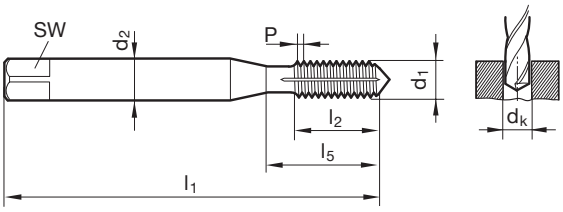
Katalog-Nr. 63119

Durativ | ~DIN 371 | C | HSS-E | TiN | R | 6GX

P	M	K	N	S	H
●	●		●		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- für große Gewindetiefen
- universell einsetzbar
- Stahlwerkstoffe bis 1000 N/mm²
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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	18,000	35,000
M10	1,500	10,000	8,000	9,25	100,000	20,000	39,000

Gewindeformer

Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde

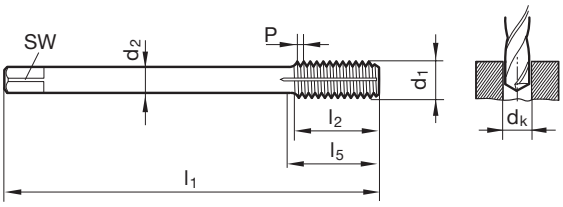
Katalog-Nr. 63122

Durativ | ~DIN 376 | C | HSS-E | TiN | R | 6HX

P	M	K	N	S	H
•	•		•		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- für große Gewindetiefen
- universell einsetzbar
- Stahlwerkstoffe bis 1000 N/mm²
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M12	1,750	9,000	7,000	11,25	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

Gewindeformer

Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde

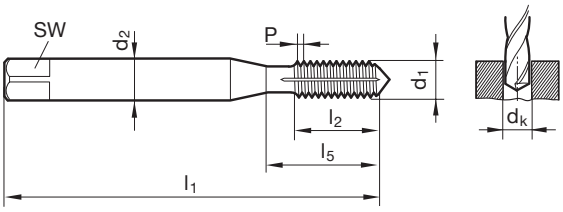
Katalog-Nr. 53620

Durativ | ~DIN 371 | C | HSS-E-PM | Al-CrN | R | 6HX

P	M	K	N	S	H
●	●		●		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- für große Gewindetiefen
- universell einsetzbar
- Stahlwerkstoffe bis 1000 N/mm²
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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	18,000	35,000
M10	1,500	10,000	8,000	9,25	100,000	20,000	39,000

Gewindeformer

Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde

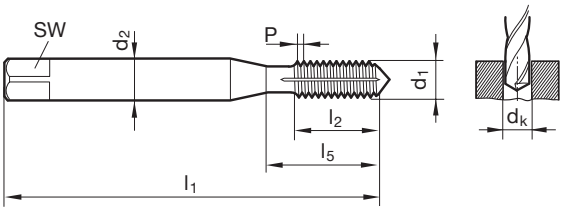
Katalog-Nr. 53621

Durativ | ~DIN 371 | C | HSS-E-PM | Al-CrN | R | 6GX

P	M	K	N	S	H
●	●		●		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- für große Gewindetiefen
- universell einsetzbar
- Stahlwerkstoffe bis 1000 N/mm²
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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	18,000	35,000
M10	1,500	10,000	8,000	9,25	100,000	20,000	39,000

Gewindeformer

Gewindeformer mit Schmiernuten für Metr. ISO-Gewinde

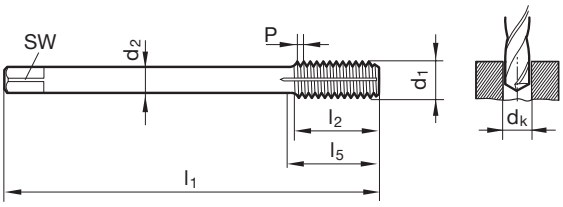
Katalog-Nr. 53622

Durativ | ~DIN 376 | C | HSS-E-PM | Al-CrN | R | 6HX

P	M	K	N	S	H
●	●		●		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- für große Gewindetiefen
- universell einsetzbar
- Stahlwerkstoffe bis 1000 N/mm²
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M12	1,750	9,000	7,000	11,25	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

Gewindeformer

Kühlkanal-Gewindeformer für Metr. ISO-Gewinde

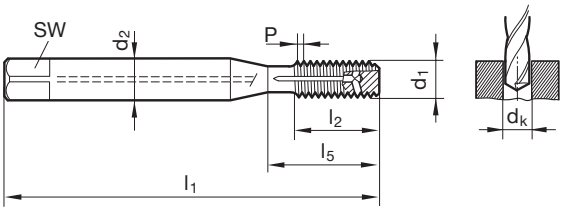
Katalog-Nr. 63013

Durativ | ~DIN 371 | C | VHM | TiCN | R | 6HX

P	M	K	N	S	H
•	•		•		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- für große Gewindetiefen
- universell einsetzbar
- Stahlwerkstoffe bis 1000 N/mm²
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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

Gewindeformer

Gewindeformer ohne Schmiernuten für Metr. ISO-Gewinde

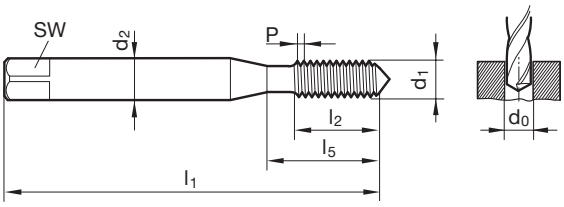
Katalog-Nr. 73121

Durativ | DIN 371 | C | HSS-E | blank | R | 6HX

P	M	K	N	S	H
•	•		•		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- für große Gewindetiefen
- universell einsetzbar
- Stahlwerkstoffe bis 1000 N/mm²
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M 2	0,400	2,800	2,100	1,80	45,000	8,000	13,500
M 2,2	0,450	2,800	2,100	2,00	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	18,000	35,000
M10	1,500	10,000	8,000	9,25	100,000	20,000	39,000

Gewindeformer

Gewindeformer ohne Schmiernuten für Metr. ISO-Gewinde

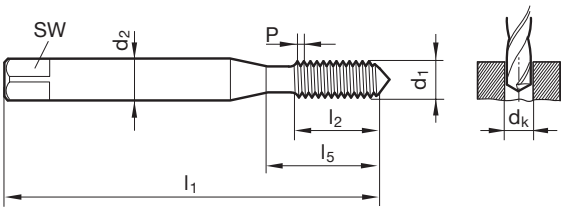
Katalog-Nr. 63121

Durativ | DIN 371 | C | HSS-E | TiN | R | 6HX

P	M	K	N	S	H
•	•		•		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- für große Gewindetiefen
- universell einsetzbar
- Stahlwerkstoffe bis 1000 N/mm²
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M 2	0,400	2,800	2,100	1,80	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	18,000	35,000
M10	1,500	10,000	8,000	9,25	100,000	20,000	39,000

Gewindeformer

Gewindeformer ohne Schmiernuten für Metr. ISO-Gewinde

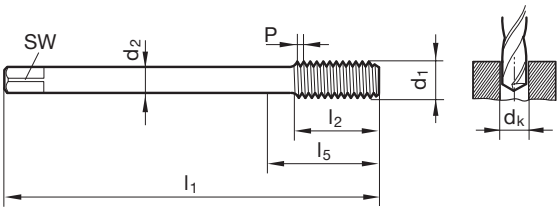
Katalog-Nr. 63123

Durativ | ~DIN 376 | C | HSS-E | TiN | R | 6HX

P	M	K	N	S	H
●	●		●		

Arbeitsrichtwerte Seite 348

- für Durchgangs- und Grundgewinde
- für große Gewindetiefen
- universell einsetzbar
- Stahlwerkstoffe bis 1000 N/mm²
- rost-/säurebest. Stähle
- zähe, langspanige Werkstoffe



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm
M12	1,750	9,000	7,000	11,25	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

Gewindefräser

Gewindefräser mit Senkfase für Metr. ISO-Gewinde

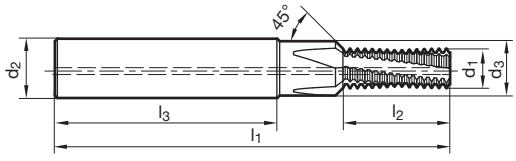
Katalog-Nr. 73810

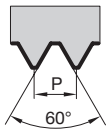
TMC SP | 2xD | WN | VHM | blank | R | HA

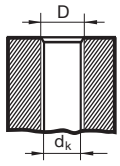
P	M	K	N	S	H
●	●	●	●	●	

Arbeitsrichtwerte Seite 348

- Gewindefräser mit 45° Senkfase, Spiralnut und innerer Kühlmittelzufuhr mit axialem Austritt
- universelle Verwendung in nahezu allen Werkstoffen







Code-Nr.	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	6,750	36,000	3
4,000	M 4	0,700	3,000	6,000	4,500	3,30	48,000	8,750	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	18,130	40,000	3
10,000	M10	1,500	7,950	12,000	11,000	8,50	80,000	21,750	45,000	4
12,000	M12	1,750	9,950	14,000	13,500	10,20	90,000	25,380	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	41,250	50,000	4

Gewindefräser

Gewindefräser mit Senkfase für Metr. ISO-Gewinde

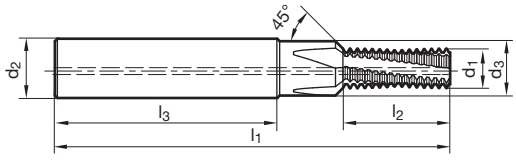
Katalog-Nr. 53810

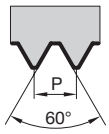
TMC SP | 2xD | WN | VHM | TiCN | R | HA

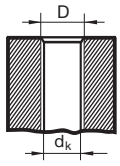
P	M	K	N	S	H
●	●	●	●	●	○

Arbeitsrichtwerte Seite 348

- Gewindefräser mit 45° Senkfase, Spiralnut und innerer Kühlmittelzufuhr mit axialem Austritt
- universelle Verwendung in nahezu allen Werkstoffen







Code-Nr.	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	6,750	36,000	3
4,000	M 4	0,700	3,000	6,000	4,500	3,30	48,000	8,750	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	18,130	40,000	3
10,000	M10	1,500	7,950	12,000	11,000	8,50	80,000	21,750	45,000	4
12,000	M12	1,750	9,950	14,000	13,500	10,20	90,000	25,380	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	41,250	50,000	4

Gewindefräser

Gewindefräser mit Senkfase für Metr. ISO-Feingewinde

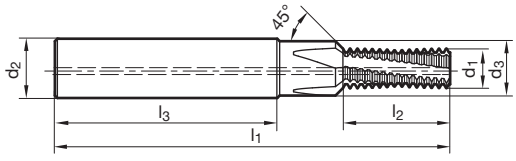
Katalog-Nr. 53820

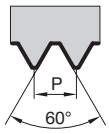
TMC SP | 2xD | WN | VHM | TiCN | R | HA

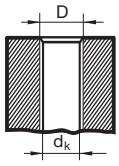
P	M	K	N	S	H
●	●	●	●	●	○

Arbeitsrichtwerte Seite 348

- Gewindefräser mit 45° Senkfase, Spiralnut und innerer Kühlmittelzufuhr mit axialem Austritt
- universelle Verwendung in nahezu allen Werkstoffen







Code-Nr.	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	8,750	36,000	3
5,003	M 5 X0,5	4,000	6,000	5,500	4,50	54,000	10,750	36,000	3
6,003	M 6 X0,5	4,800	8,000	6,600	5,50	62,000	12,750	36,000	3
6,004	M 6 X0,75	4,800	8,000	6,600	5,20	62,000	13,130	36,000	3
8,004	M 8 X0,75	6,400	10,000	9,000	7,20	74,000	16,880	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	21,880	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	26,250	45,000	4
14,007	M14 X1,5	11,200	16,000	15,500	12,50	102,000	30,750	48,000	4
16,007	M16 X1,5	12,800	18,000	17,500	14,50	102,000	33,750	48,000	4

Gewindefräser

Gewindefräser mit Senkfase für Metr. ISO-Feingewinde

Katalog-Nr. 73820

TMC SP | 2xD | WN | VHM | blank | R | HA

P	M	K	N	S	H
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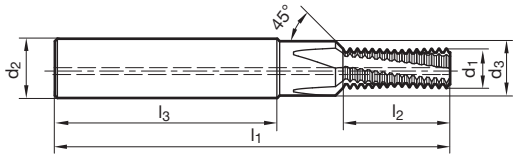
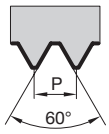
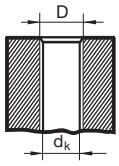
Arbeitsrichtwerte Seite 348

- Gewindefräser mit 45° Senkfase, Spiralnut und innerer Kühlmittelzufuhr mit axialem Austritt
- universelle Verwendung in nahezu allen Werkstoffen







Code-Nr.	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	8,750	36,000	3
5,003	M 5 X0,5	4,000	6,000	5,500	4,50	54,000	10,750	36,000	3
6,003	M 6 X0,5	4,800	8,000	6,600	5,50	62,000	12,750	36,000	3
6,004	M 6 X0,75	4,800	8,000	6,600	5,20	62,000	13,130	36,000	3
8,004	M 8 X0,75	6,400	10,000	9,000	7,20	74,000	16,880	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	21,880	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	26,250	45,000	4
14,007	M14 X1,5	11,200	16,000	15,500	12,50	102,000	30,750	48,000	4
16,007	M16 X1,5	12,800	18,000	17,500	14,50	102,000	33,750	48,000	4

Gewindefräser

Gewindefräser ohne Senkfase für Metr. ISO-Gewinde

Katalog-Nr. 73830

TM SP | 2xD | WN | VHM | blank | R | HA

P	M	K	N	S	H
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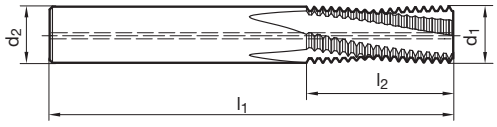
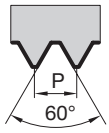
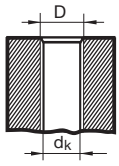
Arbeitsrichtwerte Seite 348

- Gewindefräser ohne Senkfase, mit Spiralnut und innerer Kühlmittelzufuhr mit axialem Austritt
- universelle Verwendung in nahezu allen Werkstoffen







Code-Nr.	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	80,000	31,000	4
14,007	M14 X1,5	1,500	11,200	12,000	12,50	80,000	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

Gewindefräser

Gewindefräser ohne Senkfase für Metr. ISO-Gewinde

Katalog-Nr. 53830

TM SP | 2xD | WN | VHM | TiCN | R | HA

P	M	K	N	S	H
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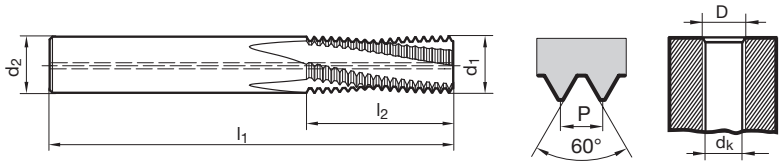
Arbeitsrichtwerte Seite 348

- Gewindefräser ohne Senkfase, mit Spiralnut und innerer Kühlmittelzufuhr mit axialem Austritt
- universelle Verwendung in nahezu allen Werkstoffen

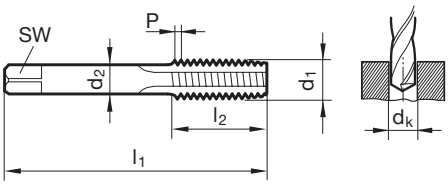


Code-Nr.	d1	P mm	d1 mm	d2 mm	dk mm	l1 mm	l2 mm	Z
6,000	M 6	1,000	4,800	6,000	5,00	54,000	13,500	3
8,000	M 8	1,250	6,400	8,000	6,80	62,000	18,100	3
8,005	M 8 X1	1,000	6,400	8,000	7,00	62,000	14,500	3
10,000	M10	1,500	7,950	10,000	8,50	74,000	21,800	3
10,005	M10 X1	1,000	7,950	10,000	9,00	74,000	14,500	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

Hand-Gewindebohrer

Hand-Gewindebohrer für Metr. ISO-Gewinde, Satz, rechtsschneidend

Katalog-Nr. 73531



N | DIN 352 | HSS | blank | R | ISO2/6H

P	M	K	N	S	H
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Arbeitsrichtwerte Seite 358

- für Durchgangs- und Grundgewinde
- Gewindebohrer-Satz, gerade genutet, speziell für den Handgebrauch, aber auch für den Maschineneinsatz
- Vor- und Mittelschneider sind im Außen- und Flankendurchmesser abgestuft
- der Fertigschneider kann einzeln als kurzer Maschinengewindebohrer verwendet werden
- Vorschneider 73101
- Mittelschneider 73102
- Fertigschneider 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	1,30	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	2,10	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	18,000
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

Hand-Gewindebohrer

Hand-Gewindebohrer für Metr. ISO-Gewinde, Satz, linksschneidend

Katalog-Nr. 73532

N	DIN 352	HSS	blank	L	ISO2/6H

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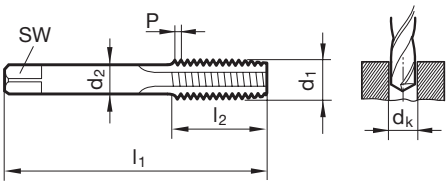
Arbeitsrichtwerte Seite 358

- für Durchgangs- und Grundgewinde
- Gewindebohrer-Satz, gerade genutet, speziell für den Handgebrauch, aber auch für den Maschineneinsatz
- Vor- und Mittelschneider sind im Außen- und Flankendurchmesser abgestuft
- der Fertigschneider kann einzeln als kurzer Maschinengewindebohrer verwendet werden
- Vorschneider 73105
- Mittelschneider 73106
- Fertigschneider 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	18,000
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

Hand-Gewindebohrer

Hand-Gewindebohrer für Metr. ISO-Feingewinde, Satz

Katalog-Nr. 73521

N | DIN 2180 | HSS | blank | R | ISO2/6H

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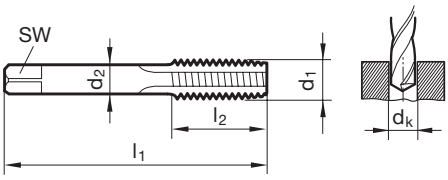
Arbeitsrichtwerte Seite 358

- für Durchgangs- und Grundgewinde
- Gewindebohrer-Satz, gerade genutet, speziell für den Handgebrauch, aber auch für den Maschineneinsatz
- der Fertigschneider kann einzeln als kurzer Maschinengewindebohrer verwendet werden
- Vorschneider 73110
- Fertigschneider 73111



Code-Nr.	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	10,000
6,003	M 6 X0,5	6,000	4,900	5,50	56,000	13,000
6,004	M 6 X0,75	6,000	4,900	5,25	56,000	13,000
8,004	M 8 X0,75	6,000	4,900	7,25	56,000	14,000
8,005	M 8 X1	6,000	4,900	7,00	63,000	18,000
10,005	M10 X1	7,000	5,500	9,00	63,000	18,000
10,006	M10 X1,25	7,000	5,500	8,80	70,000	20,000
11,005	M11 X1	8,000	6,200	10,00	63,000	20,000
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	22,000
18,007	M18 X1,5	14,000	11,000	16,50	80,000	22,000

Hand-Gewindebohrer

Hand-Gewindebohrer für UNC-Gewinde, Satz

Katalog-Nr. 73535

N	~DIN 352	HSS	blank	R	2B

P	M	K	N	S	H
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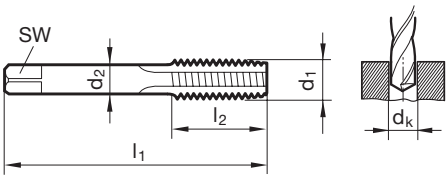
Arbeitsrichtwerte Seite 358

- für Durchgangs- und Grundgewinde
- Gewindebohrer-Satz, gerade genutet, speziell für den Handgebrauch, aber auch für den Maschineneinsatz
- Vor- und Mittelschneider sind im Außen- und Flankendurchmesser abgestuft
- der Fertigschneider kann einzeln als kurzer Maschinengewindebohrer verwendet werden
- Vorschneider 73301
- Mittelschneider 73302
- Fertigschneider 73303



Code-Nr.	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	13,000
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

Hand-Gewindebohrer

Hand-Gewindebohrer für BSW-Gewinde, Satz

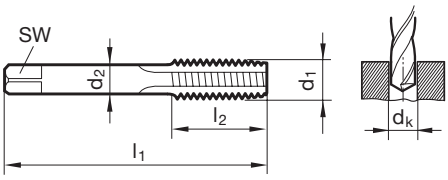
Katalog-Nr. 73534

N	~DIN 352	HSS	blank	R

P	M	K	N	S	H
●	○	●	●		

Arbeitsrichtwerte Seite 358

- für Durchgangs- und Grundgewinde
- Gewindebohrer-Satz, gerade genutet, speziell für den Handgebrauch, aber auch für den Maschineneinsatz
- Vor- und Mittelschneider sind im Außen- und Flankendurchmesser abgestuft
- der Fertigschneider kann einzeln als kurzer Maschinengewindebohrer verwendet werden
- Vorschneider 73311
- Mittelschneider 73312
- Fertigschneider 73313



Code-Nr.	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	13,000
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	30,000
15,876	W 5/8	12,000	9,000	13,50	80,000	30,000
19,051	W 3/4	16,000	11,000	16,50	95,000	33,000

Hand-Gewindebohrer

Hand-Gewindebohrer für Rohrgewinde, Satz

N | DIN 5157 | HSS | blank | R

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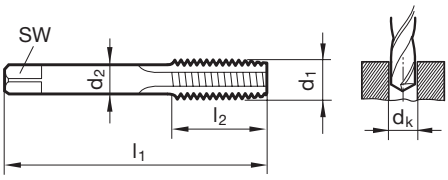
Arbeitsrichtwerte Seite 358

Katalog-Nr. 73522

- für Durchgangs- und Grundgewinde
- Gewindebohrer-Satz, gerade genutet, speziell für den Handgebrauch, aber auch für den Maschineneinsatz
- der Fertigschneider kann einzeln als kurzer Maschinengewindebohrer verwendet werden
- Vorschneider 73315
- Fertigschneider 73316



Code-Nr.	d1	d2 mm	SW mm	dk mm	l1 mm	l2 mm
9,728	G 1/8	7,000	5,500	8,80	63,000	20,000
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	22,000
20,955	G 1/2	16,000	12,000	19,00	80,000	22,000

Kombibohrer

Kombibohrer für Metrische ISO-Gewinde

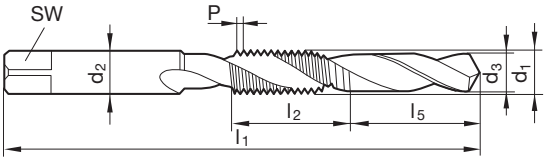
Katalog-Nr. 73248

N | WN | D | HSS-E | blank | R | ISO2/6H

P	M	K	N	S	H
●	○	●	●		

Arbeitsrichtwerte Seite 358

- für Durchgangsgewinde
- Stähle bis 800 N/mm²



d1	P mm	Code-Nr.	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	9,000	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

Maschinen-Muttergewindebohrer

Maschinen-Muttergewindebohrer für Metrische ISO-Gewinde

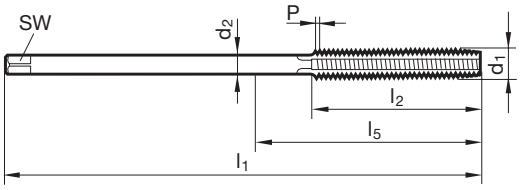
Katalog-Nr. 73243

N | DIN 357 | HSS-E | blank | R | ISO2/6H

P	M	K	N	S	H
●	○	●	●		

Arbeitsrichtwerte Seite 358

- für Durchgangsgewinde
- für Muttern mit Gewindetiefen bis 1xD
- Anschnitt ca. 20 Gänge



d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 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

Schneideisen

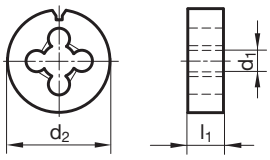
Schneideisen für Metrische ISO-Gewinde

Katalog-Nr. 73400

DIN EN 22568 | HSS | blank | R | 6g

P	M	K	N	S	H
●	○		●		

• allgemeine Stahlbearbeitung



d1	P mm	d2 mm	l1 mm	Werkstück-Ø mm	Code-Nr.
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

Schneideisen

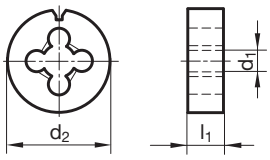
Schneideisen für Metrische ISO-Gewinde

Katalog-Nr. 73410

DIN EN 22568 | HSS | blank | R | 6g

P	M	K	N	S	H
●		○	●		

- geläppte Ausführung für NE-Metalle
- allgemeine Stahlbearbeitung



d1	P mm	d2 mm	l1 mm	Werkstück-Ø mm	Code-Nr.
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

Schneideisen

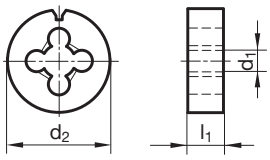
Schneideisen für Metrische ISO-Gewinde

Katalog-Nr. 73413

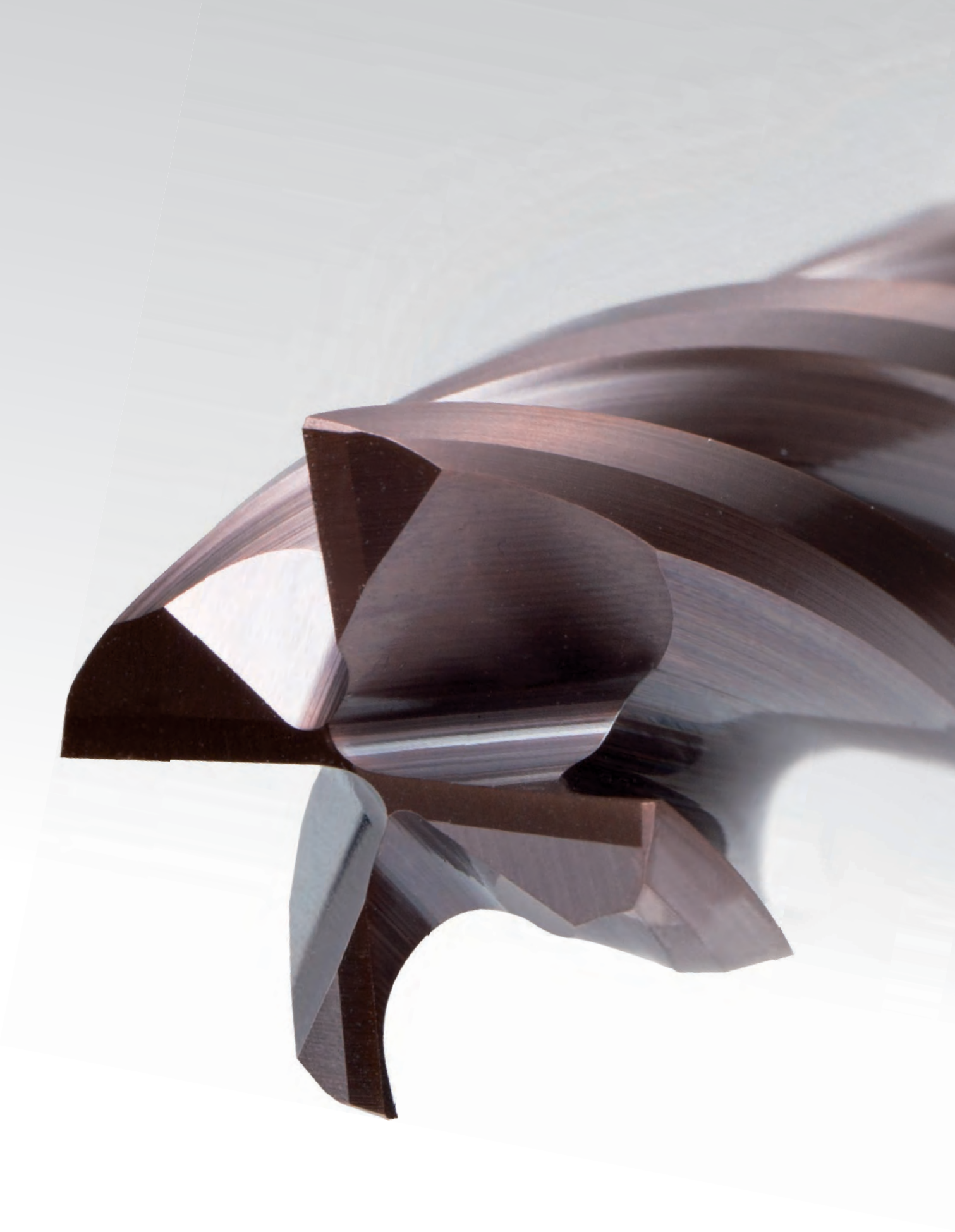
DIN EN 22568 | HSS-E | nit-riert | R | 6g

P	M	K	N	S	H
●	●		●		

- geläppte Ausführung für NE-Metalle
- allgemeine Stahlbearbeitung



d1	P mm	d2 mm	l1 mm	Werkstück-Ø mm	Code-Nr.
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



FRÄSWERKZEUGE

SUPER F-UT

ISO-CODES

P	Stahl, hochlegierter Stahl
M	Rostfreier Stahl
K	Grauguss, Sphäroguss und Temperguss
N	Aluminium und andere Nichteisenmetalle
S	Sonder-, Super- und Titanlegierungen
H	Gehärteter Stahl und Hartguss

Auf den Produktseiten finden Sie zu jedem Werkzeug Empfehlungen zur Eignung für die Anwendungsgruppen bzw. die Angaben von max. Zugfestigkeit und Härte:

● optimal geeignet
○ bedingt geeignet
nicht geeignet

PIKTOGRAMME

SCHNEIDSTOFF	VHM Vollhartmetall
BESCHICHTUNG	blank, AlTiN nano, TiAl-SiN, TiAlN, Al-TiN+
Ø-TOLERANZ	h10, e8
FRÄSBEDINGUNGEN	HPC
SCHNEIDRICHTUNG	R rechts
SCHAFTFORM	HB, HA
SPIRALWINKEL	36° 38° 37°, 35° 38°, 30° 32°, 41° 43° 45°, 45°, 36° 38°, 40° 42°, 30° 29° 31°, 39° 40° 41°, 44° 45° 46°
NORM	DIN 6527 L, DIN 6527 K, WN Werksnorm
TYP	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

SuperF-UT-Fräser NX

P	M	K	N	S	H	Typ	Schaft-form	Spiral-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
•	•	•	•	•		SuperF-UT NX	HA	36/38/37	VHM	TiAlSiN	DIN 6527L	4,000 - 20,000	**54590**	518
•	•	•	•	•		SuperF-UT NX	HB	36/38/37	VHM	TiAlSiN	DIN 6527L	4,000 - 20,000	**54591**	519

SuperF-UT-Fräser N

•		•				SuperF-UT N	HB	35/38	VHM	TiAlN	DIN 6527K	6,000 - 20,000	**64550**	520
•		•				SuperF-UT N	HA	35/38	VHM	TiAlN	DIN 6527L	4,000 - 20,000	**54551**	521
•		•				SuperF-UT N	HB	35/38	VHM	TiAlN	DIN 6527L	4,000 - 25,000	**64551**	522
•		•				SuperF-UT N	HA	35/38	VHM	TiAlN	Werksnorm	6,000 - 20,000	**54562**	523
•		•				SuperF-UT N	HB	35/38	VHM	TiAlN	Werksnorm	6,000 - 20,000	**54563**	524
•		•				SuperF-UT N	HA	35/38	VHM	TiAlN	Werksnorm	10,000 - 25,000	**54552**	525
•		○		○		SuperF-UT N-F	HA	30/32	VHM	TiAlN	DIN 6527L	6,000 - 25,000	**54566**	526
•		○		○		SuperF-UT N-F	HB	30/32	VHM	TiAlN	DIN 6527L	6,000 - 25,000	**54567**	527
•	○	•	○			SuperF-UT N-3	HA	41/43/45	VHM	TiAlN	Werksnorm	3,000 - 20,000	**54564**	528
•	○	•	○			SuperF-UT N-3	HB	41/43/45	VHM	TiAlN	Werksnorm	3,000 - 20,000	**54565**	529
•	•	•	•	•		SuperF-UT N-5	HA	45	VHM	TiAlN	Werksnorm	4,000 - 20,000	**54579**	530
•	•	•	•	•		SuperF-UT N-5	HB	45	VHM	TiAlN	Werksnorm	4,000 - 20,000	**54580**	531

P	M	K	N	S	H	Typ	Schaft-form	Spiral-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
SuperF-UT-Fräser FS														
•	•	•	•	•	•	SuperF-UT FS	HA	44/45/46	**VHM**	TiAlN	Werksnorm	8,000 - 25,000	**64558**	552
•	•	•	•	•	•	SuperF-UT FS	HB	44/45/46	**VHM**	TiAlN	Werksnorm	8,000 - 25,000	**64559**	553
SuperF-UT-Fräser Ti														
•		○		•		SuperF-UT Ti	HA	35/38	**VHM**	AlTiN+	DIN 6527L	6,000 - 20,000	**54560**	532
•		○		•		SuperF-UT Ti	HB	35/38	**VHM**	AlTiN+	DIN 6527L	6,000 - 20,000	**54561**	533
SuperF-UT-Fräser H														
•		•			•	SuperF-UT H	HA	40/42	**VHM**	TiAlSiN	DIN 6527L	6,000 - 20,000	**54572**	550
•		•			•	SuperF-UT H	HB	40/42	**VHM**	TiAlSiN	DIN 6527L	6,000 - 20,000	**54573**	551
SuperF-UT-Fräser VA-X														
	•			•		SuperF-UT VA-X	HB	36/38	**VHM**	AlTiN nano	DIN 6527K	4,000 - 20,000	**54576**	534
	•			•		SuperF-UT VA-X	HA	36/38	**VHM**	AlTiN nano	DIN 6527L	3,000 - 25,000	**54558**	535
	•			•		SuperF-UT VA-X	HB	36/38	**VHM**	AlTiN nano	DIN 6527L	3,000 - 25,000	**54559**	536
	•			•		SuperF-UT VA-X IK	HA	36/38	**VHM**	AlTiN nano	DIN 6527L	6,000 - 25,000	**54574**	537
	•			•		SuperF-UT VA-X IK	HB	36/38	**VHM**	AlTiN nano	DIN 6527L	6,000 - 25,000	**54575**	538
	•			•		SuperF-UT VA-XF	HA	36/38	**VHM**	AlTiN nano	DIN 6527L	6,000 - 25,000	**54568**	539

SuperF-UT-Fräser VA-X

P	M	K	N	S	H	Typ	Schaft-form	Spiral-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
	●			●		SuperF-UT VA-XF	HB	36/38	**VHM**	AlTiN nano	DIN 6527L	6,000 - 25,000	**54569**	540
●	○		○			SuperF-UT VA	HA	40/42	**VHM**	TiAlN	DIN 6527L	4,000 - 20,000	**54556**	541
●	○		○			SuperF-UT VA	HB	40/42	**VHM**	TiAlN	DIN 6527L	4,000 - 20,000	**64557**	542
●	○		○			SuperF-UT VA-IK	HB	40/42	**VHM**	TiAlN	DIN 6527L	6,000 - 20,000	**64567**	543

SuperF-UT-Fräser Al

			●			SuperF-UT Al	HA	40/42	**VHM**	blank	DIN 6527L	4,000 - 20,000	**74554**	544
			●			SuperF-UT Al	HB	40/42	**VHM**	blank	DIN 6527L	4,000 - 20,000	**74555**	545
			●			SuperF-UT Al-F	HA	30/29/31	**VHM**	blank	Werksnorm	6,000 - 25,000	**54570**	546
			●			SuperF-UT Al-F	HB	29/30/31	**VHM**	blank	Werksnorm	6,000 - 25,000	**54571**	547
			●			SuperF-UT Al-3	HA	39/40/41	**VHM**	blank	Werksnorm	3,000 - 20,000	**74552**	548
			●			SuperF-UT Al-3	HB	39/40/41	**VHM**	blank	Werksnorm	3,000 - 20,000	**74553**	549

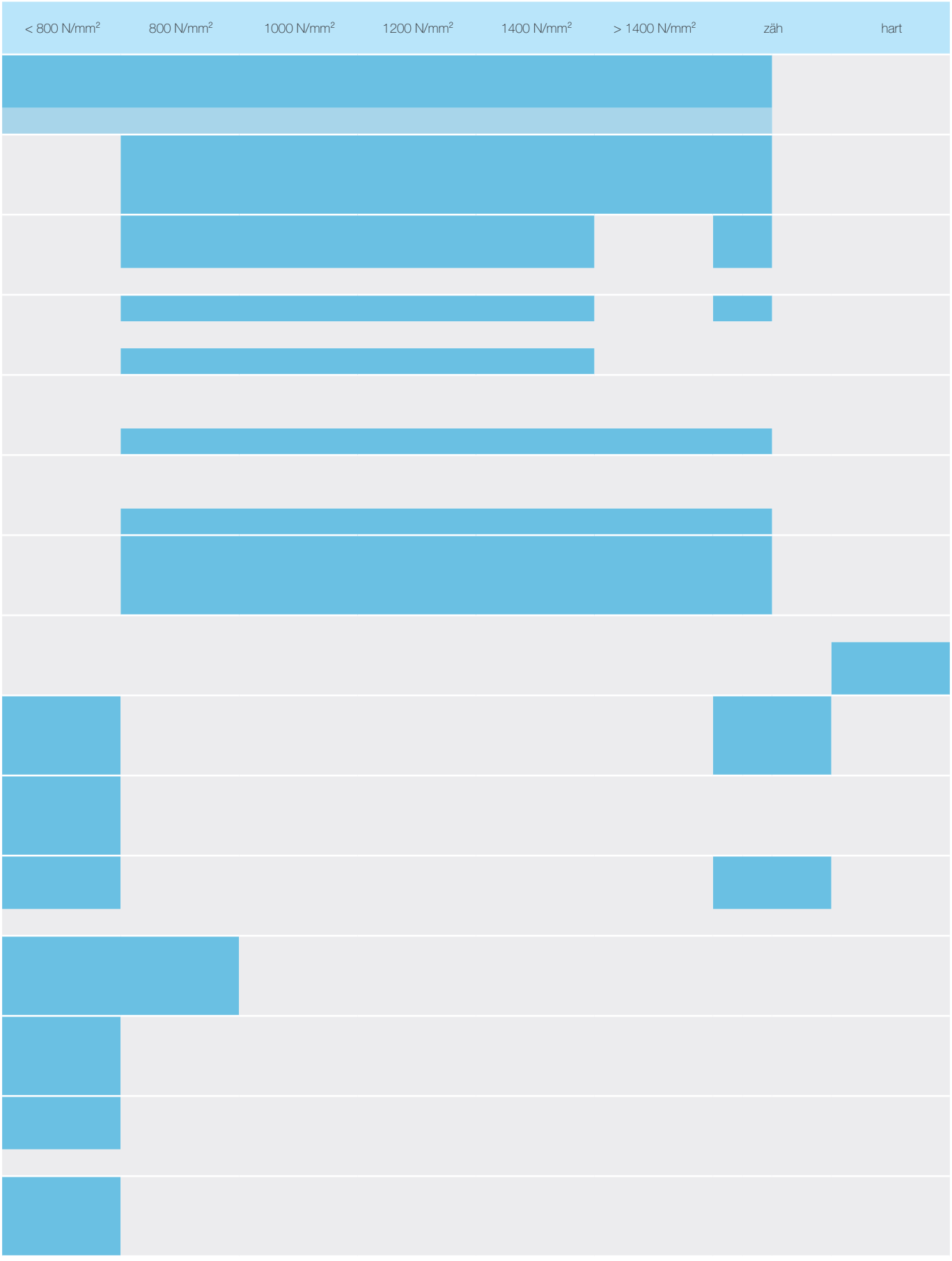
Anwendung

Zuordnung nach Werkstoffen

Typ	Katalog-Nr.	Anwendung	Nichteisenmetalle, Aluminium	Stähle	GG, GGG	rost- und säurebest. Stähle	Nickel, Ti-Legierungen	Gehärtete Stähle
SuperF-UT NX	54590 54591	Nuten						
		Schruppen						
		Schlichten						
SuperF-UT N	64550 54551 64551 54562 54563 54552	Nuten						
		Schruppen						
		Schlichten						
SuperF-UT N-F	54566 54567	Nuten						
		Schruppen						
		Schlichten						
SuperF-UT N-3	54564 54565	Nuten						
		Schruppen						
		Schlichten						
SuperF-UT N-5	54579 54580	Nuten						
		Schruppen						
		Schlichten						
SuperF-UT FS	64558 64559	Nuten						
		Schruppen						
		Schlichten						
SuperF-UT Ti	54560 54561	Nuten						
		Schruppen						
		Schlichten						
SuperF-UT H	54572 54573	Nuten						
		Schruppen						
		Schlichten						
SuperF-UT VA-X	54576 54558 54559	Nuten						
		Schruppen						
		Schlichten						
SuperF-UT VA-X IK	54574 54575	Nuten						
		Schruppen						
		Schlichten						
SuperF-UT VA-XF	54568 54569	Nuten						
		Schruppen						
		Schlichten						
SuperF-UT VA	54556 64557 64567	Nuten						
		Schruppen						
		Schlichten						
SuperF-UT Al-3	74552 74553	Nuten						
		Schruppen						
		Schlichten						
SuperF-UT Al-F	54570 54571	Nuten						
		Schruppen						
		Schlichten						
SuperF-UT Al	74554 74555	Nuten						
		Schruppen						
		Schlichten						

optimal gut geeignet

Zuordnung nach Zugfestigkeit



Allgemeine Einsatzempfehlungen

Stock SuperF-UT-Fräser sind für den Einsatz unter optimalen Bearbeitungsbedingungen ausgelegt, d. h.

- hohe Leistungsabgabe der Maschine
- gute Kühlung
- stabile Aufspannung von Werkstück und Werkzeug

Sollten diese Bedingungen nicht oder nur unzureichend gegeben sein, empfehlen wir den Einsatz der SuperF-UT-Fräser mit Schruppschlichtprofil.
HPC- und HSC-Bearbeitung sind mit SuperF-UT-Fräsern möglich, weitere Informationen finden Sie auf den folgenden Seiten.
Für die Bearbeitung von Stahlwerkstoffen (normalerweise SuperF-UT N) mit einem Eckradius-Fräser nutzen Sie bitte den SuperF-UT Ti, Katalog-Nr. 54560 oder 54561.
Wir empfehlen Gleichlauffräsen.

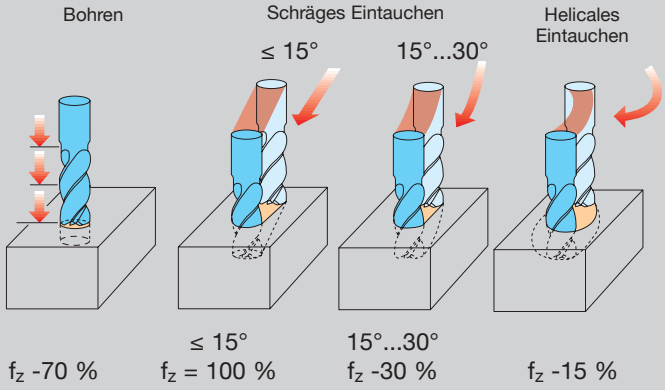
Beim Bohren:
➤ Vorschub v_f (mm/min.) reduzieren
➤ Bei Bohrtiefen > 0,5 x D oder beim Übergang zur radialen Bearbeitung zusätzlich entspanen

Achtung: Bruchgefahr durch abrupten Lastanstieg!

Schräges Eintauchen bis 15°-Schräge (bevorzugt):
➤ Vorschub v_f (mm/min.) muss nicht reduziert werden

Schräges Eintauchen mit 15°- bis 30°-Schräge:
➤ Vorschub v_f (mm/min.) gemäß nebenstehender Grafik reduzieren

Helicales Eintauchen:
➤ Beim helicalen Eintauchen bzw. Eintauchen auf einer Kreisbahn empfehlen wir eine Zustellung von 0,1 bis 0,2 x D pro Umlauf
➤ Vorschub v_f (mm/min.) gemäß nebenstehender Grafik reduzieren
➤ Bohrungsdurchmesser von vorzugsweise 1,8 x D wählen



Allgemeine Formeln:

Drehzahl n [min^{-1}]

$$n \quad \frac{v_c \cdot 1000}{\pi \cdot D}$$

Vorschubgeschwindigkeit v_f [mm/min]

$$v_f = f_z \cdot n \cdot Z_c$$

f_z = Vorschub pro Zahn [mm/Z]
Z_c = effektive Zähnezahl
D = Werkzeugdurchmesser [mm]

Zeitspanvolumen Q [mm^3/min]

$$Q = \frac{a_p \cdot a_e \cdot v_f}{1000}$$

Drehmoment M_c [Nm]

$$M_c \quad \frac{P_c \cdot 30 \cdot 10^3}{\pi \cdot n}$$

P_c = Schnittleistung [kW]
v_c = Schnittgeschwindigkeit [m/min]
a_p = Schnitttiefe [mm]
a_e = Schnittbreite [mm]
π = Pi

STOCK

SUPER F-UT NX

RAMPEN

Mit extrem steilen Tauchwinkeln bis 45°
Sehr gute Spanabfuhr

BOHREN

Sehr gute Bohreigenschaften bis 2xD
Kein separates Pilotierwerkzeug notwendig
Ideales Vorbohrwerkzeug für Reibahlen

NUTEN

Hoher Vorschub beim Eintauchen und Nuten
Hohes Zeitspanvolumen und Untermaß für exakte Passnuten
Hohe Laufruhe und Prozessstabilität

SCHRUPPEN

Durch geringe Leistungsaufnahme auch auf schwächeren Maschinen einsetzbar
Bis zu 100% höhere Schnittgeschwindigkeit in Stahl
Hohe Zeitspanvolumen

SCHLICHTEN

Konturen mit hoher Oberflächengüte
Bis zu 100% höherer Standweg
Hohe Schnittparameter auch in legierten Vergütungsstählen

HPC Frässtrategie

High Performance Cutting (HPC) oder auch **Hochleistungszerspanung** ermöglicht höhere Schnitt- und Vorschubgeschwindigkeiten gegenüber den konventionellen Zerspanungsverfahren sowie größere Schnitttiefen.

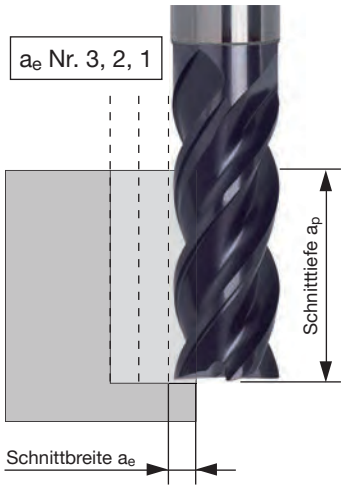
Vorteile:

- geringere Belastung an Werkzeug und Maschine durch reduzierte Eingriffsbreite
- niedrige Temperaturen im Zerspanungsprozess
- Nutzung der kompletten Schneidenlänge möglich
- daraus resultierend Erhöhung der Einsatzzeiten

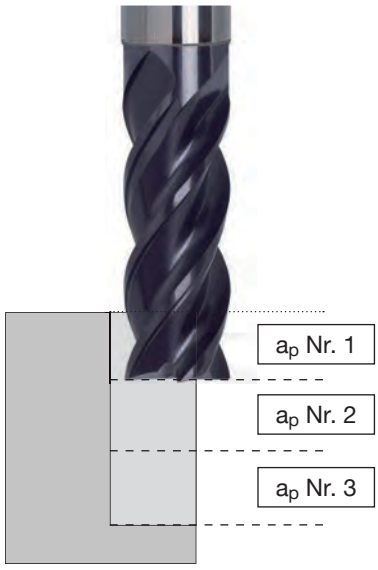
Nachteil:

- dynamische Maschine bei komplexen Werkstückkonturen erforderlich

HPC



konventionell



Schnittwertanpassung HPC-Fräsen

ae	Faktor fz	Faktor 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

Anmerkung:
Als Basisschnittwerte dienen die SuperF-UT-Schnittwerte für das Nuten!

Beispiel:
Werkzeug: SuperF-UT N Ø12, Kat.-Nr. 54551
Material: 42CrMo4
Schnittwerte „HPC Grundlagenschnittwerte”:
v_c = 135 m/min
fz = 0,065 mm/Z

Berechnung:
HPC-Schnittwerte bei 10 % ae:
v_c = 135 m/min x 1,5 = 203 m/min
fz = 0,065 mm/Z x 2 = 0,13 mm/Z

F-UT HPC-Fräsen Grundlagenschnittwerte

HPC

Stabile Verhältnisse:
- gute Kühlung
- ausreichende Leistung
- kurze Ausspanung

Instabile Verhältnisse:
- Standardkühlung
- durchschnittliche Leistung
- mittlere bis lange Ausspanung

Schnittwertanpassung HPC-Fräsen			
ae	Faktor fz	Faktor 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

Material	Härte / Zug-festigkeit	empf. F-UT Typ	Art der Bedingungen	v_c [m/min]	Vorschub fz [mm/z] bei Nenn-Ø							
					3	6	8	10	12	16	20	25
P Bau- und Automatenstähle, unlegierte Vergütungs- und Einsatzstähle 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	bis 850 N/mm²	N	stabile Verhältnisse	180	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
		N-F	instabile Verhältnisse	180	0,013	0,025	0,032	0,042	0,049	0,063	0,070	0,105
P Automatenstähle, unlegierte Einsatzstähle, Nitrierstähle 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	stabile Verhältnisse	160	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
		N-F	instabile Verhältnisse	160	0,013	0,025	0,032	0,042	0,049	0,063	0,070	0,105
P Legierte Vergütungsstähle, Werkzeug- und Schnellarbeitsstähle 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 Federstahl = 1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4	850-1.400 N/mm²	N	stabile Verhältnisse	135	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		N-F	instabile Verhältnisse	135	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
H Gehärteter Stahl Werkzeugstahl, Vergütungstahl, Federstahl, Schnellarbeitsstahl, Einsatzstahl, etc. Z.B.: 1.2344 X40CrMoV5-1; 1.2767 X45NiCrMo4; 1.2379 X155CrVMo12-1 ;1.2080 X210Cr12 1.3343 S 6-5-2	bis 54 HRC	N	stabile Verhältnisse	70	0,012	0,025	0,030	0,040	0,045	0,060	0,070	0,100
		N-F	instabile Verhältnisse	70	0,008	0,018	0,021	0,028	0,032	0,042	0,049	0,070
M Rostfreier Stahl 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	bis 750 N/mm²	VA-X	stabile Verhältnisse	120	0,015	0,030	0,040	0,050	0,060	0,070	0,090	0,130
		VA-XF	instabile Verhältnisse	120	0,011	0,021	0,028	0,035	0,042	0,049	0,063	0,091
M Rostfreier Stahl 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	VA-X	stabile Verhältnisse	80	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
		VA-XF	instabile Verhältnisse	80	0,011	0,018	0,025	0,032	0,035	0,046	0,056	0,084
M Rostfreier Stahl 1.4438 X2CrNiMo18-15-4, 1.4404 X2CrNiMo17-12-2, 1.4571 X6CrNiTi18-10 USA = 310, 316, 316B, 316L, 317	über 850 N/mm²	VA-X	stabile Verhältnisse	70	0,012	0,025	0,030	0,040	0,045	0,060	0,070	0,100
		VA-XF	instabile Verhältnisse	70	0,008	0,018	0,021	0,028	0,032	0,042	0,049	0,070
S Sonderlegierungen (Nickelbasis "Ni") Nimonic, Inconel, Monel, Hastelloy	bis 1.300 N/mm²	Ti	stabile Verhältnisse	30	0,010	0,015	0,020	0,025	0,030	0,040	0,050	0,060
		N-F	instabile Verhältnisse	30	0,007	0,011	0,014	0,018	0,021	0,028	0,035	0,042
Ti Titanlegierungen ("Ti") 3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7164 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5	bis 1.300 N/mm²	Ti	stabile Verhältnisse	60	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
		N-F	instabile Verhältnisse	60	0,011	0,018	0,025	0,032	0,035	0,046	0,056	0,084
K Gusseisen, Grauguss, Temperguss und Kugelgraphitguss 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)	bis 240 HB 30	N	stabile Verhältnisse	160	0,020	0,040	0,050	0,065	0,080	0,095	0,110	0,160
		N-F	instabile Verhältnisse	160	0,014	0,028	0,035	0,046	0,056	0,067	0,077	0,112
K Gusseisen, Grauguss, Temperguss und Kugelgraphitguss 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)	über 240 HB 30	N	stabile Verhältnisse	140	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		N-F	instabile Verhältnisse	140	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
N Aluminum, Alu-Knetlegierungen, Alulegierungen 3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1 3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	bis 3% Si	Al	stabile Verhältnisse	500	0,020	0,040	0,050	0,065	0,080	0,095	0,110	0,160
		Al-F	instabile Verhältnisse	500	0,014	0,028	0,035	0,046	0,056	0,067	0,077	0,112
N Aluminum-Gusslegierungen 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	über 3% Si	Al	stabile Verhältnisse	230	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		Al-F	instabile Verhältnisse	230	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
N Magnesium-Legierungen MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-	Al	stabile Verhältnisse	180	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		Al-F	instabile Verhältnisse	180	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
N NE-Metalle (Kupfer, Messing oder Messing je kurz- und langspanend) 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	bis 850 N/mm²	Al	stabile Verhältnisse	250	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
		Al-F	instabile Verhältnisse	250	0,011	0,018	0,025	0,032	0,035	0,046	0,056	0,084

$a_p = 1 \times D - 3 \times D$

$a_e = 0{,}1 \times D - 0{,}5 \times D$

F-UT NX für die universelle Fräsbearbeitung

Für optimale Spanabfuhr und Standwege wird Peripheriekühlung empfohlen

EINTAUCHEN UND RAMPEN

Material	Härte / Zug-festigkeit	Ramptiefe (ap max.)	Ram-pen-winkel	v_c [m/min]	Vorschub fz [mm/z] bei Nenn-Ø							
					4	6	8	10	12	14	16	20
P Bau- und Automatenstähle, unlegierte Vergütungs- und Einsatzstähle 1.0345 P235GH, 1.0050, 1.0503 C45, 1.2076 102Cr6	bis 850 N/mm²	1xD	45°	270	0,015	0,020	0,030	0,040	0,045	0,050	0,055	0,060
P Automatenstähle, unlegierte Einsatzstähle, Nitrierstähle 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 Legierte Vergütungsstähle, Werkzeug- und Schnellarbeitsstähle 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 Rostfreier Stahl 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9	bis 750 N/mm²	1xD	10°	60	0,007	0,010	0,015	0,020	0,025	0,030	0,035	0,040
M Rostfreier Stahl 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 Titanlegierungen ("Ti") 3.7114 TiAl5Sn2,5, 3.7124 TiCu2, 3.7154 TiAl6Zr5, 3.7164 TiAl6V4	bis 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 Gusseisen, Grauguss, Temperguss und Kugelgraphitguss 0.6025 EN-GL250 (GG25), 0.7070 EN-GJS-700-2 (GGG70)	über 240 HB	1xD	45°	150	0,015	0,020	0,030	0,040	0,045	0,050	0,055	0,060
N Aluminum, Alu-Knetlegierungen, Alulegierungen 3.0255 Al99,5, 3.2315 AlMgSi1, 3.1325 AlCuMg1, 3.3245 AlMg3Si	bis 3% Si	1xD	30°	180	0,010	0,015	0,020	0,030	0,035	0,040	0,045	0,050
N Aluminum-Gusslegierungen 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9	über 3% Si	1xD	45°	140	0,015	0,020	0,030	0,040	0,045	0,050	0,055	0,060

NUTEN

Material	Härte / Zug-festigkeit	Schnitttiefe (ap max.)	Schnitt-breite (ae max.)	v_c [m/min]	Vorschub fz [mm/z] bei Nenn-Ø							
					4	6	8	10	12	14	16	20
P Bau- und Automatenstähle, unlegierte Vergütungs- und Einsatzstähle 1.0345 P235GH, 1.0050, 1.0503 C45, 1.2076 102Cr6	bis 850 N/mm²	1xD	1xD	270	0.015	0.025	0.035	0.050	0.055	0.060	0.080	0.100
P Automatenstähle, unlegierte Einsatzstähle, Nitrierstähle 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 Legierte Vergütungsstähle, Werkzeug- und Schnellarbeitsstähle 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 Rostfreier Stahl 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9	bis 750 N/mm²	1xD	1xD	120	0.015	0.020	0.030	0.045	0.055	0.060	0.065	0.075
M Rostfreier Stahl 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 Titanlegierungen ("Ti") 3.7114 TiAl5Sn2,5, 3.7124 TiCu2, 3.7154 TiAl6Zr5, 3.7164 TiAl6V4	bis 1.300 N/mm²	1xD	1xD	60	0.015	0.020	0.025	0.030	0.040	0.050	0.060	0.070
K Gusseisen, Grauguss, Temperguss und Kugelgraphitguss 0.6025 EN-GL250 (GG25), 0.7070 EN-GJS-700-2 (GGG70)	über 240 HB	1xD	1xD	160	0.015	0.025	0.035	0.050	0.055	0.060	0.080	0.100
N Aluminum, Alu-Knetlegierungen, Alulegierungen 3.0255 Al99,5, 3.2315 AlMgSi1, 3.1325 AlCuMg1, 3.3245 AlMg3Si	bis 3% Si	1xD	1xD	500	0.025	0.030	0.040	0.065	0.080	0.085	0.095	0.110
N Aluminum-Gusslegierungen 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9	über 3% Si	1xD	1xD	340	0.015	0.020	0.030	0.055	0.065	0.07w0	0.080	0.100

HPC-SCHRUPPEN UND HSC-SCHLICHTEN

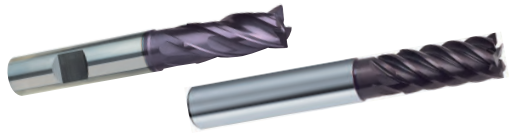
* beim HSC-Schlichten kann die Schnittgeschwindigkeit um 50% erhöht werden; je nach Oberflächenanforderung Vorschub fz reduzieren
** beim Trochoidal-Fräsen mit ae = 0,1 - 0,2xD können Schnittgeschwindigkeit vc und Vorschub um 50% erhöht werden.

Material	Härte / Zug-festigkeit	Schnitttiefe (ap max.)	Schnitt-breite (ae max.)	v_c [m/min]	Vorschub fz [mm/z] bei Nenn-Ø							
					4	6	8	10	12	14	16	20
P Bau- und Automatenstähle, unlegierte Vergütungs- und Einsatzstähle 1.0345 P235GH, 1.0050, 1.0503 C45, 1.2076 102Cr6	bis 850 N/mm²	2xD	0.4xD	350	0.020	0.030	0.045	0.060	0.075	0.080	0.090	0.110
P Automatenstähle, unlegierte Einsatzstähle, Nitrierstähle 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 Legierte Vergütungsstähle, Werkzeug- und Schnellarbeitsstähle 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 Rostfreier Stahl 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9	bis 750 N/mm²	2xD	0.3xD	140	0.020	0.025	0.035	0.055	0.065	0.070	0.080	0.090
M Rostfreier Stahl 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 Titanlegierungen ("Ti") 3.7114 TiAl5Sn2,5, 3.7124 TiCu2, 3.7154 TiAl6Zr5, 3.7164 TiAl6V4	bis 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 Gusseisen, Grauguss, Temperguss und Kugelgraphitguss 0.6025 EN-GL250 (GG25), 0.7070 EN-GJS-700-2 (GGG70)	über 240 HB	2xD	0.4xD	180	0.020	0.030	0.045	0.060	0.075	0.080	0.090	0.110
N Aluminum, Alu-Knetlegierungen, Alulegierungen 3.0255 Al99,5, 3.2315 AlMgSi1, 3.1325 AlCuMg1, 3.3245 AlMg3Si	bis 3% Si	2xD	0.5xD	600	0.025	0.040	0.060	0.080	0.100	0.110	0.120	0.150
N Aluminum-Gusslegierungen 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9	über 3% Si	2xD	0.4xD	420	0.020	0.030	0.045	0.060	0.075	0.080	0.090	0.110

BOHREN

Material	Härte / Zug-festigkeit	Bohrtiefe (ap max.)	entspänen ab 1xD	v_c [m/min]	Vorschub fz [mm/z] bei Nenn-Ø							
					4	6	8	10	12	14	16	20
P Bau- und Automatenstähle, unlegierte Vergütungs- und Einsatzstähle 1.0345 P235GH, 1.0050, 1.0503 C45, 1.2076 102Cr6	bis 850 N/mm²	2xD	Ja	270	0,015	0,020	0,030	0,040	0,045	0,045	0,050	0,060
P Automatenstähle, unlegierte Einsatzstähle, Nitrierstähle 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 Legierte Vergütungsstähle, Werkzeug- und Schnellarbeitsstähle 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 Gusseisen, Grauguss, Temperguss und Kugelgraphitguss 0.6025 EN-GL250 (GG25), 0.7070 EN-GJS-700-2 (GGG70)	über 240 HB	2xD	Ja	150	0,015	0,020	0,030	0,040	0,045	0,045	0,050	0,060
N Aluminum, Alu-Knetlegierungen, Alulegierungen 3.0255 Al99,5, 3.2315 AlMgSi1, 3.1325 AlCuMg1, 3.3245 AlMg3Si	bis 3% Si	1xD	-	180	0,010	0,015	0,020	0,035	0,040	0,040	0,045	0,050
N Aluminum-Gusslegierungen 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9	über 3% Si	1xD	-	140	0,015	0,020	0,030	0,040	0,045	0,045	0,050	0,060

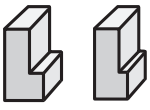
F-UT Schlichtfräsen / Feinstschlichten



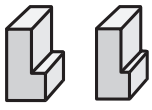
Stabile Verhältnisse:
- gute Kühlung
- ausreichende Leistung
- kurze Ausspanung

* Fräswerkzeug #54207,#54227 zum Feinstschlichten in gehärteten Stählen > 54 HRC.

Material	Härte / Zug-festigkeit	empf. F-UT Typ	Art der Bedingungen	v_c [m/min]	Vorschub fz [mm/z] bei Nenn-Ø							
					3	6	8	10	12	16	20	25
P Bau- und Automatenstähle, unlegierte Vergütungs- und Einsatzstähle 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	bis 850 N/mm²	N / FS	stabile Verhältnisse	280	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
			instabile Verhältnisse	-								
P Automatenstähle, unlegierte Einsatzstähle, Nitrierstähle 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	stabile Verhältnisse	220	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
			instabile Verhältnisse	-								
P Legierte Vergütungsstähle, Werkzeug- und Schnellarbeitsstähle 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 Federstahl = 1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4	850-1.400 N/mm²	N / FS	stabile Verhältnisse	200	0,015	0,030	0,040	0,050	0,060	0,070	0,090	0,130
			instabile Verhältnisse	-								
H Gehärteter Stahl Werkzeugstahl, Vergütungstahl, Federstahl, Schnellarbeitsstahl, Einsatzstahl, etc. Z.B.: 1.2344 X40CrMoV5-1; 1.2767 X45NiCrMo4; 1.2379 X155CrVMo12-1 ;1.2080 X210Cr12 1.3343 S 6-5-2	bis 54 HRC	N / FS	stabile Verhältnisse	150	0,015	0,030	0,040	0,050	0,060	0,070	0,090	0,130
		- / H*	instabile Verhältnisse	110	0,007	0,017	0,024	0,030	0,036	0,045	0,057	0,065
M Rostfreier Stahl 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	bis 750 N/mm²	VA-X / FS	stabile Verhältnisse	180	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
			instabile Verhältnisse	-								
M Rostfreier Stahl 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	VA-X / FS	stabile Verhältnisse	140	0,015	0,030	0,040	0,050	0,060	0,070	0,090	0,130
			instabile Verhältnisse	-								
M Rostfreier Stahl 1.4438 X2CrNiMo18-15-4, 1.4404 X2CrNiMo17-12-2, 1.4571 X6CrNiTi18-10 USA = 310, 316, 316B, 316L, 317	über 850 N/mm²	VA-X / FS	stabile Verhältnisse	120	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
			instabile Verhältnisse	-								
S Sonderlegierungen (Nickelbasis "Ni") Nimonic, Inconel, Monel, Hastelloy	bis 1.300 N/mm²	N / FS	stabile Verhältnisse	45	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
			instabile Verhältnisse	-								
Ti Titanlegierungen ("Ti") 3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7164 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5	bis 1.300 N/mm²	N / FS	stabile Verhältnisse	130	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
			instabile Verhältnisse	-								
K Gusseisen, Grauguss, Temperguss und Kugelgraphitguss 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)	bis 240 HB 30	N / FS	stabile Verhältnisse	220	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
			instabile Verhältnisse	-								
K Gusseisen, Grauguss, Temperguss und Kugelgraphitguss 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)	über 240 HB 30	N / FS	stabile Verhältnisse	200	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
			instabile Verhältnisse	-								
N Aluminum, Alu-Knetlegierungen, Alulegierungen 3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1 3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	bis 3% Si	Al / FS	stabile Verhältnisse	1000	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
			instabile Verhältnisse	-								
N Aluminum-Gusslegierungen 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	über 3% Si	Al / FS	stabile Verhältnisse	350	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
			instabile Verhältnisse	-								
N Magnesium-Legierungen MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-	Al / FS	stabile Verhältnisse	280	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
			instabile Verhältnisse	-								
N NE-Metalle (Kupfer, Messing oder Messing je kurz- und langspanend) 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	bis 850 N/mm²	N / FS	stabile Verhältnisse	400	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
			instabile Verhältnisse	-								

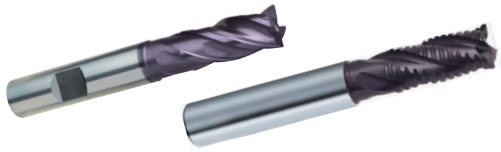


Schlichtfräsen:
a_p = 1 x D - 2 x D
a_e = 0,1 x D - 0,3 x D



Feinstschlichten:
a_p = 1 x D - 3 x D
a_e = 0,05 x D - 0,1 x D

F-UT Schruppfräsen



Stabile Verhältnisse:
- gute Kühlung
- ausreichende Leistung
- kurze Ausspanung

Instabile Verhältnisse:
- Standardkühlung
- durchschnittliche Leistung
- mittlere bis lange Ausspanung

Material	Härte / Zug-festigkeit	empf. F-UT Typ	Art der Bedingungen	v_c [m/min]	Vorschub fz [mm/z] bei Nenn-Ø							
					3	6	8	10	12	16	20	25
P Bau- und Automatenstähle, unlegierte Vergütungs- und Einsatzstähle 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	bis 850 N/mm²	N	stabile Verhältnisse	200	0,020	0,040	0,055	0,070	0,085	0,100	0,120	0,170
		N-F	instabile Verhältnisse	200	0,014	0,028	0,039	0,049	0,060	0,070	0,084	0,119
P Automatenstähle, unlegierte Einsatzstähle, Nitrierstähle 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	stabile Verhältnisse	180	0,020	0,040	0,055	0,070	0,085	0,100	0,120	0,170
		N-F	instabile Verhältnisse	180	0,014	0,028	0,039	0,049	0,060	0,070	0,084	0,119
P Legierte Vergütungsstähle, Werkzeug- und Schnellarbeitsstähle 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 Federstahl = 1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4	850-1.400 N/mm²	N	stabile Verhältnisse	160	0,020	0,040	0,050	0,065	0,080	0,095	0,110	0,160
		N-F	instabile Verhältnisse	160	0,014	0,028	0,035	0,046	0,056	0,067	0,077	0,112
H Gehärteter Stahl Werkzeugstahl, Vergütungstahl, Federstahl, Schnellarbeitsstahl, Einsatzstahl, etc. Z.B.: 1.2344 X40CrMoV5-1; 1.2767 X45NiCrMo4; 1.2379 X155CrVMo12-1 ;1.2080 X210Cr12 1.3343 S 6-5-2	bis 54 HRC	N	stabile Verhältnisse	110	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
		N-F	instabile Verhältnisse	110	0,011	0,018	0,025	0,032	0,035	0,046	0,056	0,084
M Rostfreier Stahl 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	bis 750 N/mm²	VA-X	stabile Verhältnisse	140	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
		VA-XF	instabile Verhältnisse	140	0,013	0,025	0,032	0,042	0,049	0,063	0,070	0,105
M Rostfreier Stahl 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	VA-X	stabile Verhältnisse	120	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		VA-XF	instabile Verhältnisse	120	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
M Rostfreier Stahl 1.4438 X2CrNiMo18-15-4, 1.4404 X2CrNiMo17-12-2, 1.4571 X6CrNiTi18-10 USA = 310, 316, 316B, 316L, 317	über 850 N/mm²	VA-X	stabile Verhältnisse	100	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
		VA-XF	instabile Verhältnisse	100	0,011	0,018	0,025	0,032	0,035	0,046	0,056	0,084
S Sonderlegierungen (Nickelbasis "Ni") Nimonic, Inconel, Monel, Hastelloy	bis 1.300 N/mm²	Ti	stabile Verhältnisse	35	0,010	0,020	0,030	0,035	0,040	0,055	0,065	0,080
		N-F	instabile Verhältnisse	35	0,007	0,014	0,021	0,025	0,028	0,039	0,046	0,056
Ti Titanlegierungen ("Ti") 3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7164 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5	bis 1.300 N/mm²	Ti	stabile Verhältnisse	90	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		N-F	instabile Verhältnisse	90	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
K Gusseisen, Grauguss, Temperguss und Kugelgraphitguss 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)	bis 240 HB 30	N	stabile Verhältnisse	180	0,020	0,040	0,055	0,070	0,085	0,100	0,120	0,170
		N-F	instabile Verhältnisse	180	0,014	0,028	0,039	0,049	0,060	0,070	0,084	0,119
K Gusseisen, Grauguss, Temperguss und Kugelgraphitguss 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)	über 240 HB 30	N	stabile Verhältnisse	160	0,020	0,040	0,050	0,065	0,080	0,095	0,110	0,160
		N-F	instabile Verhältnisse	160	0,014	0,028	0,035	0,046	0,056	0,067	0,077	0,112
N Aluminum, Alu-Knetlegierungen, Alulegierungen 3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1 3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	bis 3% Si	Al	stabile Verhältnisse	600	0,020	0,040	0,055	0,070	0,085	0,100	0,120	0,170
		Al-F	instabile Verhältnisse	600	0,014	0,028	0,039	0,049	0,060	0,070	0,084	0,119
N Aluminum-Gusslegierungen 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	über 3% Si	Al	stabile Verhältnisse	280	0,020	0,040	0,050	0,065	0,080	0,095	0,110	0,160
		Al-F	instabile Verhältnisse	280	0,014	0,028	0,035	0,046	0,056	0,067	0,077	0,112
N Magnesium-Legierungen MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-	Al	stabile Verhältnisse	220	0,020	0,040	0,050	0,065	0,080	0,095	0,110	0,160
		Al-F	instabile Verhältnisse	220	0,014	0,028	0,035	0,046	0,056	0,067	0,077	0,112
N NE-Metalle (Kupfer, Messing oder Messing je kurz- und langspanend) 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	bis 850 N/mm²	Al	stabile Verhältnisse	300	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		Al-F	instabile Verhältnisse	300	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098

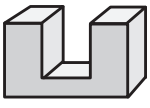
a_p = ≤ 1 x D a_p = 1 x D - 2 x D
a_e = 0,5 - 0,9 x D f_z = 70%

F-UT Nutenfräsen

Stabile Verhältnisse:
- gute Kühlung
- ausreichende Leistung
- kurze Ausspanung

Instabile Verhältnisse:
- Standardkühlung
- durchschnittliche Leistung
- mittlere bis lange Ausspanung

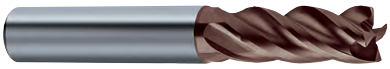
Material	Härte / Zug-festigkeit	empf. F-UT Typ	Art der Bedingungen	v_c [m/min]	Vorschub fz [mm/z] bei Nenn-Ø							
					3	6	8	10	12	16	20	25
P Bau- und Automatenstähle, unlegierte Vergütungs- und Einsatzstähle 1.0035 S185, 1.0486 P275N, 1.0345 P235GH, 1.0050, 1.0070, 1.8937 1.0718 11SMnPb30, 1.0736 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	bis 850 N/mm²	N-3	stabile Verhältnisse	180	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
		N-F	instabile Verhältnisse	180	0,013	0,025	0,032	0,042	0,049	0,063	0,070	0,105
P Automatenstähle, unlegierte Einsatzstähle, Nitrierstähle 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	stabile Verhältnisse	160	0,018	0,035	0,045	0,060	0,070	0,090	0,100	0,150
		N-F	instabile Verhältnisse	160	0,013	0,025	0,032	0,042	0,049	0,063	0,070	0,105
P Legierte Vergütungsstähle, Werkzeug- und Schnellarbeitsstähle 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 Federstahl = 1.5026 55Si7, 1.7176 55Cr3, 1.8159 51CrV4	850-1.400 N/mm²	N-3	stabile Verhältnisse	135	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		N-F	instabile Verhältnisse	135	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
H Gehärteter Stahl Werkzeugstahl, Vergütungstahl, Federstahl, Schnellarbeitsstahl, Einsatzstahl, etc. Z.B.: 1.2344 X40CrMoV5-1; 1.2767 X45NiCrMo4; 1.2379 X155CrVMo12-1 ;1.2080 X210Cr12 1.3343 S 6-5-2	bis 54 HRC	N-3	stabile Verhältnisse	70	0,012	0,025	0,030	0,040	0,045	0,060	0,070	0,100
		N-F	instabile Verhältnisse	70	0,008	0,018	0,021	0,028	0,032	0,042	0,049	0,070
M Rostfreier Stahl 1.4104 X14CrMoS17, 1.4105 X6CrMoS17, 1.4305 X10CrNiS18-9 USA = 303, 410, 420F, 430, 430F	bis 750 N/mm²	VA-X	stabile Verhältnisse	120	0,015	0,030	0,040	0,050	0,060	0,070	0,090	0,130
		VA-XF	instabile Verhältnisse	120	0,011	0,021	0,028	0,035	0,042	0,049	0,063	0,091
M Rostfreier Stahl 1.4301X5CrNi18-10, 1.4303 X5CrNi18-12 1.4310 XCrNi18-8 USA = 304, 304L, 420	750-850 N/mm²	VA-X	stabile Verhältnisse	80	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
		VA-XF	instabile Verhältnisse	80	0,011	0,018	0,025	0,032	0,035	0,046	0,056	0,084
M Rostfreier Stahl 1.4438 X2CrNiMo18-15-4, 1.4404 X2CrNiMo17-12-2, 1.4571 X6CrNiTi18-10 USA = 310, 316, 316B, 316L, 317	über 850 N/mm²	VA-X	stabile Verhältnisse	70	0,012	0,025	0,030	0,040	0,045	0,060	0,070	0,100
		VA-XF	instabile Verhältnisse	70	0,008	0,018	0,021	0,028	0,032	0,042	0,049	0,070
S Sonderlegierungen (Nickelbasis "Ni") Nimonic, Inconel, Monel, Hastelloy	bis 1.300 N/mm²	Ti	stabile Verhältnisse	30	0,010	0,015	0,020	0,025	0,030	0,040	0,050	0,060
		N-F	instabile Verhältnisse	30	0,007	0,011	0,014	0,018	0,021	0,028	0,035	0,042
Ti Titanlegierungen ("Ti") 3.7024 Ti99,5, 3.7114 TiAl5Sn2,5, 3.7124 TiCu2 3.7154 TiAl6Zr5, 3.7164 TiAl6V4, 3.7184 TiAl4Mo4Sn2,5	bis 1.300 N/mm²	Ti	stabile Verhältnisse	60	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
		N-F	instabile Verhältnisse	60	0,011	0,018	0,025	0,032	0,035	0,046	0,056	0,084
K Gusseisen, Grauguss, Temperguss und Kugelgraphitguss 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)	bis 240 HB 30	N	stabile Verhältnisse	160	0,020	0,040	0,050	0,065	0,080	0,095	0,110	0,160
		N-F	instabile Verhältnisse	160	0,014	0,028	0,035	0,046	0,056	0,067	0,077	0,112
K Gusseisen, Grauguss, Temperguss und Kugelgraphitguss 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)	über 240 HB 30	N	stabile Verhältnisse	140	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		N-F	instabile Verhältnisse	140	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
N Aluminum, Alu-Knetlegierungen, Alulegierungen 3.0255 Al99,5, 3.2315 AlMgSi1, 3.3515 AlMg1 3.0615 AlMgSiPb, 3.1325 AlCuMg1, 3.3245 AlMg3Si, 3.4365 AlZnMgCu1,5	bis 3% Si	Al-3	stabile Verhältnisse	500	0,020	0,040	0,050	0,065	0,080	0,095	0,110	0,160
		Al-F	instabile Verhältnisse	500	0,014	0,028	0,035	0,046	0,056	0,067	0,077	0,112
N Aluminum-Gusslegierungen 3.2131 G-AlSi5Cu1, 3.2153 G-AlSi7Cu3, 3.2573 G-AlSi9 3.2581 G-AlSi12, 3.2583 G-AlSi12Cu, - G-AlSi12CuNiMg	über 3% Si	Al-3	stabile Verhältnisse	230	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		Al-F	instabile Verhältnisse	230	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
N Magnesium-Legierungen MgMn2, G-MgAl8Zn1, G-MgAl6Zn3	-	Al-3	stabile Verhältnisse	180	0,016	0,030	0,040	0,055	0,065	0,080	0,095	0,140
		Al-F	instabile Verhältnisse	180	0,011	0,021	0,028	0,039	0,046	0,056	0,067	0,098
N NE-Metalle (Kupfer, Messing oder Messing je kurz- und langspanend) 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	bis 850 N/mm²	Al-3	stabile Verhältnisse	250	0,015	0,025	0,035	0,045	0,050	0,065	0,080	0,120
		Al-F	instabile Verhältnisse	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%

SuperF-UT-Fräser

SuperF-UT-Fräser NX



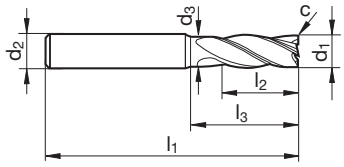
Katalog-Nr. 54590

HPC | NX | DIN 6527 L | VHM | TiAl-SiN | h10 | R | HA | 36° 38° 37°

P	M	K	N	S	H
●	●	●	●	●	

Arbeitsrichtwerte Seite 513-517

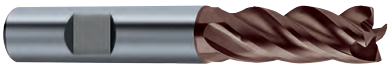
- angepasste Stirn- und Nutengeometrie für höchste Schnittwerte und sehr gute Spanabfuhr
- extrem steile Tauchwinkel bis 45° möglich
- hohe Standzeiten durch hochharte Beschichtung
- hohe Prozesssicherheit bei gleichzeitiger Reduzierung der Bearbeitungszeiten
- bis 1400 N/mm²
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser NX



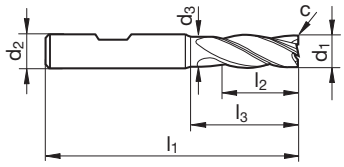
Katalog-Nr. 54591

HPC | NX | DIN 6527 L | VHM | TiAl-SiN | h10 | R | HB | 36° 38° 37°

P	M	K	N	S	H
●	●	●	●	●	

Arbeitsrichtwerte Seite 513-517

- angepasste Stirn- und Nutengeometrie für höchste Schnittwerte und sehr gute Spanabfuhr
- extrem steile Tauchwinkel bis 45° möglich
- hohe Standzeiten durch hochharte Beschichtung
- hohe Prozesssicherheit bei gleichzeitiger Reduzierung der Bearbeitungszeiten
- bis 1400 N/mm²
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser N

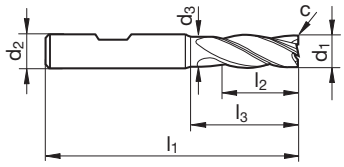
Katalog-Nr. 64550

HPC | N | DIN 6527 K | VHM | TiAlN | h10 | R | HB | 35° 38°

P	M	K	N	S	H
●		●			

Arbeitsrichtwerte Seite 513-517

- universell einsetzbar
- kurze stabile Ausführung
- bis 1600 N/mm²
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser N

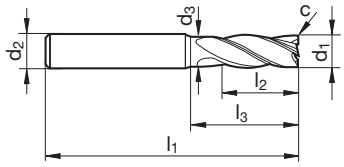
Katalog-Nr. 54551

HPC | N | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 35° 38°

P	M	K	N	S	H
●		●			

Arbeitsrichtwerte Seite 513-517

- universell einsetzbar
- bis 1600 N/mm²
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser N

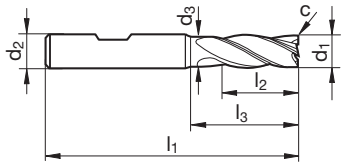
Katalog-Nr. 64551

HPC | N | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 35° 38°

P	M	K	N	S	H
●		●			

Arbeitsrichtwerte Seite 513-517

- universell einsetzbar
- bis 1600 N/mm²
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser N

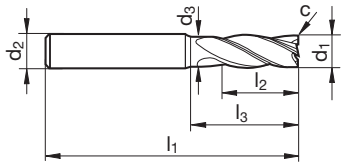
Katalog-Nr. 54562

HPC | N | WN | VHM | TiAlN | h10 | R | HA | 35° 38°

P	M	K	N	S	H
●		●			

Arbeitsrichtwerte Seite 513-517

- universell einsetzbar
- bis 1600 N/mm²
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser N

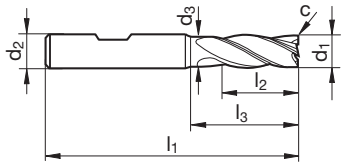
Katalog-Nr. 54563

HPC | N | WN | VHM | TiAlN | h10 | R | HB | 35° 38°

P	M	K	N	S	H
●		●			

Arbeitsrichtwerte Seite 513-517

- universell einsetzbar
- bis 1600 N/mm²
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser N

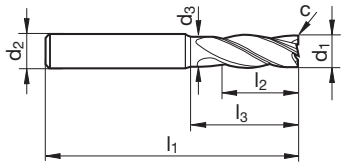
Katalog-Nr. 54552

HPC | N | WN | VHM | TiAlN | h10 | R | HA | 35° 38°

P	M	K	N	S	H
•		•			

Arbeitsrichtwerte Seite 513-517

- universell einsetzbar
- bis 1600 N/mm²
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser N-F

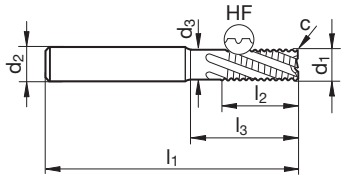
Katalog-Nr. 54566

N-F | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 30° 32°

P	M	K	N	S	H
●		○		○	

Arbeitsrichtwerte Seite 513-517

- bis 48 HRC sowie Titan- und Nickel-Legierungen
- gut geeignet auch bei instabilen und schwierigen Maschinenverhältnissen
- erreichbare Oberflächengüte Ra = 2 bis 3 µm
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser N-F

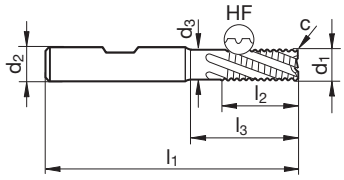
Katalog-Nr. 54567

N-F | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 30° 32°

P	M	K	N	S	H
●		○		○	

Arbeitsrichtwerte Seite 513-517

- bis 48 HRC sowie Titan- und Nickel-Legierungen
- gut geeignet auch bei instabilen und schwierigen Maschinenverhältnissen
- erreichbare Oberflächengüte Ra = 2 bis 3 µm
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser N-3

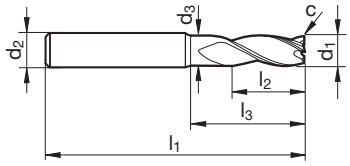
Katalog-Nr. 54564

N-3 | WN | VHM | TiAlN | e8 | R | HA | 41° 43° 45°

P	M	K	N	S	H
●	○	●	○		

Arbeitsrichtwerte Seite 513-517

- 3-Schneider mit vergrößerten Spanräumen
- zur Herstellung von Passfedernuten
- bis 1400 N/mm²
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser N-3

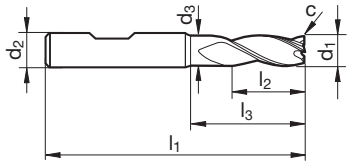
Katalog-Nr. 54565

N-3 | WN | VHM | TiAlN | e8 | R | HB | 41° 43° 45°

P	M	K	N	S	H
●	○	●	○		

Arbeitsrichtwerte Seite 513-517

- 3-Schneider mit vergrößerten Spanräumen
- zur Herstellung von Passfedernuten
- bis 1400 N/mm²
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser N-5

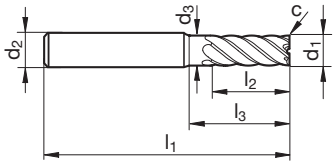
Katalog-Nr. 54579

HPC | N-5 | WN | VHM | TiAlN | h10 | R | HA | 45°

P	M	K	N	S	H
●	●	●	●	●	

Arbeitsrichtwerte Seite 513-517

- größtmögliche Vorteile bei Schlicht- und Semischrupp-Operationen speziell unter HPC Bedingungen
- ungleiche Teilung
- kürzeres Baumaß siehe F-UT FS mit 6 Zähnen
- bis 1600 N/mm²
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser N-5

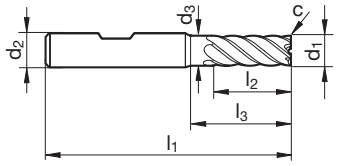
Katalog-Nr. 54580

HPC | N-5 | WN | VHM | TiAlN | h10 | R | HB | 45°

P	M	K	N	S	H
●	●	●	●	●	

Arbeitsrichtwerte Seite 513-517

- größtmögliche Vorteile bei Schlicht- und Semischrupp-Operationen speziell unter HPC Bedingungen
- ungleiche Teilung
- kürzeres Baumaß siehe F-UT FS mit 6 Zähnen
- bis 1600 N/mm²
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser Ti

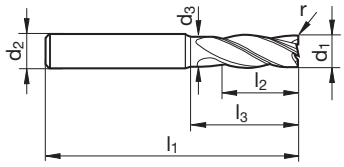
Katalog-Nr. 54560

HPC | Ti | DIN 6527 L | VHM | Al-TiN+ | h10 | R | HA | 35° 38°

P	M	K	N	S	H
●		○		●	

Arbeitsrichtwerte Seite 513-517

- optimierte Schneidkantenausführung für hochfeste Titanlegierungen und Sonderwerkstoffe
- auch als SuperF-UT Typ N mit Eckenradius einsetzbar
- mit definierten Eckradien
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	r	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser Ti

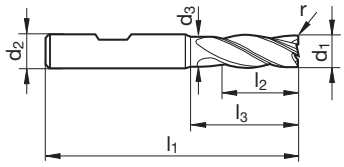
Katalog-Nr. 54561

HPC | Ti | DIN 6527 L | VHM | Al-TiN+ | h10 | R | HB | 35° 38°

P	M	K	N	S	H
●		○		●	

Arbeitsrichtwerte Seite 513-517

- optimierte Schneidkantenausführung für hochfeste Titanlegierungen und Sonderwerkstoffe
- auch als SuperF-UT Typ N mit Eckenradius einsetzbar
- mit definierten Eckradien
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	r	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser VA-X

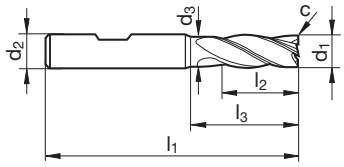
Katalog-Nr. 54576

HPC | VA-X | DIN 6527 K | VHM | AlTiN nano | h10 | R | HB | 36° 38°

P	M	K	N	S	H
	•			•	

Arbeitsrichtwerte Seite 513-517

- angepasste Schneidengeometrie und Beschichtung
- zur Bearbeitung von rost- und säurebeständigen Stählen sowie Nickelbasis-legierungen
- kurze stabile Ausführung
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser VA-X

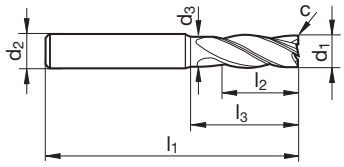
Katalog-Nr. 54558

HPC | VA-X | DIN 6527 L | VHM | AlTiN nano | h10 | R | HA | 36° 38°

P	M	K	N	S	H
	•			•	

Arbeitsrichtwerte Seite 513-517

- angepasste Schneidengeometrie und Beschichtung
- zur Bearbeitung von rost- und säurebeständigen Stählen sowie Nickelbasislegierungen
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser VA-X

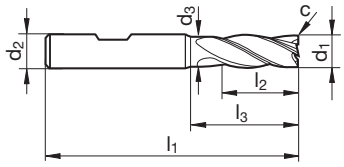
Katalog-Nr. 54559

HPC | VA-X | DIN 6527 L | VHM | AlTiN nano | h10 | R | HB | 36° 38°

P	M	K	N	S	H
	•			•	

Arbeitsrichtwerte Seite 513-517

- angepasste Schneidengeometrie und Beschichtung
- zur Bearbeitung von rost- und säurebeständigen Stählen sowie Nickelbasislegierungen
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser VA-X IK

Katalog-Nr. 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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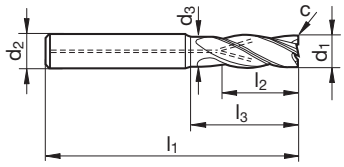
Arbeitsrichtwerte Seite 513-517

- angepasste Schneidengeometrie und Beschichtung
- zur Bearbeitung von rost- und säurebeständigen Stählen sowie Nickelbasis-legierungen
- mit Innenkühlung für hohe Standzeiten und optimale Spanabfuhr
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser VA-X IK

Katalog-Nr. 54575

HPC | VA-X IK | DIN 6527 L | VHM | AlTiN nano | h10 | R | HB | 36° 38°

P	M	K	N	S	H
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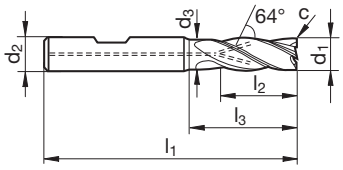
Arbeitsrichtwerte Seite 513-517

- angepasste Schneidengeometrie und Beschichtung
- zur Bearbeitung von rost- und säurebeständigen Stählen sowie Nickelbasis-legierungen
- mit Innenkühlung für hohe Standzeiten und optimale Spanabfuhr
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser VA-XF

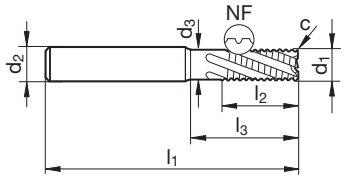
Katalog-Nr. 54568

VA-XF | DIN 6527 L | VHM | AlTiN nano | h10 | R | HA | 36° 38°

P	M	K	N	S	H
	•			•	

Arbeitsrichtwerte Seite 513-517

- angepasste Schneidengeometrie und Beschichtung
- zur Bearbeitung von rost- und säurebeständigen Stählen sowie Nickelbasislegierungen
- gut geeignet auch bei instabilen und schwierigen Maschinenverhältnissen
- erreichbare Oberflächengüte Ra = 2 bis 3 µm
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser VA-XF

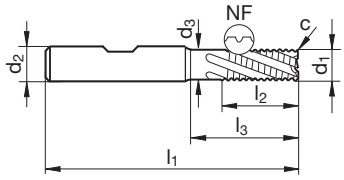
Katalog-Nr. 54569

VA-XF | DIN 6527 L | VHM | AlTiN nano | h10 | R | HB | 36° 38°

P	M	K	N	S	H
	•			•	

Arbeitsrichtwerte Seite 513-517

- angepasste Schneidengeometrie und Beschichtung
- zur Bearbeitung von rost- und säurebeständigen Stählen sowie Nickelbasis-legierungen
- gut geeignet auch bei instabilen und schwierigen Maschinenverhältnissen
- erreichbare Oberflächengüte Ra = 2 bis 3 µm
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser VA

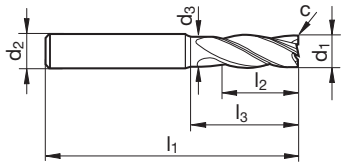
Katalog-Nr. 54556

HPC | VA | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 40° 42°

P	M	K	N	S	H
●	○		○		

Arbeitsrichtwerte Seite 513-517

- angepasste Schneidengeometrie und Beschichtung
- weiche, langspanende Werkstoffe
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser VA

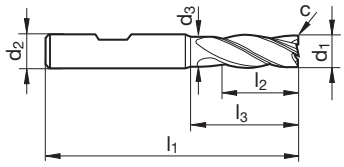
Katalog-Nr. 64557

HPC | VA | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 40° 42°

P	M	K	N	S	H
●	○		○		

Arbeitsrichtwerte Seite 513-517

- angepasste Schneidengeometrie und Beschichtung
- weiche, langspanende Werkstoffe
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser VA-IK

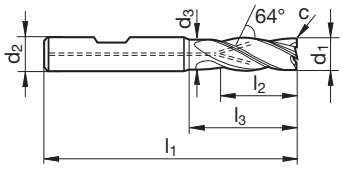
Katalog-Nr. 64567

HPC | VA-IK | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 40° 42°

P	M	K	N	S	H
●	○		○		

Arbeitsrichtwerte Seite 513-517

- angepasste Schneidengeometrie und Beschichtung
- weiche, langspanende Werkstoffe
- mit Innenkühlung für hohe Standzeiten und optimale Spanabfuhr
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser Al

Katalog-Nr. 74554

Al	DIN 6527 L	VHM	blank	h10	R	HA	40° 42°

P	M	K	N	S	H
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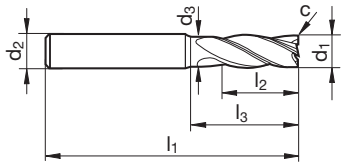
Arbeitsrichtwerte Seite 513-517

- Al und Al-Legierungen sowie NE-Metalle
- hervorragende Oberflächengüte bei Schlichtoperationen
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser Al

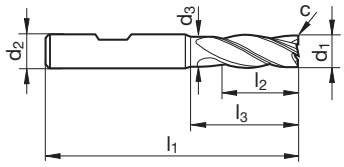
Katalog-Nr. 74555

Al	DIN 6527 L	VHM	blank	h10	R	HB	40° 42°

P	M	K	N	S	H
			•		

Arbeitsrichtwerte Seite 513-517

- Al und Al-Legierungen sowie NE-Metalle
- hervorragende Oberflächengüte bei Schlichtoperationen
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser Al-F

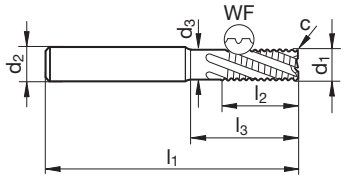
Katalog-Nr. 54570

AL-F | WN | VHM | blank | h10 | R | HA | 30° 29° 31°

P	M	K	N	S	H
			●		

Arbeitsrichtwerte Seite 513-517

- 3-Schneider mit vergrößerten Spanräumen
- gut geeignet auch bei instabilen und schwierigen Maschinenverhältnissen
- erreichbare Oberflächengüte Ra = 2 bis 3 µm
- Al und Al-Legierungen sowie weitere langspanende NE-Metalle
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser Al-F

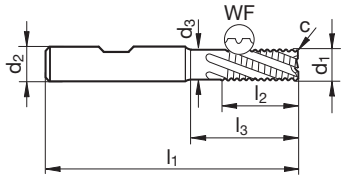
Katalog-Nr. 54571

AL-F | WN | VHM | blank | h10 | R | HB | 30° 29° 31°

P	M	K	N	S	H
			●		

Arbeitsrichtwerte Seite 513-517

- 3-Schneider mit vergrößerten Spanräumen
- gut geeignet auch bei instabilen und schwierigen Maschinenverhältnissen
- erreichbare Oberflächengüte Ra = 2 bis 3 µm
- Al und Al-Legierungen sowie weitere langspanende NE-Metalle
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser Al-3

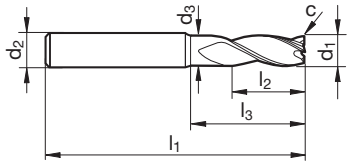
Katalog-Nr. 74552

AL-3 | WN | VHM | blank | h10 | R | HA | 39° 40° 41°

P	M	K	N	S	H
			•		

Arbeitsrichtwerte Seite 513-517

- 3-Schneider mit vergrößerten Spanräumen
- Spiegelschliff für optimale Spanabfuhr
- Al und Al-Legierungen sowie weitere langspanende NE-Metalle
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser Al-3

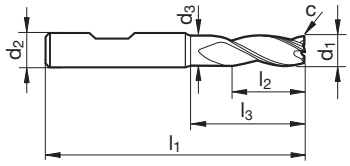
Katalog-Nr. 74553

AL-3 | WN | VHM | blank | h10 | R | HB | 39° 40° 41°

P	M	K	N	S	H
			•		

Arbeitsrichtwerte Seite 513-517

- 3-Schneider mit vergrößerten Spanräumen
- Spiegelschliff für optimale Spanabfuhr
- Al und Al-Legierungen sowie weitere langspanende NE-Metalle
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser H

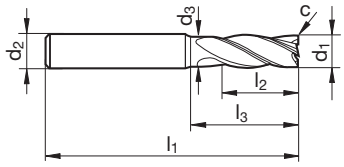
Katalog-Nr. 54572

H | DIN 6527 L | VHM | TiAl-SiN | h10 | R | HA | 40° 42°

P	M	K	N	S	H
●		●			●

Arbeitsrichtwerte Seite 513-517

- Schruppen bis 1xD von Materialien bis 54 HRC
- Schlichten bis 2,5xD von Materialien bis 63 HRC
- hohe Standzeiten durch hochharte Beschichtung
- besonders stabil durch Kernsprung
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser H

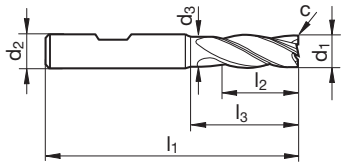
Katalog-Nr. 54573

H	DIN 6527 L	VHM	TiAl-SiN	h10	R	HB	40° 42°

P	M	K	N	S	H
●		●			●

Arbeitsrichtwerte Seite 513-517

- Schruppen bis 1xD von Materialien bis 54 HRC
- Schlichten bis 2,5xD von Materialien bis 63 HRC
- hohe Standzeiten durch hochharte Beschichtung
- besonders stabil durch Kernsprung
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm x 45°	c mm	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser FS

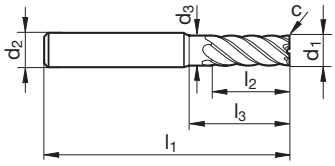
Katalog-Nr. 64558

HPC | FS | WN | VHM | TiAlN | h10 | R | HA | 44° 45° 46°

P	M	K	N	S	H
●	●	●	●	●	●

Arbeitsrichtwerte Seite 513-517

- größtmögliche Vorteile bei Schlicht- und Semischrupp-Operationen speziell unter HPC Bedingungen
- zum Feinstschlichten bis 50 HRC mit überragender Oberflächengüte
- längeres Baumaß siehe F-UT N-5 mit 5 Zähnen
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**

SuperF-UT-Fräser

SuperF-UT-Fräser FS

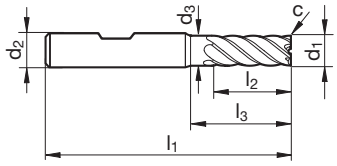
Katalog-Nr. 64559

HPC | FS | WN | VHM | TiAlN | h10 | R | HB | 44° 45° 46°

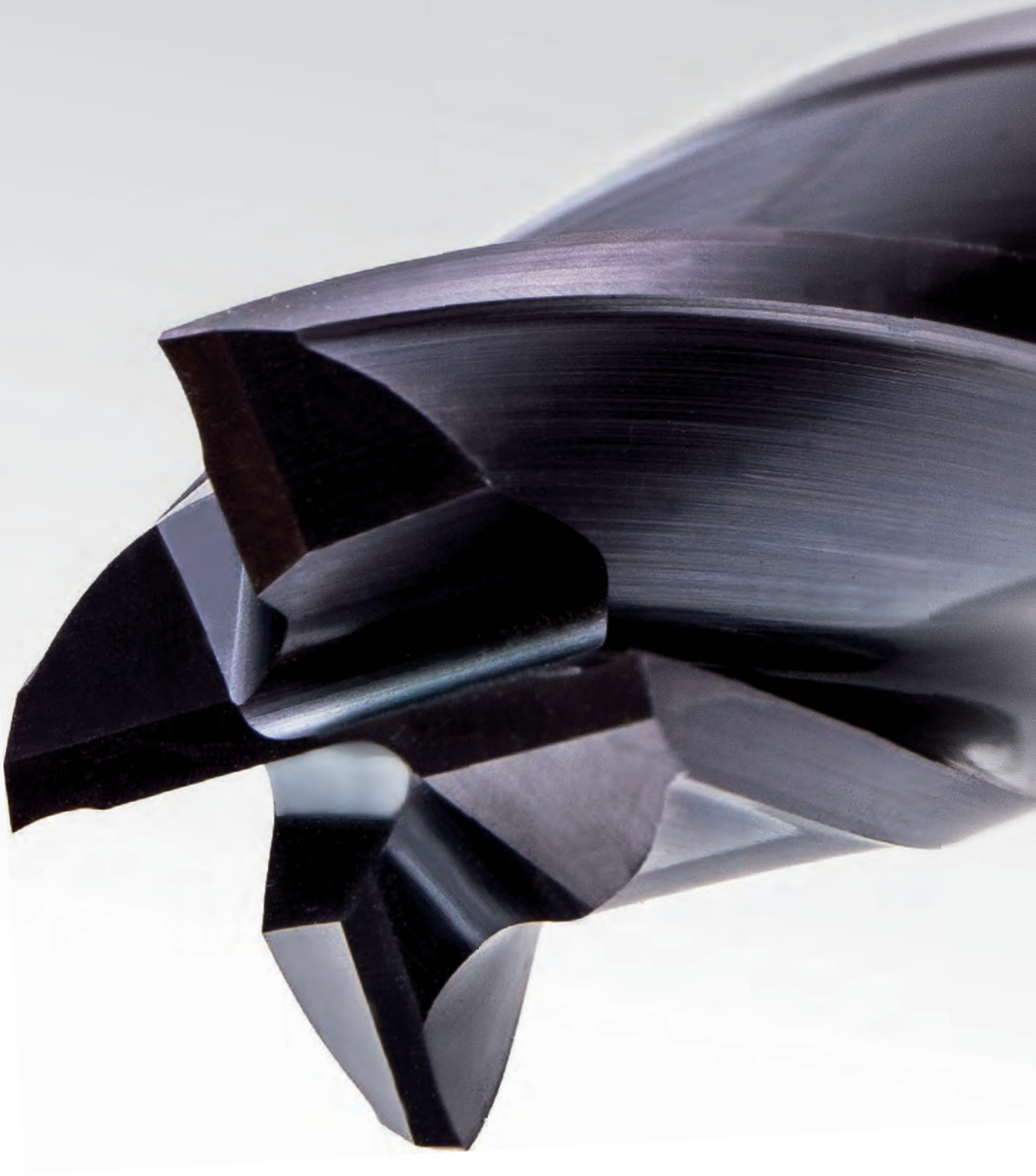
P	M	K	N	S	H
●	●	●	●	●	●

Arbeitsrichtwerte Seite 513-517

- größtmögliche Vorteile bei Schlicht- und Semischrupp-Operationen speziell unter HPC Bedingungen
- zum Feinstschlichten bis 50 HRC mit überragender Oberflächengüte
- längeres Baumaß siehe F-UT N-5 mit 5 Zähnen
- Mikroeckenschutz
- Halsfreischliff
- Zentrumschnitt
- ruhiger, vibrationsfreier Lauf durch ungleiche Drallsteigung



d1 mm	d2 mm	d3 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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**



FRÄSWERKZEUGE

ISO-CODES

P	Stahl, hochlegierter Stahl
M	Rostfreier Stahl
K	Grauguss, Sphäroguss und Temperguss
N	Aluminium und andere Nichteisenmetalle
S	Sonder-, Super- und Titanlegierungen
H	Gehärteter Stahl und Hartguss

Auf den Produktseiten finden Sie zu jedem Werkzeug Empfehlungen zur Eignung für die Anwendungsgruppen bzw. die Angaben von max. Zugfestigkeit und Härte:

● optimal geeignet
○ bedingt geeignet
nicht geeignet

PIKTOGRAMME

SCHNEIDSTOFF	VHM			M42	HSS-E-PM				
	Vollhartmetall								
BESCHICHTUNG	blank	TiAlN	TiAl-SiN	Al-TiN	AlTiN nano	Al-TiN+			
Ø-TOLERANZ	e8	e8/h10	h8	h10	m8	js9	k10	js12	k12
SCHNEIDRICHTUNG	R								
	rechts								
SCHAFTFORM	HA	HB	B						
SPIRALWINKEL	20°	30°	45°	55°					
NORM	DIN 6527K	DIN 6527L	DIN 6528	DIN 327	DIN 844K	DIN 844L	WN		
							Werksnorm		
TYP	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	Typ	Schaft-form	Spiral-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
Bohrnutenfräser Alu														
			●			W	HB	45	VHM	blank	DIN 6527K	3,000 - 20,000	**74204**	584
			●			W	HB	45	VHM	blank	DIN 6527L	3,000 - 20,000	**74202**	585
			●			W	HA	45	VHM	blank	Werksnorm	5,000 - 16,000	**74206**	586
			●			W	HA	45	VHM	blank	Werksnorm	6,000 - 20,000	**74479**	587
Langlochfräser (2-Schneider)														
●	●	●	●			N	HB	30	VHM	blank	DIN 6527K	2,000 - 20,000	**74520**	588
●	●	●	○	●		N	HB	30	VHM	TiAlN	DIN 6527K	2,000 - 20,000	**54520**	589
●	●	●	○	●		N	HA	30	VHM	TiAlN	DIN 6527L	2,000 - 20,000	**54519**	590
●	●	●	●			N	HB	30	VHM	blank	DIN 6527L	2,000 - 20,000	**74521**	591
●	●	●	○	●		N	HB	30	VHM	TiAlN	DIN 6527L	2,000 - 20,000	**54521**	592
●		○	○			N	HA	30	VHM	blank	Werksnorm	3,000 - 20,000	**74404**	593
●		●	○			N	HA	30	VHM	TiAlN	Werksnorm	5,000 - 20,000	**54404**	594
Mini-Bohrnutenfräser (3-Schneider)														
●		●				N	HA/HB	30	VHM	TiAlN	Werksnorm	0,300 - 20,000	**64080**	595
	●			●		NH	HA/HB	45	VHM	TiAlN	Werksnorm	1,000 - 10,000	**64180**	596

Bohrnutenfräser (3-Schneider)

P	M	K	N	S	H	Typ	Schaft-form	Spiral-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
●	●	●	●			N	HB	30	VHM	blank	DIN 6527K	2,000 - 20,000	**74522**	597
●	●	●	○	●		N	HB	30	VHM	TiAlN	DIN 6527K	2,000 - 20,000	**64522**	598
●	●	●	○	●		N	HA	30	VHM	TiAlN	DIN 6527L	2,000 - 20,000	**54523**	599
●	●	●	●			N	HB	30	VHM	blank	DIN 6527L	2,000 - 20,000	**74523**	600
●	●	●	○	●		N	HB	30	VHM	TiAlN	DIN 6527L	2,000 - 20,000	**64523**	601
●		○	○			N	HA	30	VHM	blank	Werksnorm	3,000 - 20,000	**74424**	602
●		●	○			N	HA	30	VHM	TiAlN	Werksnorm	3,000 - 20,000	**54424**	603

Bohrnutenfräser NH (3-Schneider)

P	M	K	N	S	H	Typ	Schaft-form	Spiral-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
●	●	●		○		NH	HB	45	VHM	TiAlN	DIN 6527K	3,000 - 20,000	**64570**	604
●	●	●				NH	HA	45	VHM	blank	DIN 6527L	3,000 - 20,000	**74478**	605
●	●	●		○		NH	HA	45	VHM	TiAlN	DIN 6527L	1,000 - 20,000	**64478**	606
●	●	●		○		NH	HB	45	VHM	TiAlN	DIN 6527L	3,000 - 20,000	**64571**	607

Schaftfräser (4-Schneider)

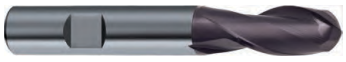
P	M	K	N	S	H	Typ	Schaft-form	Spiral-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
●		●	○			N	HA	30	VHM	TiAlN	DIN 6527L	2,000 - 20,000	**54524**	608
●	●	●	●			N	HB	30	VHM	blank	DIN 6527L	3,000 - 20,000	**74525**	609

P	M	K	N	S	H	Typ	Schaft-form	Spiral-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
Schaftfräser (4-Schneider)														
●	○	●				N	HB	30	**VHM**	TiAlN	DIN 6527L	2,000 - 20,000	**64525**	610
●		●	○			N	HA	30	**VHM**	TiAlN	Werksnorm	3,000 - 20,000	**54444**	611
Schaftfräser mit Eckradius														
●	●	●	○	●		N	HA	30	**VHM**	TiAlN	DIN 6527L	6,000 - 16,000	**54522**	612
●	●	●	○	●		N	HA	30	**VHM**	TiAlN	DIN 6527L	6,000 - 20,000	**54526**	613
●	●	●	○	●	○	NH	HA	45	**VHM**	TiAlN	DIN 6527L	6,000 - 20,000	**54206**	614
Schlichtfräser, mehrschneidig														
●	●	●	○	●	○	NH	HA	45	**VHM**	TiAlN	Werksnorm	3,000 - 20,000	**54205**	615
●	●	●	○	●	○	NH	HB	45	**VHM**	TiAlN	Werksnorm	6,000 - 20,000	**54201**	616
●	●	●	○	●	○	NH	HA	45	**VHM**	TiAlN	Werksnorm	6,000 - 20,000	**54225**	617
●	●	●	○	●	○	NH	HB	45	**VHM**	TiAlN	Werksnorm	6,000 - 20,000	**54221**	618
Hartfräser, mehrschneidig														
		●			●	H	HA	55	**VHM**	TiAlSiN	Werksnorm	3,000 - 20,000	**54207**	619
		●			●	H	HA	55	**VHM**	TiAlSiN	Werksnorm	6,000 - 20,000	**54227**	620

Schruppfräser

P	M	K	N	S	H	Typ	Schaft-form	Spiral-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
●	○	●	○			NF	HB	30	VHM	TiAlN	DIN 6527L	6,000 - 25,000	**54496**	621
●	○	●	○			NF	HB	45	VHM	TiAlN	DIN 6527L	6,000 - 25,000	**54497**	622
			●			WR	HB	30	VHM	blank	DIN 6527L	6,000 - 20,000	**74203**	623
			●			WR	HB	30	VHM	blank	DIN 6527L	6,000 - 20,000	**74303**	624
●	●	●				NRf	HB	30	VHM	TiAlN	DIN 6527L	6,000 - 20,000	**64495**	625
●		●			●	HR	HB	20	VHM	TiAlSiN	DIN 6527L	6,000 - 20,000	**64497**	626

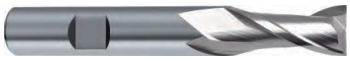
Radiusfräser

●	●	●	○			N	HA	30	VHM	blank	DIN 6527L	3,000 - 20,000	**74543**	627
●	●	●	○	○		N	HA	30	VHM	TiAlN	DIN 6527L	0,500 - 20,000	**54541**	628
														
●	●	●	○	○		N	HB	30	VHM	TiAlN	DIN 6527L	1,000 - 20,000	**64542**	629
●	○	●	○			N	HA	30	VHM	blank	Werksnorm	3,000 - 12,000	**74545**	630
●	●	●	○	○		N	HA	30	VHM	TiAlN	Werksnorm	3,000 - 12,000	**64545**	631
●	●	●	○			N	HA	30	VHM	blank	DIN 6528	4,000 - 16,000	**74531**	632
●	●	●	○	○		N	HA	30	VHM	TiAlN	DIN 6528	4,000 - 20,000	**54531**	633
●	●	●	○	○		N	HB	30	VHM	TiAlN	DIN 6527L	3,000 - 20,000	**64532**	634

P	M	K	N	S	H	Typ	Schaft-form	Spiral-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
Radiusfräser														
●	●	●	○	○		N	HA	30	**VHM**	TiAlN	Werksnorm	3,000 - 12,000	**64535**	635
Kopierfräser mit Torusanschliff														
●	●	●		●	●	H	HA	30	**VHM**	TiAlSiN	Werksnorm	3,000 - 16,000	**54304**	636
●	●	●		●	●	H	HA	30	**VHM**	TiAlSiN	Werksnorm	6,000 - 16,000	**54305**	637
●	●	●	●	○		N	HA	30	**VHM**	TiAlSiN	Werksnorm	2,000 - 12,000	**54302**	638
●	●	●	●	○		N	HA	30	**VHM**	TiAlSiN	Werksnorm	2,000 - 12,000	**54303**	639
Kopierfräser mit Vollradius														
●	●	●		●	●	H	HA	30	**VHM**	TiAlSiN	Werksnorm	0,500 - 16,000	**54306**	640
●	●	●		●	●	H	HA	30	**VHM**	TiAlSiN	Werksnorm	3,000 - 16,000	**54307**	641
●	●	●	●	○		N	HA	30	**VHM**	TiAlSiN	Werksnorm	2,000 - 12,000	**54300**	642
●	●	●	●	○		N	HA	30	**VHM**	TiAlSiN	Werksnorm	2,000 - 12,000	**54301**	643
Pilotfräser														
●	●	●	●	●	●	N	HA	30	**VHM**	AlTiN+	DIN 6527L	1,400 - 12,000	**54700**	644
Entgratfräser 60°														
●	●	●	●	●		SuperAF-60	HA	0	**VHM**	AlTiN	Werksnorm	4,000 - 12,000	**53393**	645

P	M	K	N	S	H	Typ	Schaft-form	Spiral-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
Entgratfräser 60°														
•	•	•	•	•		SuperAF-60	HB	0	**VHM**	AlTiN	Werksnorm	6,000 - 12,000	**53394**	646
Entgratfräser 90°														
•	•	•	•	•		SuperAF-90	HA	0	**VHM**	AlTiN	Werksnorm	4,000 - 12,000	**53395**	647
•	•	•	•	•		SuperAF-90	HB	0	**VHM**	AlTiN	Werksnorm	4,000 - 12,000	**53396**	648
Entgratfräser 120°														
•	•	•	•	•		SuperAF-120	HA	0	**VHM**	AlTiN	Werksnorm	4,000 - 12,000	**53397**	649
•	•	•	•	•		SuperAF-120	HB	0	**VHM**	AlTiN	Werksnorm	6,000 - 12,000	**53398**	650
Vor- und Rückwärtsentgrater 90°														
•	•					SuperAD-90	HA	0	**VHM**	AlTiN nano	Werksnorm	3,000 - 12,000	**52365**	651

Langlochfräser (2-Schneider)

P	M	K	N	S	H	Typ	Schaft-form	Spiral-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
•	•	•	•			N	B	30	M42	blank	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	blank	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	blank	DIN 844L	3,000 - 20,000	**74244**	656
•		•				N	B	30	M42	TiAlN	DIN 844L	4,000 - 20,000	**64671**	657

Bohrnutenfräser (3-Schneider)

•	•	•	•			N	B	30	M42	blank	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	blank	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	blank	DIN 844L	3,000 - 20,000	**74294**	663
•	•	•	•			N	B	30	M42	TiAlN	DIN 844L	4,000 - 18,000	**54294**	662

Mini-Bohrnutenfräser (3-Schneider)

•	•	•	•	•		N	B	30	M42	TiAlN	Werksnorm	3,000 - 10,000	**54080**	664

P	M	K	N	S	H	Typ	Schaft-form	Spiral-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
Mini-Bohrnutenfräser (3-Schneider)														
●	●	●	●	●		N	B	30	M42	TiAlN	Werksnorm	3,000 - 10,000	**54180**	665
Schaftfräser (mehrschneidig)														
●	●	○	○			N	B	30	M42	blank	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	blank	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	blank	Werksnorm	6,000 - 20,000	**74800**	670
Schruppschlichtfräser														
●	●	●				NF	B	30	M42	TiAlN	DIN 844K	6,000 - 25,000	**54815**	671
Schruppfräser (3-Schneider)														
●	●	●				NRf	B	30	HSS-E-PM	blank	DIN 844K	6,000 - 20,000	**74825**	672
●	●	●				NRf	B	30	HSS-E-PM	TiAlN	DIN 844K	6,000 - 20,000	**54825**	673
Schruppfräser (4-Schneider)														
●	●	●				NR	B	30	M42	blank	DIN 844K	6,000 - 30,000	**74816**	674
●	●	●				NR	B	30	M42	TiAlN	DIN 844K	6,000 - 32,000	**54816**	675

Schruppfräser (4-Schneider)

P	M	K	N	S	H	Typ	Schaft-form	Spiral-winkel °	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
•	•	•				NRf	B	30	HSS-E-PM	blank	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	blank	DIN 844L	6,000 - 25,000	**74836**	678
•	•	•				NR	B	30	M42	TiAlN	DIN 844L	6,000 - 25,000	**54836**	679

Radiusfräser

•	•	•	•			N	B	30	M42	TiAlN	DIN 327	2,000 - 20,000	**54275**	680
•	•	•	•			N	B	30	M42	TiAlN	Werksnorm	3,000 - 20,000	**54276**	681

Arbeitsrichtwerte für VHM-Langloch- und Bohrnutenfräser

Vorschubreihen

Werkzeug-Ø mm / Code-Buchst.	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

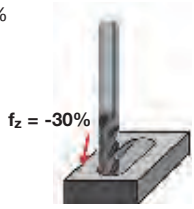
Vorschübe f (mm/Zahn)

a_e = Schnittbreite
a_p = Schnitttiefe

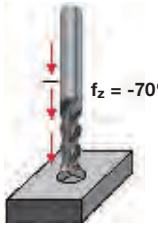
a_e = 1,0 x D

Fett gedruckte Vorschubreihen-Codebuchstaben sind bevorzugt einzusetzen, wenn es die Fräsfreigabe gestattet.

Schräges Eintauchen und Nutenfräsen
Beim schrägen Eintauchen sollte der Vorschub (v_f = mm/min) wie dargestellt reduziert werden. Bei großen Bohrtiefen über 1 x D muss zusätzlich entspant werden. Ebenso beim Übergang in die radiale Bearbeitung.
Nutenfräsen
a_p = Schnitttiefe 0,5 x D = f_z 100%
a_p = Schnitttiefe 1,0 x D = f_z 75%



Bohren
Beim Bohren muss der Vorschub (v_f = mm/min) wie dargestellt reduziert werden. Bei großen Bohrtiefen über 0,5 x D muss zusätzlich entspant werden.



Kühlmittel:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
nur Luftkühlung ⊡

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⊡
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

Nutenfräsen

Katalog-Nr.	74204	74202	74479		74520	74522	54520 54522	64522	74521	74523	74478	
Schneidst.	VHM		VHM		VHM		VHM		VHM		VHM	
DIN	6527 K	6527 L	WN		6527 K		6527 K		6527 L		6527 L	
Typ	W		W		N		N		N		NH	
Seite	584	585	587		588	597	589/612	598	591	600	605	

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
				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	

Arbeitsrichtwerte für VHM-Langloch- und Bohrnutenfräser

Vorschubreihen

Werkzeug-Ø mm / Code-Buchst.	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

Vorschübe f (mm/Zahn)

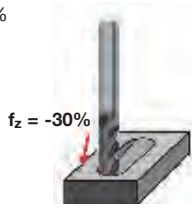
a_e = Schnittbreite
a_p = Schnitttiefe

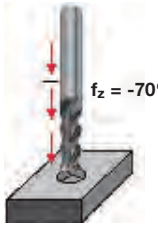
a_e = 1,0 x D

Fett gedruckte Vorschubreihen-Codebuchstaben sind bevorzugt einzusetzen, wenn es die Fräsfreigabe gestattet.

Schräges Eintauchen und Nutenfräsen
Beim schrägen Eintauchen sollte der Vorschub (v_f = mm/min) wie dargestellt reduziert werden. Bei großen Bohrtiefen über 1 x D muss zusätzlich entspant werden. Ebenso beim Übergang in die radiale Bearbeitung.
Nutenfräsen
a_p = Schnitttiefe 0,5 x D = f_z 100%
a_p = Schnitttiefe 1,0 x D = f_z 75%

Bohren
Beim Bohren muss der Vorschub (v_f = mm/min) wie dargestellt reduziert werden. Bei großen Bohrtiefen über 0,5 x D muss zusätzlich entspant werden.





Kühlmittel:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
nur Luftkühlung ⊡

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⊡
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

Nutenfräsen

Katalog-Nr.	54521 54519	54523 64523	64478	64570 64571	74404	74424	54404	54424	64080	64180
Schneidst.	VHM		VHM		VHM		VHM		VHM	VHM
DIN	6527 L		6527 L	6527 K/L	Werksnorm		Werksnorm		Werksnorm	Werksnorm
Typ	N		NH		N		N		N	NH
Seite	592/590	599/601	606	604/607	593	602	594	603	595	596

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
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

Arbeitsrichtwerte für VHM-Bohrnuten- und Schaftfräser

Vorschubreihen

Werkzeug-Ø mm / Code-Buchst.	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

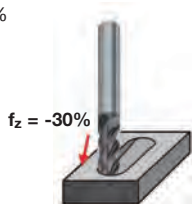
Vorschübe f (mm/Zahn)

a_e = Schnittbreite
a_p = Schnitttiefe

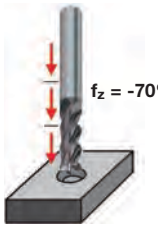
a_e = 0,1 x D

Fett gedruckte Vorschubreihen-Codebuchstaben sind bevorzugt einzusetzen, wenn es die Fräsfreigabe gestattet.

Schräges Eintauchen und Nutenfräsen
Beim schrägen Eintauchen sollte der Vorschub (v_f = mm/min) wie dargestellt reduziert werden. Bei großen Bohrtiefen über 1 x D muss zusätzlich entspant werden. Ebenso beim Übergang in die radiale Bearbeitung.
Nutenfräsen
a_p = Schnitttiefe 0,5 x D = f_z 100%
a_p = Schnitttiefe 1,0 x D = f_z 75%



Bohren
Beim Bohren muss der Vorschub (v_f = mm/min) wie dargestellt reduziert werden. Bei großen Bohrtiefen über 0,5 x D muss zusätzlich entspant werden.



Kühlmittel:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
nur Luftkühlung ⊡

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⊡
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

Schlichtfräsen

Katalog-Nr.	74525	54526	64525 54524	74424	54444	74204	74202	74206	74479
Schneidst.	VHM	VHM		VHM	VHM	VHM		VHM	VHM
DIN	6527 L	6527 L		Werksnorm	Werksnorm	6527 K	6527 L	Werksnorm	Werksnorm
Typ	N	N		N	N	W		W	W
Seite	609	613	610/608	602	611	584	585	586	587

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	v_c m/min	VR-Code
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

Arbeitsrichtwerte für VHM-Bohrnuten- und Schaftfräser

Vorschubreihen

Werkzeug-Ø mm / Code-Buchst.	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

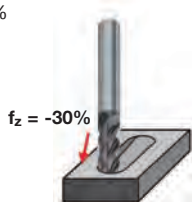
Vorschübe f (mm/Zahn)

a_e = Schnittbreite
a_p = Schnitttiefe

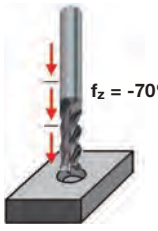
a_e = 0,5 x D

Fett gedruckte Vorschubreihen-Codebuchstaben sind bevorzugt einzusetzen, wenn es die Fräsfreigabe gestattet.

Schräges Eintauchen und Nutenfräsen
Beim schrägen Eintauchen sollte der Vorschub (v_f = mm/min) wie dargestellt reduziert werden. Bei großen Bohrtiefen über 1 x D muss zusätzlich entspant werden. Ebenso beim Übergang in die radiale Bearbeitung.
Nutenfräsen
a_p = Schnitttiefe 0,5 x D = f_z 100%
a_p = Schnitttiefe 1,0 x D = f_z 75%



Bohren
Beim Bohren muss der Vorschub (v_f = mm/min) wie dargestellt reduziert werden. Bei großen Bohrtiefen über 0,5 x D muss zusätzlich entspant werden.



Kühlmittel:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
nur Luftkühlung ⊡

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⊡
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

Schruppfräsen

Katalog-Nr.	74478	64478	64570 64571	74204	74202	74479	74203	74303	54496	54497	64495	64497
Schneidst.	VHM	VHM		VHM		VHM	VHM		VHM		VHM	VHM
DIN	6527 L	6527 L	6527 K/L	6527 K	6527 L	Werksnorm	6527 L		6527 L		6527 L	6527 L
Typ	NH	NH		W		W	WR		NF		NRf	HR
Seite	605	606	604/607	584	585	587	623	624	621	622	625	626

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	VR-Code	VR-Code
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				

Arbeitsrichtwerte für VHM-Bohrnuten-, Schaft- und Radiusfräser

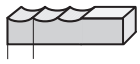
Vorschubreihen

Werkzeug-Ø mm (Code-Buchst.)	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

Vorschübe f (mm/Zahn)

a_e = Schnittbreite
a_p = Schnitttiefe

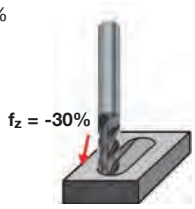
a_e = 0,02 - 0,05 x D



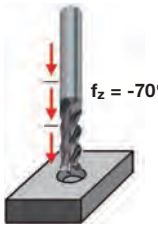
a_e = 0,02 - 0,05 x D

Fett gedruckte Vorschubreihen-Codebuchstaben sind bevorzugt einzusetzen, wenn es die Fräsfreigabe gestattet.

Schräges Eintauchen und Nutenfräsen
Beim schrägen Eintauchen sollte der Vorschub (v_f = mm/min) wie dargestellt reduziert werden. Bei großen Bohrtiefen über 1 x D muss zusätzlich entspant werden. Ebenso beim Übergang in die radiale Bearbeitung.
Nutenfräsen
a_p = Schnitttiefe 0,5 x D = f_z 100%
a_p = Schnitttiefe 1,0 x D = f_z 75%



Bohren
Beim Bohren muss der Vorschub (v_f = mm/min) wie dargestellt reduziert werden. Bei großen Bohrtiefen über 0,5 x D muss zusätzlich entspant werden.



Kühlmittel:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
nur Luftkühlung ⊡

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⊡
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

Feinstschlichten

Kopieren

Katalog-Nr.	54205	54201 54206	54225	54221	54207	54227	74543	74531	64542 54541	64532 54531	74545	64545	64535
Schneidst.	VHM		VHM		VHM	VHM	VHM		VHM		VHM	VHM	
DIN	Werksnorm		Werksnorm		Werksnorm	Werksnorm	6527 L	6528	6527 L	6528	Werksnorm	Werksnorm	
Typ	NH		NH		H	H	N		N		N	N	
Seite	615	616/614	617	618	619	620	627	632	629/628	634/633	630	631	635

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	v_c m/min	VR-Code	v_c m/min	VR-Code
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												

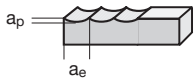
Arbeitsrichtwerte für VHM-Kopierfräser

Vorschubreihen

Werkzeug-Ø mm / Code-Buchst.	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

Vorschübe f (mm/Zahn)

a_e = Schnittbreite
a_p = Schnitttiefe



Wir wenden bei unserer Werkstoffbeispiel-Auswahl die neuen europaweit vereinheitlichten Bezeichnungen für Stahl- und Gusswerkstoffe nach DIN EN an.

Kühlmittel:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
nur Luftkühlung ⊡

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⊡
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

HSC-Bearbeitung

Katalog-Nr.	54300 54301	54302 54303
Schneidst.	VHM	VHM
DIN	Werksnorm	Werksnorm
Typ	N	N
Seite	642/643	638/639

	Ø	2/3	4	6	8	10	12
				Schruppen			
	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
				Schlichten			
	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
v_c m/min	v_c m/min	fz (mm)	fz (mm)	fz (mm)	fz (mm)	fz (mm)	fz (mm)
225	310	0,03	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	0,02	0,04	0,05	0,08	0,1
150	190	0,02	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	0,02	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	0,02	0,04	0,05	0,08	0,1
105	140	0,02	0,02	0,04	0,05	0,08	0,1
225	310	0,03	0,03	0,05	0,06	0,08	0,1
150	190	0,02	0,02	0,04	0,05	0,08	0,1
105	140	0,02	0,02	0,04	0,05	0,08	0,1
150	190	0,02	0,02	0,04	0,05	0,08	0,1
105	140	0,02	0,02	0,04	0,05	0,08	0,1
150	190	0,02	0,02	0,04	0,05	0,08	0,1
105	140	0,02	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	0,02	0,04	0,05	0,06	0,08
300	450	0,04	0,04	0,06	0,08	0,1	0,13
225	310	0,03	0,03	0,05	0,06	0,08	0,1
105	140	0,02	0,02	0,04	0,05	0,08	0,1
80	125	0,02	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	0,05	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	275	0,04	0,04	0,06	0,08	0,1	0,12
65	80	0,02	0,02	0,04	0,05	0,06	0,08
80	125	0,02	0,02	0,04	0,05	0,08	0,1
75	100	0,02	0,02	0,04	0,05	0,06	0,08
375	500	0,04	0,04	0,06	0,08	0,1	0,15
500	900	0,04	0,04	0,06	0,08	0,1	0,15
300	450	0,04	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	0,03	0,05	0,06	0,08	0,1
300	350	0,05	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	325	0,05	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	0,04	0,06	0,08	0,1	0,12
150	225	0,03	0,03	0,05	0,08	0,1	0,12

	Ø	4	6	8	10	12
			Schruppen			
	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
			Schlichten			
	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)	fz (mm)	fz (mm)	fz (mm)	fz (mm)
225	310	0,03	0,05	0,06	0,08	0,1
170	240	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	0,04	0,05	0,08	0,1
190	240	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	0,04	0,05	0,08	0,1
150	190	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	0,05	0,06	0,08	0,1
150	190	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	0,04	0,05	0,08	0,1
105	140	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	0,04	0,05	0,08	0,1
80	125					
80	125					
300	450	0,04	0,06	0,08	0,1	0,13
225	310	0,03	0,05	0,06	0,08	0,1
105	140	0,02	0,04	0,05	0,08	0,1
80	125	0,02	0,04	0,05	0,06	0,08
300	400	0,06	0,1	0,15	0,2	0,25
300	400	0,05	0,08	0,1	0,15	0,2
225	325	0,05	0,08	0,1	0,12	0,15
225	275	0,04	0,06	0,08	0,1	0,12
65	80	0,02	0,04	0,05	0,06	0,08
80	125	0,02	0,04	0,05	0,08	0,1
75	100	0,02	0,04	0,05	0,06	0,08
375	500	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	0,06	0,08	0,1	0,13
225	310	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	0,08	0,12	0,15	0,2
225	300	0,04	0,06	0,1	0,12	0,15
225	325	0,05	0,08	0,1	0,12	0,15
225	275	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	0,05	0,08	0,1	0,12

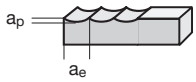
Arbeitsrichtwerte für VHM-Kopierfräser

Vorschubreihen

Werkzeug-Ø mm / Code-Buchst.	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

Vorschübe f (mm/Zahn)

a_e = Schnittbreite
a_p = Schnitttiefe



Wir wenden bei unserer Werkstoffbeispiel-Auswahl die neuen europaweit vereinheitlichten Bezeichnungen für Stahl- und Gusswerkstoffe nach DIN EN an.

Kühlmittel:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
nur Luftkühlung ⊡

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⊡
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

HSC-Bearbeitung

Katalog-Nr.	54306 54307	54304 54305
Schneidst.	VHM	VHM
DIN	Werksnorm	Werksnorm
Typ	N	N
Seite	640/641	636/637

	Ø	4	6	8	10	12	16
				Schruppen			
	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
				Schlichten			
	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

	Ø	6	8	10	12	16
			Schruppen			
	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
			Schlichten			
	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

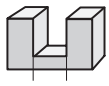
Arbeitsrichtwerte für HSS-Fräser

Vorschubreihen

Werkzeug-Ø mm \ Code-Buchst.	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

Vorschübe f (mm/Zahn)

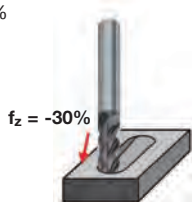
a_e = Schnittbreite
a_p = Schnitttiefe



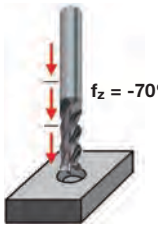
a_e = 1,0 x D

Fett gedruckte Vorschubreihen-Codebuchstaben sind bevorzugt einzusetzen, wenn es die Fräsfreigabe gestattet.

Schräges Eintauchen und Nutenfräsen
Beim schrägen Eintauchen sollte der Vorschub (v_f = mm/min) wie dargestellt reduziert werden. Bei großen Bohrtiefen über 1 x D muss zusätzlich entspant werden. Ebenso beim Übergang in die radiale Bearbeitung.
Nutenfräsen
a_p = Schnitttiefe 0,5 x D = f_z 100%
a_p = Schnitttiefe 1,0 x D = f_z 75%



Bohren
Beim Bohren muss der Vorschub (v_f = mm/min) wie dargestellt reduziert werden. Bei großen Bohrtiefen über 0,5 x D muss zusätzlich entspant werden.



Kühlmittel:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
nur Luftkühlung ⊡

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⊡
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

Nutenfräsen

Katalog-Nr.	74231 74280	74243 74282	54275 64640 64604	64670 64641	54080 54180	74244	74294	64671	54294	54276	54825	54845	74816	54816
Schneidst.	M42		M42			M42		M42			HSS-E-PM		M42	M42
DIN	327 D	844 K	327 D	844 K	WN	844 L		844 L		WN	844 K		844 K	844 K
Typ	N		N			N		N			NRf		NR	NR
Seite	652/658	654/660	680/653/659	655/661	664/665	656	663	657	662	681	673	677	674	675

v_c m/min	VR-Code	v_c m/min	VR-Code	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code	v_c m/min	VR-Code
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											

Arbeitsrichtwerte für HSS-Fräser

Vorschubreihen

Werkzeug-Ø mm / Code-Buchst.	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

Vorschübe f (mm/Zahn)

a_e = Schnittbreite
a_p = Schnitttiefe

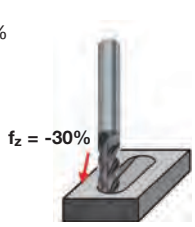
a_e = 0,5 x D

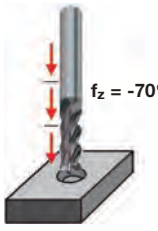
a_e = 1,0 x D

Fett gedruckte Vorschubreihen-Codebuchstaben sind bevorzugt einzusetzen, wenn es die Fräsfreigabe gestattet.

Schräges Eintauchen und Nutenfräsen
Beim schrägen Eintauchen sollte der Vorschub (v_f = mm/min) wie dargestellt reduziert werden.
Bei großen Bohrtiefen über 1 x D muss zusätzlich entspant werden. Ebenso beim Übergang in die radiale Bearbeitung.
Nutenfräsen
a_p = Schnitttiefe 0,5 x D = f_z 100%
a_p = Schnitttiefe 1,0 x D = f_z 75%

Bohren
Beim Bohren muss der Vorschub (v_f = mm/min) wie dargestellt reduziert werden. Bei großen Bohrtiefen über 0,5 x D muss zusätzlich entspant werden.





Kühlmittel:
Schneidöl, hochaktiviert ■
Bohrölemulsion ■
nur Luftkühlung ⊡

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⊡
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

Schlichtfräsen

Schruppfräsen

Katalog-Nr.	74617	74847	64667	54847	74800	74825	74845	54825	54845	74816 74836	54816 54836	54815
Schneidst.	M42	M42	M42		M42	HSS-E-PM		HSS-E-PM		M42	M42	
DIN	844K	844 L	844 K	844 L	WN	844 K		844 K		844 K/L	844 K/L	
Typ	N	N	N		N	NRf		NRf		NR	NF	
Seite	666	668	667	669	670	672	676	673	677	674/678	675/679	671

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	v_c m/min	VR-Code	v_c m/min	VR-Code
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										

VHM Fräser

Bohrnutenfräser Alu

Katalog-Nr. 74204

W | DIN 6527 K | VHM | blank | e8 | R | HB | 45°

P	M	K	N	S	H
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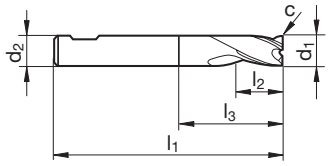
Arbeitsrichtwerte Seite 570

- extra kurz
- Zentrumschnitt



d1 e8 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Bohrnutenfräser Alu

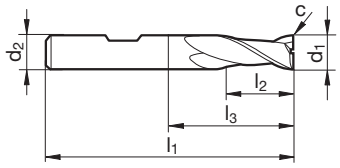
Katalog-Nr. 74202

W | DIN 6527 L | VHM | blank | e8 | R | HB | 45°

P	M	K	N	S	H
			•		

Arbeitsrichtwerte Seite 570

• Zentrumschnitt



d1 e8 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Bohrnutenfräser Alu

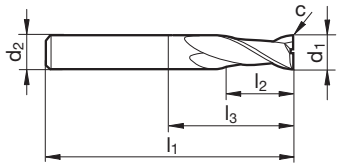
Katalog-Nr. 74206

W | WN | VHM | blank | h10 | R | HA | 45°

P	M	K	N	S	H
			•		

Arbeitsrichtwerte Seite 570

- extra lang
- Zentrumschnitt



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Bohrnutenfräser Alu

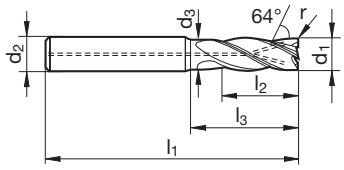
Katalog-Nr. 74479

W | WN | VHM | blank | h10 | R | HA | 45°

P	M	K	N	S	H
			•		

Arbeitsrichtwerte Seite 570

- mit Innenkühlung für hohe Standzeiten und optimale Spanabfuhr
- Zentrumschnitt



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm x 45°	Z	Code-Nr.
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

VHM Fräser

Langlochfräser (2-Schneider)

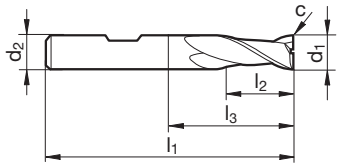
Katalog-Nr. 74520

N | DIN 6527 K | VHM | blank | h10 | R | HB | 30°

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 566

- extra kurz
- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Langlochfräser (2-Schneider)

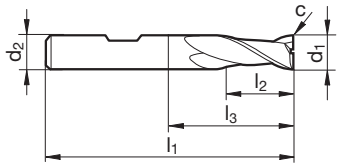
Katalog-Nr. 54520

N | DIN 6527 K | VHM | TiAlN | h10 | R | HB | 30°

P	M	K	N	S	H
●	●	●	○	●	

Arbeitsrichtwerte Seite 566

- extra kurz
- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Langlochfräser (2-Schneider)

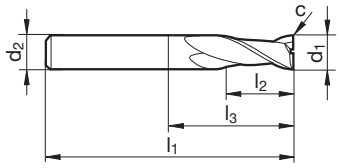
Katalog-Nr. 54519

N | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○	●	

Arbeitsrichtwerte Seite 568

- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Langlochfräser (2-Schneider)

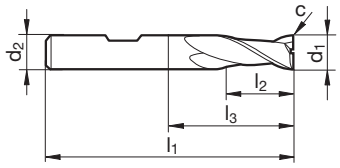
Katalog-Nr. 74521

N | DIN 6527 L | VHM | blank | h10 | R | HB | 30°

P	M	K	N	S	H
•	•	•	•		

Arbeitsrichtwerte Seite 566

- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Langlochfräser (2-Schneider)

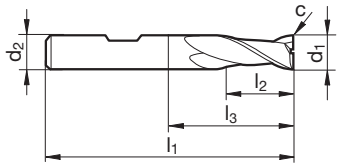
Katalog-Nr. 54521

N | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 30°

P	M	K	N	S	H
●	●	●	○	●	

Arbeitsrichtwerte Seite 568

- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Langlochfräser (2-Schneider)

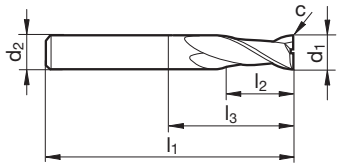
Katalog-Nr. 74404

N | WN | VHM | blank | h10 | R | HA | 30°

P	M	K	N	S	H
●		○	○		

Arbeitsrichtwerte Seite 568

- extra lang
- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Langlochfräser (2-Schneider)

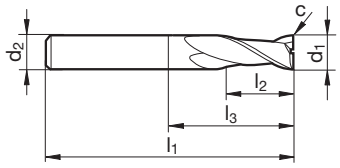
Katalog-Nr. 54404

N | WN | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 568

- extra lang
- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Mini-Bohrnutenfräser (3-Schneider)

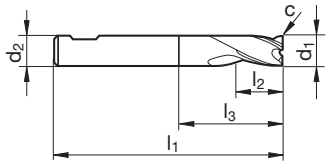
Katalog-Nr. 64080

N | WN | VHM | TiAlN | e8 | R | HA/HB | 30°

P	M	K	N	S	H
•		•			

Arbeitsrichtwerte Seite 568

- extra kurz
- Zentrumschnitt
- optimaler One-Way-Fräser



d1 e8 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Mini-Bohrnutenfräser (3-Schneider)

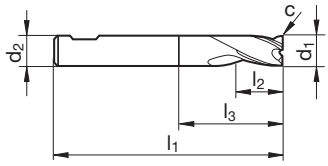
Katalog-Nr. 64180

NH | WN | VHM | TiAlN | e8 | R | HA/HB | 45°

P	M	K	N	S	H
	•			•	

Arbeitsrichtwerte Seite 568

- stabile Ausführung
- Zentrumschnitt
- optimaler One-Way-Fräser



d1 e8 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Bohrnutenfräser (3-Schneider)

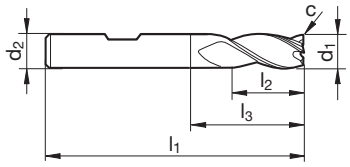
Katalog-Nr. 74522

N | DIN 6527 K | VHM | blank | h10 | R | HB | 30°

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 566

- extra kurz
- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Bohrnutenfräser (3-Schneider)

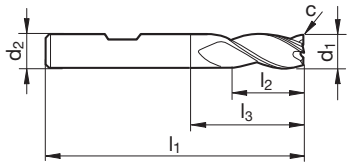
Katalog-Nr. 64522

N | DIN 6527 K | VHM | TiAlN | h10 | R | HB | 30°

P	M	K	N	S	H
●	●	●	○	●	

Arbeitsrichtwerte Seite 566

- extra kurz
- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Bohrnutenfräser (3-Schneider)

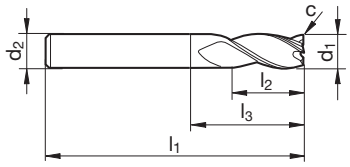
Katalog-Nr. 54523

N | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○	●	

Arbeitsrichtwerte Seite 568

- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Bohrnutenfräser (3-Schneider)

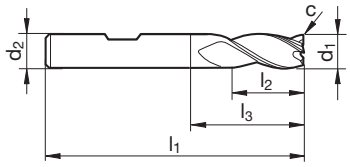
Katalog-Nr. 74523

N | DIN 6527 L | VHM | blank | h10 | R | HB | 30°

P	M	K	N	S	H
•	•	•	•		

Arbeitsrichtwerte Seite 566

- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Bohrnutenfräser (3-Schneider)

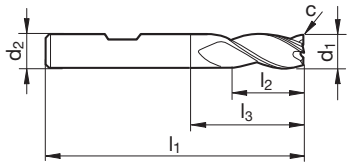
Katalog-Nr. 64523

N | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 30°

P	M	K	N	S	H
●	●	●	○	●	

Arbeitsrichtwerte Seite 568

- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Bohrnutenfräser (3-Schneider)

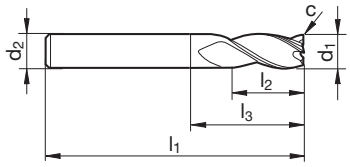
Katalog-Nr. 74424

N | WN | VHM | blank | h10 | R | HA | 30°

P	M	K	N	S	H
●		○	○		

Arbeitsrichtwerte Seite 568

- extra lang
- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Bohrnutenfräser (3-Schneider)

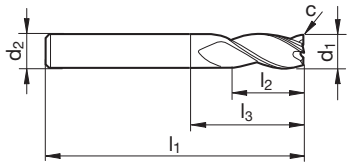
Katalog-Nr. 54424

N | WN | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 568

- extra lang
- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Bohrnutenfräser NH (3-Schneider)

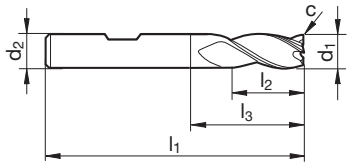
Katalog-Nr. 64570

NH | DIN 6527 K | VHM | TiAlN | h10 | R | HB | 45°

P	M	K	N	S	H
●	●	●		○	

Arbeitsrichtwerte Seite 568

- universeller Hochleistungsfräser
- extra kurz
- Zentrumschnitt



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Bohrnutenfräser NH (3-Schneider)

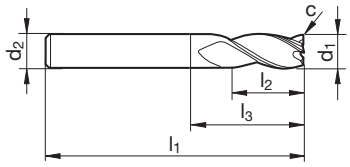
Katalog-Nr. 74478

NH | DIN 6527 L | VHM | blank | h10 | R | HA | 45°

P	M	K	N	S	H
●	●	●			

Arbeitsrichtwerte Seite 566

- hohe Zerspanleistung und große Laufruhe
- universeller Hochleistungsfräser
- Zentrumschnitt



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Bohrnutenfräser NH (3-Schneider)

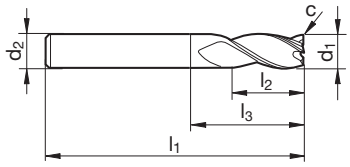
Katalog-Nr. 64478

NH | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 45°

P	M	K	N	S	H
●	●	●		○	

Arbeitsrichtwerte Seite 568

- hohe Zerspanleistung und große Laufruhe
- universeller Hochleistungsfräser
- Zentrumschnitt



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Bohrnutenfräser NH (3-Schneider)

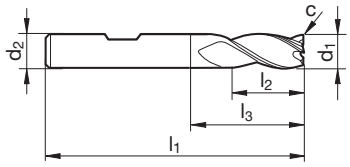
Katalog-Nr. 64571

NH | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 45°

P	M	K	N	S	H
●	●	●		○	

Arbeitsrichtwerte Seite 568

- hohe Zerspanleistung und große Laufruhe
- universeller Hochleistungsfräser
- Zentrumschnitt



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Schaftfräser (4-Schneider)

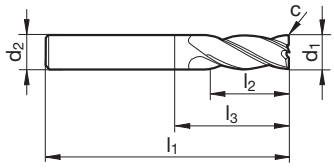
Katalog-Nr. 54524

N | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 570

- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Schaftfräser (4-Schneider)

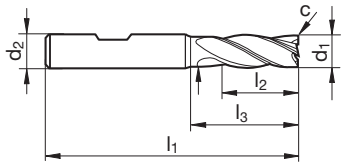
Katalog-Nr. 74525

N | DIN 6527 L | VHM | blank | h10 | R | HB | 30°

P	M	K	N	S	H
•	•	•	•		

Arbeitsrichtwerte Seite 570

- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Schaftfräser (4-Schneider)

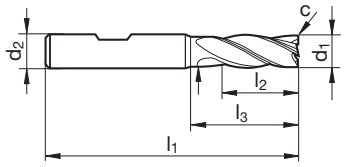
Katalog-Nr. 64525

N | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 30°

P	M	K	N	S	H
●	○	●			

Arbeitsrichtwerte Seite 570

- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Schaftfräser (4-Schneider)

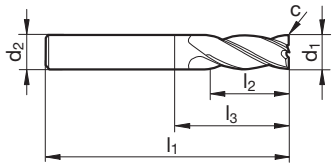
Katalog-Nr. 54444

N | WN | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●		●	○		

Arbeitsrichtwerte Seite 570

- extra lang
- Zentrumschnitt
- universell einsetzbar



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Schaftfräser mit Eckradius

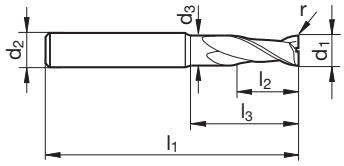
Katalog-Nr. 54522

N | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○	●	

Arbeitsrichtwerte Seite 566

- Halsfreischliff
- Zentrumschnitt



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	r	Z	Code-Nr.
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**

VHM Fräser

Schaftfräser mit Eckradius

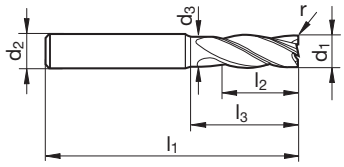
Katalog-Nr. 54526

N | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○	●	

Arbeitsrichtwerte Seite 570

- Halsfreischliff
- Zentrumschnitt



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	r	Z	Code-Nr.
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**

VHM Fräser

Schaftfräser mit Eckradius

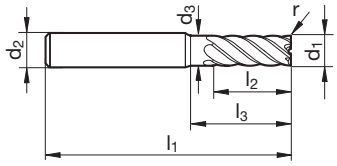
Katalog-Nr. 54206

NH | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 45°

P	M	K	N	S	H
●	●	●	○	●	○

Arbeitsrichtwerte Seite 574

- hervorragende Oberflächengüte bei Schlichtoperationen
- Halsfreischliff
- Zentrumschnitt



d1 h10 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	r	Z	Code-Nr.
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**

VHM Fräser

Schlichtfräser, mehrschneidig

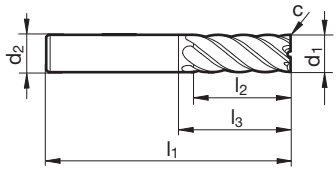
Katalog-Nr. 54205

NH | WN | VHM | TiAlN | h10 | R | HA | 45°

P	M	K	N	S	H
●	●	●	○	●	○

Arbeitsrichtwerte Seite 574

- sehr gute Oberflächengüten
- Zentrumschnitt
- zum Feinschlichten in Werkstoffen bis 50 HRC



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Schlichtfräser, mehrschneidig

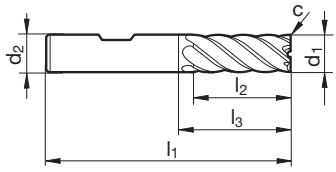
Katalog-Nr. 54201

NH | WN | VHM | TiAlN | h10 | R | HB | 45°

P	M	K	N	S	H
●	●	●	○	●	○

Arbeitsrichtwerte Seite 574

- sehr gute Oberflächengüten
- Zentrumschnitt
- zum Feinschlichten in Werkstoffen bis 50 HRC



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Schlichtfräser, mehrschneidig

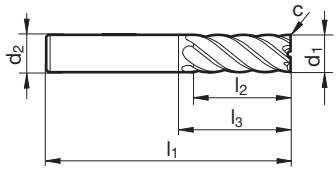
Katalog-Nr. 54225

NH | WN | VHM | TiAlN | h10 | R | HA | 45°

P	M	K	N	S	H
●	●	●	○	●	○

Arbeitsrichtwerte Seite 574

- sehr gute Oberflächengüten
- extra lang
- Zentrumschnitt
- zum Feinschlichten in Werkstoffen bis 50 HRC



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Schlichtfräser, mehrschneidig

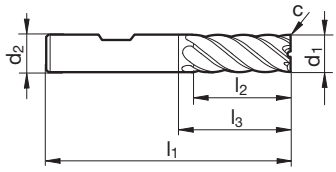
Katalog-Nr. 54221

NH | WN | VHM | TiAlN | h10 | R | HB | 45°

P	M	K	N	S	H
●	●	●	○	●	○

Arbeitsrichtwerte Seite 574

- sehr gute Oberflächengüten
- extra lang
- Zentrumschnitt
- zum Feinschlichten in Werkstoffen bis 50 HRC



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Hartfräser, mehrschneidig

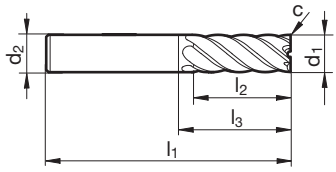
Katalog-Nr. 54207

H | WN | VHM | TiAl-SiN | h10 | R | HA | 55°

P	M	K	N	S	H
		•			•

Arbeitsrichtwerte Seite 574

- sehr gute Oberflächengüten
- Zentrumschnitt
- zum Hartfräsen und Feinschlichten in gehärteten Werkstoffen bis 62 HRC und höher



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Hartfräser, mehrschneidig

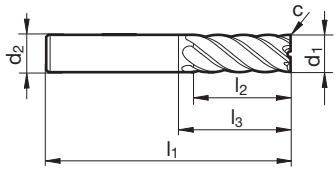
Katalog-Nr. 54227

H | WN | VHM | TiAl-SiN | h10 | R | HA | 55°

P	M	K	N	S	H
		•			•

Arbeitsrichtwerte Seite 574

- sehr gute Oberflächengüten
- extra lang
- Zentrumschnitt
- zum Hartfräsen und Feinschlichten in gehärteten Werkstoffen bis 62 HRC und höher



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Schruppfräser

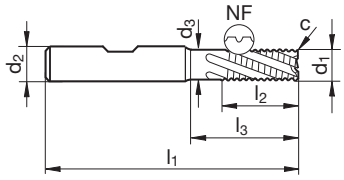
Katalog-Nr. 54496

NF | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 30°

P	M	K	N	S	H
●	○	●	○		

Arbeitsrichtwerte Seite 572

- zum Nuten und Schruppen
- Zentrumschnitt



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Schruppfräser

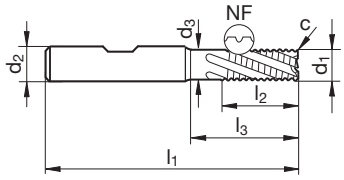
Katalog-Nr. 54497

NF | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 45°

P	M	K	N	S	H
●	○	●	○		

Arbeitsrichtwerte Seite 572

- zum Schrupp-Schlichtfräsen
- Zentrumschnitt



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Schruppfräser

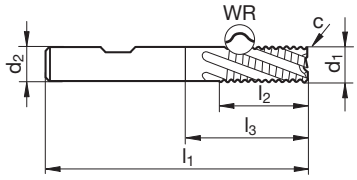
Katalog-Nr. 74203

WR | DIN 6527 L | VHM | blank | h10 | R | HB | 30°

P	M	K	N	S	H
			•		

Arbeitsrichtwerte Seite 572

- hohe Zerspanungsleistung bei Aluminium und NE-Metallen durch grobe Schrupp-Kordel-Verzahnung
- Zentrumschnitt



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Schruppfräser

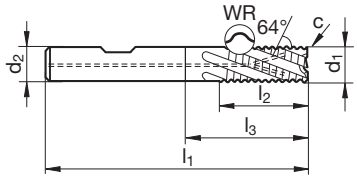
Katalog-Nr. 74303

WR | DIN 6527 L | VHM | blank | h10 | R | HB | 30°

P	M	K	N	S	H
			•		

Arbeitsrichtwerte Seite 572

- mit Innenkühlung für hohe Standzeiten und optimale Spanabfuhr
- hohe Zerspanungsleistung bei Aluminium und NE-Metallen durch grobe Schrupp-Kordel-Verzahnung
- Zentrumschnitt



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Schruppfräser

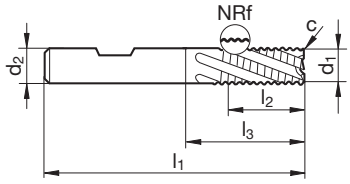
Katalog-Nr. 64495

NRf | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 30°

P	M	K	N	S	H
•	•	•			

Arbeitsrichtwerte Seite 572

- feine Schrupp-Kordel-Verzahnung
- Zentrumschnitt



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Schruppfräser

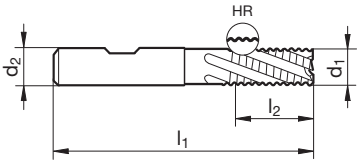
Katalog-Nr. 64497

HR | DIN 6527 L | VHM | TiAl-SiN | h10 | R | HB | 20°

P	M	K	N	S	H
●		●			●

Arbeitsrichtwerte Seite 572

- feine Schrupp-Kordel-Verzahnung
- Spanteilerprofil
- Zentrumschnitt
- für schwer zerspanbare Materialien mit 3° Spanwinkel
- besonders geeignet zum Fräsen von hochfesten Stählen, Stahlguss, Grauguss und gehärteten Stählen bis 56 HRC



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

VHM Fräser

Radiusfräser

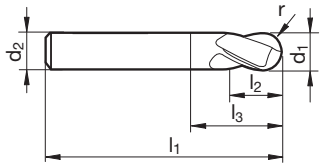
Katalog-Nr. 74543

N | DIN 6527 L | VHM | blank | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○		

Arbeitsrichtwerte Seite 574

- Zentrumschnitt
- Vollradius



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Code-Nr.
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

VHM Fräser

Radiusfräser

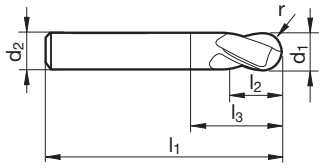
Katalog-Nr. 54541

N | DIN 6527 L | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 574

- Zentrumschnitt
- Vollradius



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Code-Nr.
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

VHM Fräser

Radiusfräser

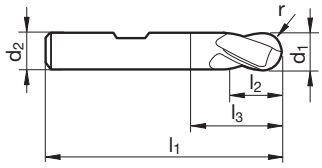
Katalog-Nr. 64542

N | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 30°

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 574

- Zentrumschnitt
- Vollradius



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Code-Nr.
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

VHM Fräser

Radiusfräser

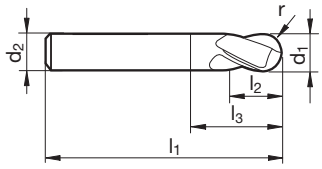
Katalog-Nr. 74545

N | WN | VHM | blank | h10 | R | HA | 30°

P	M	K	N	S	H
●	○	●	○		

Arbeitsrichtwerte Seite 574

- extra lang
- Zentrumschnitt
- Vollradius



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Code-Nr.
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

VHM Fräser

Radiusfräser

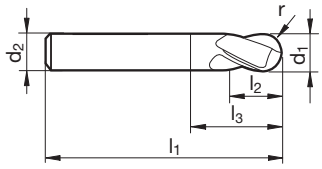
Katalog-Nr. 64545

N | WN | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 574

- extra lang
- Zentrumschnitt
- Vollradius



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Code-Nr.
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

VHM Fräser

Radiusfräser

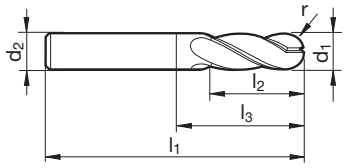
Katalog-Nr. 74531

N | DIN 6528 | VHM | blank | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○		

Arbeitsrichtwerte Seite 574

- Zentrumschnitt
- Vollradius



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Code-Nr.
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

VHM Fräser

Radiusfräser

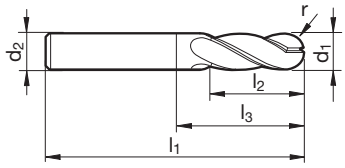
Katalog-Nr. 54531

N | DIN 6528 | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 574

- Zentrumschnitt
- Vollradius



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Code-Nr.
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

VHM Fräser

Radiusfräser

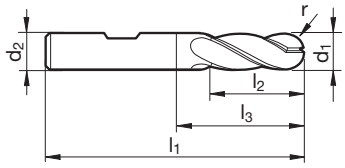
Katalog-Nr. 64532

N | DIN 6527 L | VHM | TiAlN | h10 | R | HB | 30°

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 574

- Zentrumschnitt
- Vollradius



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Code-Nr.
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

VHM Fräser

Radiusfräser

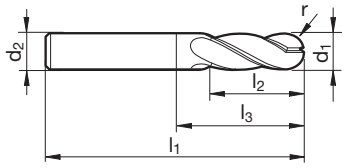
Katalog-Nr. 64535

N | WN | VHM | TiAlN | h10 | R | HA | 30°

P	M	K	N	S	H
●	●	●	○	○	

Arbeitsrichtwerte Seite 574

- extra lang
- Zentrumschnitt
- Vollradius



d1 h10 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	r mm	Z	Code-Nr.
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

VHM Fräser

Kopierfräser mit Torusanschliff

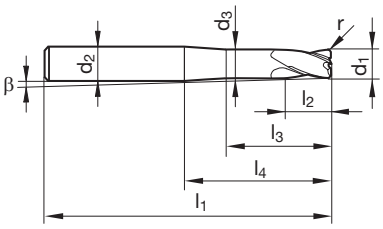
Katalog-Nr. 54304

H | WN | VHM | TiAl-SiN | h8 | R | HA | 30°

P	M	K	N	S	H
●	●	●		●	●

Arbeitsrichtwerte Seite 578

- kurz
- Zentrumschnitt
- für den Formenbau
- hohe Standzeiten durch hochharte Beschichtung



d1 h8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	r mm	β °	Z	Code-Nr.
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

VHM Fräser

Kopierfräser mit Torusanschliff

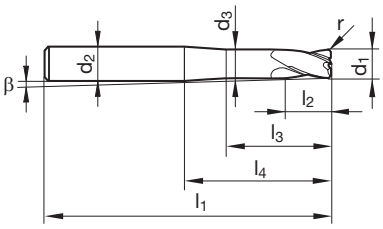
Katalog-Nr. 54305

H | WN | VHM | TiAl-SiN | h8 | R | HA | 30°

P	M	K	N	S	H
●	●	●		●	●

Arbeitsrichtwerte Seite 578

- lang
- Zentrumschnitt
- mit extra langer Reichweite für den Formenbau
- hohe Standzeiten durch hochharte Beschichtung



d1 h8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	r mm	β °	Z	Code-Nr.
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

VHM Fräser

Kopierfräser mit Torusanschliff

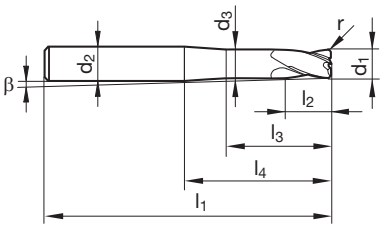
Katalog-Nr. 54302

N | WN | VHM | TiAl-SiN | h8 | R | HA | 30°

P	M	K	N	S	H
●	●	●	●	○	

Arbeitsrichtwerte Seite 576

- zum Schruppen, Schlichten und Feinstschlichten unter HSC-Bedingungen im Gesenk- und Formenbau
- Zentrumschnitt
- geeignet für Werkstoffe von 40 bis 54 HRC
- hohe Standzeiten durch hochharte Beschichtung



d1 h8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	r mm	β °	Z	Code-Nr.
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	20,000	2,000		2	6,000
8,000	8,000	7,600	63,000	7,000	25,000	26,000	2,000		2	8,000
10,000	10,000	9,600	72,000	8,000	28,000	30,000	3,000		2	10,000
12,000	12,000	11,500	83,000	10,000	33,000	35,000	4,000		2	12,000

VHM Fräser

Kopierfräser mit Torusanschliff

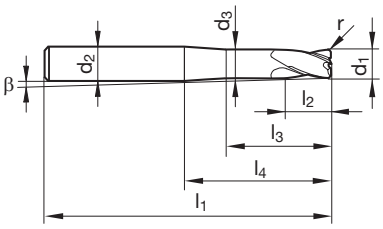
Katalog-Nr. 54303

N | WN | VHM | TiAl-SiN | h8 | R | HA | 30°

P	M	K	N	S	H
●	●	●	●	○	

Arbeitsrichtwerte Seite 576

- mit extra langer Reichweite zum Schruppen, Schlichten und Feinstschlichten unter HSC-Bedingungen im Gesenk- und Formenbau
- Zentrumschnitt
- geeignet für Werkstoffe von 40 bis 54 HRC
- hohe Standzeiten durch hochharte Beschichtung



d1 h8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	r mm	β °	Z	Code-Nr.
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

VHM Fräser

Kopierfräser mit Vollradius

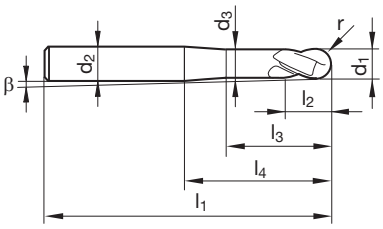
Katalog-Nr. 54306

H | WN | VHM | TiAl-SiN | h8 | R | HA | 30°

P	M	K	N	S	H
●	●	●		●	●

Arbeitsrichtwerte Seite 578

- kurz
- Zentrumschnitt
- hohe Standzeiten durch hochharte Beschichtung



d1 h8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	r mm	β °	Z	Code-Nr.
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

VHM Fräser

Kopierfräser mit Vollradius

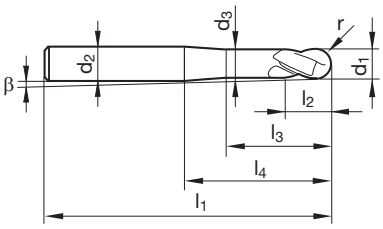
Katalog-Nr. 54307

H | WN | VHM | TiAl-SiN | h8 | R | HA | 30°

P	M	K	N	S	H
●	●	●		●	●

Arbeitsrichtwerte Seite 578

- lang
- Zentrumschnitt
- mit extra langer Reichweite für den Formenbau
- hohe Standzeiten durch hochharte Beschichtung



d1 h8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	r mm	β °	Z	Code-Nr.
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

VHM Fräser

Kopierfräser mit Vollradius

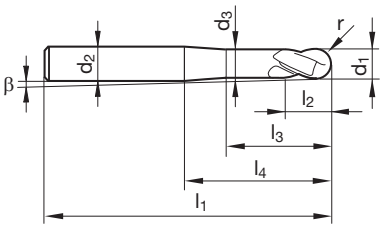
Katalog-Nr. 54300

N | WN | VHM | TiAl-SiN | h8 | R | HA | 30°

P	M	K	N	S	H
●	●	●	●	○	

Arbeitsrichtwerte Seite 576

- kurz
- Zentrumschnitt
- für die Hartbearbeitung bis 54 HRC
- hohe Standzeiten durch hochharte Beschichtung



d1 h8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	r mm	β °	Z	Code-Nr.
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	20,000	3,000		2	6,000
8,000	8,000	7,600	63,000	7,000	25,000	26,000	4,000		2	8,000
10,000	10,000	9,600	72,000	8,000	28,000	30,000	5,000		2	10,000
12,000	12,000	11,500	83,000	10,000	33,000	35,000	6,000		2	12,000

VHM Fräser

Kopierfräser mit Vollradius

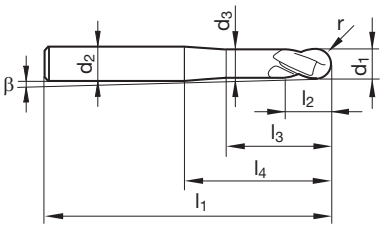
Katalog-Nr. 54301

N | WN | VHM | TiAl-SiN | h8 | R | HA | 30°

P	M	K	N	S	H
●	●	●	●	○	

Arbeitsrichtwerte Seite 576

- lang
- Zentrumschnitt
- mit extra langer Reichweite zum Schruppen, Schlichten und Feinstschlichten unter HSC-Bedingungen im Gesenk- und Formenbau
- hohe Standzeiten durch hochharte Beschichtung



d1 h8 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	l3 mm	l4 mm	r mm	β °	Z	Code-Nr.
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

VHM Fräser

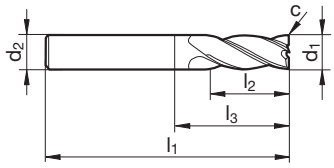
Pilotfräser

Katalog-Nr. 54700

N	DIN 6527 L	VHM	Al-TiN+	m8	R	HA	30°

P	M	K	N	S	H
●	●	●	●	●	●

- zum Anfräsen und Pilotbohren
- als erstes Werkzeug beim Bohren auf schrägen Flächen oder beim Einsatz langer Bohr- und Tiefbohrwerkzeuge für Bohrtiefen > 7xD wie z.B. SuperV-T und SuperV-NX
- Zentrumschnitt



d1 m8 mm	d2 h6 mm	l1 mm	l2 mm	l3 mm	c mm x 45°	Z	Code-Nr.
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

Entgrat- und Faswerkzeuge

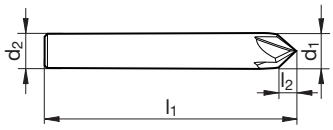
Entgratfräser 60°

Katalog-Nr. 53393

Super AF-60 | WN | VHM | Al-TiN | js9 | R | HA

P	M	K	N	S	H
•	•	•	•	•	

- Entgrat- und Anfasfräser, z.B. zur Bearbeitung des Bohrungseintritts mit Faswinkel 60°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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**

Entgrat- und Faswerkzeuge

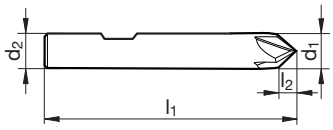
Entgratfräser 60°

Katalog-Nr. 53394

Super AF-60 | WN | VHM | Al-TiN | js9 | R | HB

P	M	K	N	S	H
•	•	•	•	•	

- Entgrat- und Anfasfräser, z.B. zur Bearbeitung des Bohrungseintritts mit Faswinkel 60°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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**

Entgrat- und Faswerkzeuge

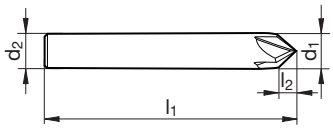
Entgratfräser 90°

Katalog-Nr. 53395

Super AF-90 | WN | VHM | Al-TiN | js9 | R | HA

P	M	K	N	S	H
•	•	•	•	•	

- Entgrat- und Anfasfräser, z.B. zur Bearbeitung des Bohrungseintritts mit Faswinkel 90°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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**

Entgrat- und Faswerkzeuge

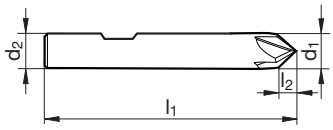
Entgratfräser 90°

Katalog-Nr. 53396

Super AF-90 | WN | VHM | Al-TiN | js9 | R | HB

P	M	K	N	S	H
•	•	•	•	•	

- Entgrat- und Anfasfräser, z.B. zur Bearbeitung des Bohrungseintritts mit Faswinkel 90°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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**

Entgrat- und Faswerkzeuge

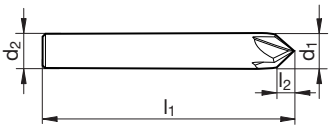
Entgratfräser 120°

Katalog-Nr. 53397

Super AF-120 | WN | VHM | Al-TiN | js9 | R | HA

P	M	K	N	S	H
•	•	•	•	•	

- Entgrat- und Anfasfräser, z.B. zur Bearbeitung des Bohrungseintritts mit Faswinkel 120°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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**

Entgrat- und Faswerkzeuge

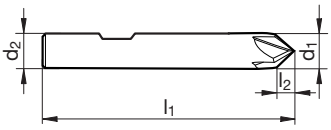
Entgratfräser 120°

Katalog-Nr. 53398

Super AF-120 | WN | VHM | Al-TiN | js9 | R | HB

P	M	K	N	S	H
•	•	•	•	•	

- Entgrat- und Anfasfräser, z.B. zur Bearbeitung des Bohrungseintritts mit Faswinkel 120°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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**

Entgrat- und Faswerkzeuge

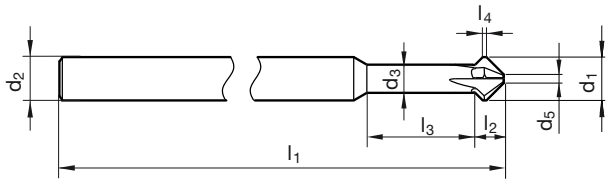
Vor- und Rückwärtsentgrater 90°

Katalog-Nr. 52365

Super AD-90 | WN | VHM | AlTiN nano | R | HA

P	M	K	N	S	H
•	•				

- Entgrat- und Faswerkzeug zur Bearbeitung des Bohrungsein- und -austritts mit Faswinkel 90°
- für die Aufnahme in Hydraulik-Dehnspannfutter und Schrumpffutter
- mit Schaft nach DIN 6535



d1 mm	d2 h6 mm	d3 mm	d5 mm	l1 mm	l2 mm	l3 mm	l4 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Langlochfräser (2-Schneider)

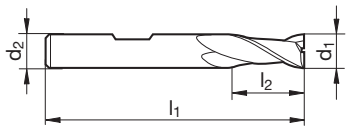
Katalog-Nr. 74231

N | DIN 327 | M42 | blank | e8/h10 | R | B | 30°

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 580

- extra kurz
- Zentrumschnitt
- Werkstoffe bis ca. 1200 N/mm²



d1 mm	Toleranz d1	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Langlochfräser (2-Schneider)

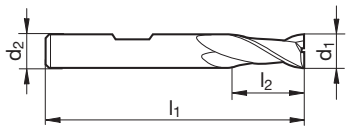
Katalog-Nr. 64640

N	DIN 327	M42	TiAlN	e8/h10	R	B	30°

P	M	K	N	S	H
●	●	●	○		

Arbeitsrichtwerte Seite 580

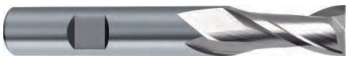
- extra kurz
- Zentrumschnitt
- Werkstoffe bis ca. 1200 N/mm²



d1 mm	Toleranz d1	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Langlochfräser (2-Schneider)



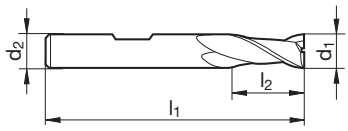
Katalog-Nr. 74243

N	DIN 844K	M42	blank	e8/h10	R	B	30°

P	M	K	N	S	H
•	•	•	•		

Arbeitsrichtwerte Seite 580

- Zentrumschnitt
- Werkstoffe bis ca. 1200 N/mm²



d1 mm	Toleranz d1	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Langlochfräser (2-Schneider)

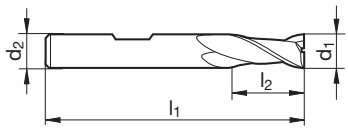
Katalog-Nr. 64670

N | DIN 844K | M42 | TiAlN | e8/h10 | R | B | 30°

P	M	K	N	S	H
●	●	●	○		

Arbeitsrichtwerte Seite 580

- Zentrumschnitt
- Werkstoffe bis ca. 1200 N/mm²



d1 mm	Toleranz d1	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Langlochfräser (2-Schneider)

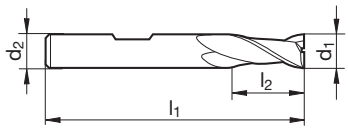
Katalog-Nr. 74244

N	DIN 844L	M42	blank	h10	R	B	30°

P	M	K	N	S	H
•		•	•		

Arbeitsrichtwerte Seite 580

- extra lang
- Zentrumschnitt
- Werkstoffe bis ca. 1000 N/mm²



d1 mm	Toleranz d1	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Langlochfräser (2-Schneider)

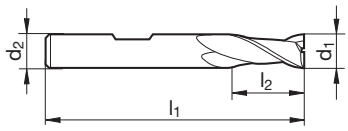
Katalog-Nr. 64671

N | DIN 844L | M42 | TiAlN | h10 | R | B | 30°

P	M	K	N	S	H
●		●			

Arbeitsrichtwerte Seite 580

- extra lang
- Zentrumschnitt
- Werkstoffe bis ca. 1000 N/mm²



d1 mm	Toleranz d1	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Bohrnutenfräser (3-Schneider)

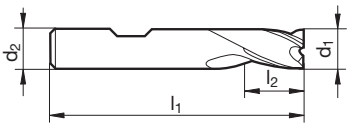
Katalog-Nr. 74280

N | DIN 327 | M42 | blank | e8/h10 | R | B | 30°

P	M	K	N	S	H
•	•	•	•		

Arbeitsrichtwerte Seite 580

- extra kurz
- Zentrumschnitt
- Werkstoffe bis ca. 1200 N/mm²



d1 mm	d1	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Bohrnutenfräser (3-Schneider)

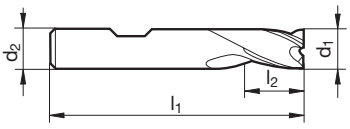
Katalog-Nr. 64604

N | DIN 327 | M42 | TiAlN | e8/h10 | R | B | 30°

P	M	K	N	S	H
●	●	●	○		

Arbeitsrichtwerte Seite 580

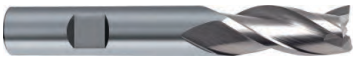
- extra kurz
- Zentrumschnitt
- Werkstoffe bis ca. 1200 N/mm²



d1 mm	d1	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Bohrnutenfräser (3-Schneider)



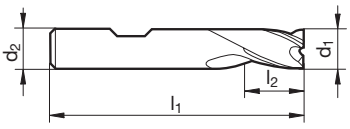
Katalog-Nr. 74282

N | DIN 844K | M42 | blank | e8/h10 | R | B | 30°

P	M	K	N	S	H
•	•	•	•		

Arbeitsrichtwerte Seite 580

- Zentrumschnitt
- Werkstoffe bis ca. 1200 N/mm²



d1 mm	d1	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Bohrnutenfräser (3-Schneider)

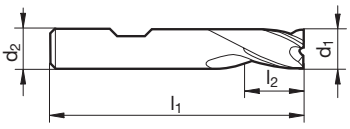
Katalog-Nr. 64641

N | DIN 844K | M42 | TiAlN | e8/h10 | R | B | 30°

P	M	K	N	S	H
●	●	●	○		

Arbeitsrichtwerte Seite 580

- Zentrumschnitt
- Werkstoffe bis ca. 1200 N/mm²



d1 mm	d1	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Bohrnutenfräser (3-Schneider)

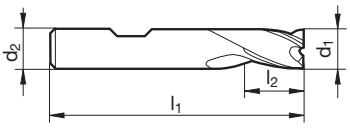
Katalog-Nr. 54294

N | DIN 844L | M42 | TiAlN | e8 | R | B | 30°

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 580

- extra lang
- Zentrumschnitt
- Werkstoffe bis ca. 1000 N/mm²



d1 mm	d1	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Bohrnutenfräser (3-Schneider)

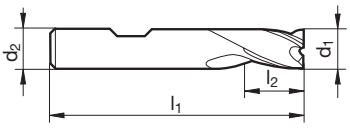
Katalog-Nr. 74294

N	DIN 844L	M42	blank	h10	R	B	30°

P	M	K	N	S	H
●		●	●		

Arbeitsrichtwerte Seite 580

- extra lang
- Zentrumschnitt
- Werkstoffe bis ca. 1000 N/mm²



d1 mm	d1	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Mini-Bohrnutenfräser (3-Schneider)

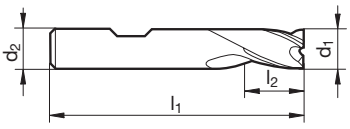
Katalog-Nr. 54080

N | WN | M42 | TiAlN | e8 | R | B | 30°

P	M	K	N	S	H
●	●	●	●	●	

Arbeitsrichtwerte Seite 580

- extra kurz
- Zentrumschnitt
- Werkstoffe bis ca. 1200 N/mm²



d1 e8 mm	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Mini-Bohrnutenfräser (3-Schneider)

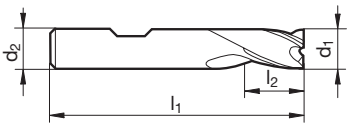
Katalog-Nr. 54180

N | WN | M42 | TiAlN | e8 | R | B | 30°

P	M	K	N	S	H
•	•	•	•	•	

Arbeitsrichtwerte Seite 580

- Zentrumschnitt
- Werkstoffe bis ca. 1200 N/mm²



d1 e8 mm	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Schaftfräser (mehrschneidig)

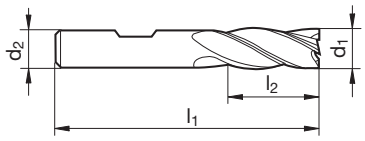
Katalog-Nr. 74617

N | DIN 844K | M42 | blank | k10 | R | B | 30°

P	M	K	N	S	H
●	●	○	○		

Arbeitsrichtwerte Seite 582

- Zentrumschnitt
- Werkstoffe bis ca. 1200 N/mm²



d1 k10 mm	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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	6	25,000

Schnellstahl Fräser

Schaftfräser (mehrschneidig)

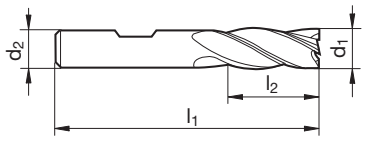
Katalog-Nr. 64667

N | DIN 844K | M42 | TiAlN | k10 | R | B | 30°

P	M	K	N	S	H
●	●	●	○		

Arbeitsrichtwerte Seite 582

- Zentrumschnitt
- Werkstoffe bis ca. 1200 N/mm²



d1 k10 mm	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Schaftfräser (mehrschneidig)

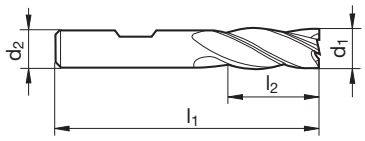
Katalog-Nr. 74847

N | DIN 844L | M42 | blank | k10 | R | B | 30°

P	M	K	N	S	H
●	○	●	○		

Arbeitsrichtwerte Seite 582

- lang
- Zentrumschnitt
- Werkstoffe bis ca. 1000 N/mm²



d1 k10 mm	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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	6	25,000

Schnellstahl Fräser

Schaftfräser (mehrschneidig)

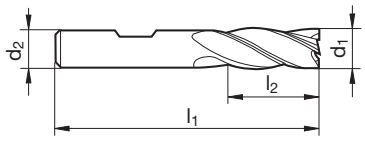
Katalog-Nr. 54847

N | DIN 844L | M42 | TiAlN | k10 | R | B | 30°

P	M	K	N	S	H
●	●	●	○		

Arbeitsrichtwerte Seite 582

- lang
- Zentrumschnitt
- Werkstoffe bis ca. 1000 N/mm²



d1 k10 mm	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Schaftfräser (4-Schneider)

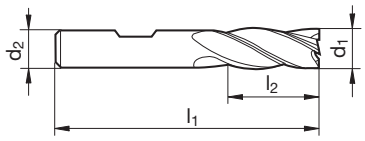
Katalog-Nr. 74800

N | WN | M42 | blank | js12 | R | B | 30°

P	M	K	N	S	H
●	○				

Arbeitsrichtwerte Seite 582

- extra lang
- Zentrumschnitt
- Werkstoffe bis ca. 1000 N/mm²



d1 js12 mm	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Schruppschlichtfräser

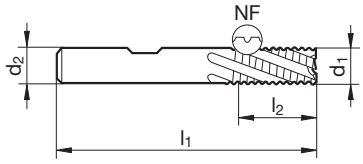
Katalog-Nr. 54815

NF | DIN 844K | M42 | TiAlN | k12 | R | B | 30°

P	M	K	N	S	H
•	•	•			

Arbeitsrichtwerte Seite 582

- mit normaler Schrupp-Schlicht-Verzahnung
- Zentrumschnitt



d1 k12 mm	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Schruppfräser (3-Schneider)

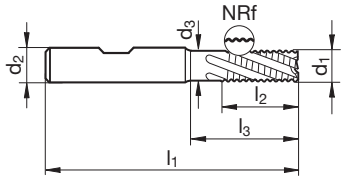
Katalog-Nr. 74825

NRf | DIN 844K | HSS-E-PM | blank | k10 | R | B | 30°

P	M	K	N	S	H
•	•	•			

Arbeitsrichtwerte Seite 582

- feine Schrupp-Kordel-Verzahnung
- Zentrumschnitt
- schwer zerspanbare Werkstoffe bis ca. 1400 N/mm²



d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Schruppfräser (3-Schneider)

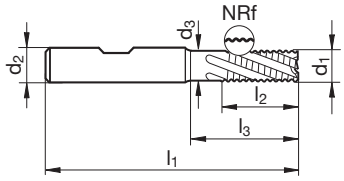
Katalog-Nr. 54825

NRf | DIN 844K | HSS-E-PM | TiAlN | k10 | R | B | 30°

P	M	K	N	S	H
•	•	•			

Arbeitsrichtwerte Seite 582

- feine Schrupp-Kordel-Verzahnung
- Zentrumschnitt
- schwer zerspanbare Werkstoffe bis ca. 1400 N/mm²



d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Schruppfräser (4-Schneider)

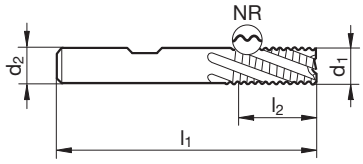
Katalog-Nr. 74816

NR | DIN 844K | M42 | blank | js12 | R | B | 30°

P	M	K	N	S	H
•	•	•			

Arbeitsrichtwerte Seite 582

- grobe Schrupp-Kordel-Verzahnung
- Zentrumschnitt



d1 js12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Schruppfräser (4-Schneider)

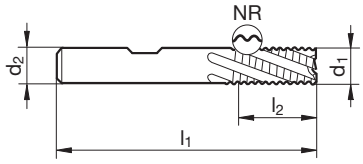
Katalog-Nr. 54816

NR | DIN 844K | M42 | TiAlN | k12 | R | B | 30°

P	M	K	N	S	H
•	•	•			

Arbeitsrichtwerte Seite 582

- grobe Schrupp-Kordel-Verzahnung
- Zentrumschnitt



d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Schruppfräser (4-Schneider)

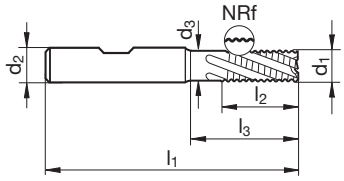
Katalog-Nr. 74845

NRf | DIN 844K | HSS-E-PM | blank | k12 | R | B | 30°

P	M	K	N	S	H
•	•	•			

Arbeitsrichtwerte Seite 582

- feine Schrupp-Kordel-Verzahnung
- Zentrumschnitt
- schwer zerspanbare Werkstoffe bis ca. 1400 N/mm²



d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Schruppfräser (4-Schneider)

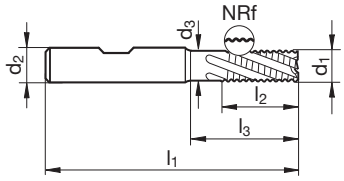
Katalog-Nr. 54845

NRf | DIN 844 K | HSS-E-PM | TiAlN | k12 | R | B | 30°

P	M	K	N	S	H
•	•	•			

Arbeitsrichtwerte Seite 582

- feine Schrupp-Kordel-Verzahnung
- Zentrumschnitt
- schwer zerspanbare Werkstoffe bis ca. 1400 N/mm²



d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Schruppfräser (4-Schneider)

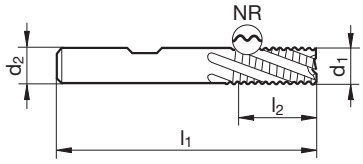
Katalog-Nr. 74836

NR | DIN 844L | M42 | blank | k12 | R | B | 30°

P	M	K	N	S	H
•	•	•			

Arbeitsrichtwerte Seite 582

- grobe Schrupp-Kordel-Verzahnung
- lang
- Zentrumschnitt



d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Schruppfräser (4-Schneider)

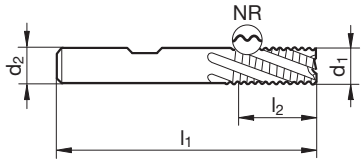
Katalog-Nr. 54836

NR | DIN 844L | M42 | TiAlN | k12 | R | B | 30°

P	M	K	N	S	H
•	•	•			

Arbeitsrichtwerte Seite 582

- grobe Schrupp-Kordel-Verzahnung
- lang
- Zentrumschnitt



d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Radiusfräser

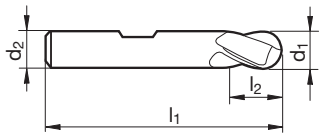
Katalog-Nr. 54275

N | DIN 327 | M42 | TiAlN | e8/h10 | R | B | 30°

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 580

- extra kurz
- Zentrumschnitt
- Vollradius
- Werkstoffe bis ca. 1000 N/mm²



d1 mm	d1	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

Schnellstahl Fräser

Radiusfräser

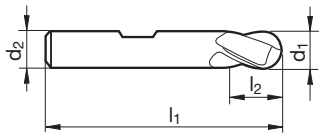
Katalog-Nr. 54276

N | WN | M42 | TiAlN | h10 | R | B | 30°

P	M	K	N	S	H
•	•	•	•		

Arbeitsrichtwerte Seite 580

- Zentrumschnitt
- Vollradius
- Werkstoffe bis ca. 1000 N/mm²



d1 mm	d1	d2 mm	l1 mm	l2 mm	Z	Code-Nr.
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

REIB- UND SENKWERKZEUGE

ISO-CODES

P	Stahl, hochlegierter Stahl
M	Rostfreier Stahl
K	Grauguss, Sphäroguss und Temperguss
N	Aluminium und andere Nichteisenmetalle
S	Sonder-, Super- und Titanlegierungen
H	Gehärteter Stahl und Hartguss

Auf den Produktseiten finden Sie zu jedem Werkzeug Empfehlungen zur Eignung für die Anwendungsgruppen bzw. die Angaben von max. Zugfestigkeit und Härte:

● optimal geeignet
○ bedingt geeignet
nicht geeignet

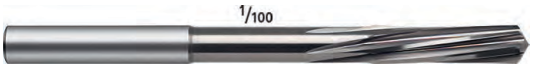
PIKTOGRAMME

SCHNEIDSTOFF	VHM			HM			HSS-E	HSS	
	Vollhartmetall			Hartmetall					
BESCHICHTUNG	blank	nit-riert	dampfbe-handelt		AlTiN nano	Al-TiN	TiN		
Ø-TOLERANZ	H7	+0,005	+0,004 +0,005	js9					
SENKWINKEL	60°	90°							
SCHNEIDRICHTUNG	R								
	rechts								
SCHAFTFORM	HB	Cyl	HA	MK					
SPIRALWINKEL	0°	7°	8°	25°	45°				
NORM	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				
					Werksnorm				
TYP	SuperR-HS-S	SuperR-HS-D	Super AF-60	Super AF-90	Super AF-120	Super AD-90	SuperE-U		
FORM	A	B	C	D					

VHM-Hochleistungs-Reibahlen

P	M	K	N	S	H	Typ	Schneid-richtung	Form	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
•	•	•	•		•	SuperR-HS-S	rechts		VHM	AlTiN nano	Werksnorm	3,000 - 20,000	**72870**	694
•	•	•	•		•	SuperR-HS-D	rechts		VHM	AlTiN nano	Werksnorm	3,000 - 20,000	**72871**	695
•	•	•	•		•	SuperR-HS-S	rechts		VHM	AlTiN nano	Werksnorm	2,970 - 12,030	**72872**	696
•	•	•	•		•	SuperR-HS-D	rechts		VHM	AlTiN nano	Werksnorm	2,970 - 12,030	**72873**	698

NC-Maschinen-Reibahlen

P	M	K	N	S	H	Typ	Schneid-richtung	Form	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
														
•	•	•	•				rechts	B	VHM	blank	Werksnorm	0,980 - 12,050	**72920**	700
•	•	•	•				rechts	B	VHM	blank	Werksnorm	3,000 - 12,000	**72930**	702

HM-Maschinen Reibahlen

P	M	K	N	S	H	Typ	Schneid-richtung	Form	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
•	•	•	•		○		rechts	A	HM	blank	~DIN 8050	5,000 - 20,000	**72868**	704
•	•	•	•		○		rechts	B	HM	blank	~DIN 8050	5,000 - 20,000	**72867**	705
•	•	•	•		○		rechts	A	HM	blank	~DIN 8051	10,000 - 30,000	**72860**	708
•	•	•	•		○		rechts	B	HM	blank	~DIN 8051	6,000 - 32,000	**72859**	709
•	•	•	•		○		rechts	A	HM	blank	~DIN 8093	1,200 - 16,000	**72880**	706
•	•	•	•		○		rechts	B	HM	blank	~DIN 8093	1,000 - 16,000	**72881**	707

P	M	K	N	S	H	Typ	Schneid-richtung	Form	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
NC-Maschinen-Reibahlen														
●	●	●	●	○			rechts	B	HSS-E	blank	DIN 212-3	1,000 - 12,030	**72900**	710
●	●	●	●	○			rechts	B	HSS-E	blank	DIN 212-3	1,500 - 20,000	**72910**	712
Maschinen-Reibahlen														
●	○	●	●	○			rechts	A	HSS-E	blank	DIN 208	8,000 - 35,000	**72660**	718
●	○	●	●	○			rechts	B	HSS-E	blank	DIN 208	5,000 - 50,000	**72670**	719
●	○	●	●	○			rechts	A	HSS-E	blank	DIN 212-2	2,200 - 20,000	**72640**	716
●	○	●	●	○			rechts	B	HSS-E	blank	DIN 212-2	2,200 - 20,000	**72650**	717
●	○	●	●	○			rechts	B	HSS-E	blank	DIN 212-2	0,980 - 12,000	**72654**	714
Maschinen-Schäl-Reibahlen														
●			●				rechts	C	HSS-E	blank	DIN 212-2	4,000 - 13,000	**72690**	720
Maschinen-Nietloch-Reibahlen														
●	○	●	●				rechts		HSS	nitriert	DIN 311	9,500 - 37,000	**72680**	721
Maschinen-Kegel-Reibahlen														
●		●	●				rechts		HSS-E	blank	DIN 2179	2,000 - 12,000	**72741**	722

P	M	K	N	S	H	Typ	Schneid-richtung	Form	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
Hand-Kegel-Reibahlen														
●		●	●				rechts	A	HSS	blank	DIN 9	1,000 - 16,000	**72730**	723
Hand-Reibahlen														
●		●	●				rechts	A	HSS	blank	DIN 206	2,500 - 34,000	**72600**	724
●		●	●				rechts	B	HSS	blank	DIN 206	2,000 - 35,000	**72610**	725
Kegelsenker 60°														
●	●	●	●	○			rechts	C	HSS	TiN	DIN 334	6,300 - 25,000	**62327**	727
●	○	●	●	○			rechts	C	HSS	blank	DIN 334	6,300 - 25,000	**72326**	726
Kegelsenker 90°														
●	○	●	●	●			rechts	A	HSS	dampfbe-handelt	DIN 335	8,000 - 20,000	**72345**	731
●	○	●	○	○			rechts	C	HSS	TiN	DIN 335	4,300 - 31,000	**62347**	729
●	○	●	●	○			rechts	C	HSS	blank	DIN 335	4,300 - 31,000	**72346**	728
●	○	●	●	○			rechts	D	HSS	blank	DIN 335	15,000 - 80,000	**72356**	730

P	M	K	N	S	H	Typ	Schneid-richtung	Form	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite

Kegelsenkersätze 90°

●	○	●	○	○			rechts	C	HSS	TiN	DIN 335		**62399**	733

●	○	●	●	○			rechts	C	HSS	blank	DIN 335		**72399**	732

Flachsenker mit Führungszapfen, Senkung fein

●	○	●	●	○			rechts		HSS	blank	DIN 373	6,000 - 20,000	**72304**	734

Flachsenker mit Führungszapfen, Senkung mittel

●	○	●	●	○			rechts		HSS	blank	DIN 373	6,000 - 18,000	**72305**	735

Entgratfräser 60°

●	●	●	●	●		SuperAF-60	rechts		VHM	AlTiN	Werksnorm	4,000 - 12,000	**53393**	736

●	●	●	●	●		SuperAF-60	rechts		VHM	AlTiN	Werksnorm	6,000 - 12,000	**53394**	737

Entgratfräser 90°

●	●	●	●	●		SuperAF-90	rechts		VHM	AlTiN	Werksnorm	4,000 - 12,000	**53395**	738

P	M	K	N	S	H	Typ	Schneid-richtung	Form	Schneidstoff	Oberfläche	Norm	d1/mm	Katalog-Nr.	Progr. Seite
Entgratfräser 90°														
•	•	•	•	•		SuperAF-90	rechts		VHM	AlTiN	Werksnorm	4,000 - 12,000	**53396**	739
Entgratfräser 120°														
•	•	•	•	•		SuperAF-120	rechts		VHM	AlTiN	Werksnorm	4,000 - 12,000	**53397**	740
•	•	•	•	•		SuperAF-120	rechts		VHM	AlTiN	Werksnorm	6,000 - 12,000	**53398**	741
Vor- und Rückwärtsentgrater 90°														
•	•					SuperAD-90	rechts		VHM	AlTiN nano	Werksnorm	3,000 - 12,000	**52365**	742
Entgratgabeln														
•	•		○			SuperE-U	rechts		VHM	blank	Werksnorm	2,000 - 8,000	**52360**	743

Arbeitsrichtwerte für Reibwerkzeuge

Vorschubreihen

Code-Buchstabe	E	F	G	H	I	J
Werkzeug-Ø mm / Vorschübe f (mm/U)						
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

Werkzeuge mit fett gedruckten Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

Durchmesser	**Untermaße (Richtwerte)**
< 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

Kühlmitteleinsatz:

Schneidöl, hochaktiviert, grenzflächenaktives Schmiermittel mit wirksamen Stoffen (Additiven), die chemisch reagieren und dabei einen besonders haftenden und verschleißmindernden Schmierfilm erzeugen. ■

Bohrölemulsion ■

ohne Schmiermittel □

nur Luftkühlung [!]

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		[!]
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

SuperR-HS Reibahlen

Katalog-Nr.	72870	72871	72872	72873
Schneidstoff	HM/K10		HM/K10	
Oberfläche	AlTiN nano		AlTiN nano	
DIN	WN	WN	WN	WN
Form				
Katalogseite	694	695	696	698

NC-Reibahlen

Katalog-Nr.	72920	72930
Schneidstoff	HM/K10	
Oberfläche	blank	blank
DIN	WN	WN
Form	B	B
Katalogseite	700	702

Maschinen-Reibahlen

Katalog-Nr.	72868	72867	72860	72859	72880	72881
Schneidstoff	HM/K10					
Oberfläche	blank	blank	blank	blank	blank	blank
DIN	8050	8050	8051	8051	8093	8093
Form	A	B	A	B	A	B
Katalogseite	704	705	708	709	706	707

v_c m/min	VR-Code		v_c m/min	VR-Code		v_c m/min	VR-Code		v_c m/min	VR-Code					
185	I-J	I-J	185	I-J	I-J	18	F	F	18	F	F	F	F	F	F
185	I-J	I-J	185	I-J	I-J	16	F	F	16	F	F	F	F	F	F
185	I-J	I-J	185	I-J	I-J	18	F	F	18	F	F	F	F	F	F
185	I-J	I-J	185	I-J	I-J	16	F	F	16	F	F	F	F	F	F
185	I-J	I-J	185	I-J	I-J	18	E	E	18	E	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	16	F	F	16	F	F	F	F	F	F
185	I-J	I-J	185	I-J	I-J	14	E	E	14	E	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	14	E	E	14	E	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	12	E	E	12	E	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	18	E	E	18	E	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	14	E	E	14	E	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	12	E	E	12	E	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	14	E	E	14	E	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	12	E	E	12	E	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	12	E	E	12	E	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	10	E	E	10	E	E	E	E	E	E
90	I-J	I-J	90	I-J	I-J	10	E	E	10	E	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	E
60	H-I	H-I	60	H-I	H-I	6	E	E	6	E	E	E	E	E	E
90	H-I	H-I	90	H-I	H-I	6	E	E	6	E	E	E	E	E	E
100	I-J	I-J	100	I-J	I-J	20	E	E	20	E	E	E	E	E	E
100	I-J	I-J	100	I-J	I-J	18	E	E	18	E	E	E	E	E	E
185	I-J	I-J	185	I-J	I-J	20	E	E	20	E	E	E	E	E	E
90	I-J	I-J	90	I-J	I-J	18	E	E	18	E	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	E
80	I-J	I-J	80	I-J	I-J	16	E	E	16	E	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	E
60	H-I	H-I	60	H-I	H-I	10	E	E	10	E	E	E	E	E	E
						30	G	G	30	G	G	G	G	G	G
						30	G	G	30	G	G	G	G	G	G
						40	F	F	40	F	F	F	F	F	F
						30	F	F	30	F	F	F	F	F	F
120	I-J	I-J	120	I-J	I-J	25	F	F	25	F	F	F	F	F	F
						25	F	F	25	F	F	F	F	F	F
175	I-J	I-J	175	I-J	I-J	35	F	F	35	F	F	F	F	F	F
						30	F	F	30	F	F	F	F	F	F
175	I-J	I-J	175	I-J	I-J	35	F	F	35	F	F	F	F	F	F
175	I-J	I-J	175	I-J	I-J	30	F	F	30	F	F	F	F	F	F
						30	F	F	30	F	F	F	F	F	F
						25	F	F	25	F	F	F	F	F	F
140	I-J	I-J	140	I-J	I-J	20	G	G	20	G	G	G	G	G	G
140	I-J	I-J	140	I-J	I-J	20	G	G	20	G	G	G	G	G	G
80	E	E	80	E	E										
80	E	E	80	E	E										

Arbeitsrichtwerte für Reibwerkzeuge

Vorschubreihen

Code-Buchstabe	E	F	G	H	I	J
Werkzeug-Ø mm / Vorschübe f (mm/U)						
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

Werkzeuge mit fett gedruckten Vorschubreihen-Codebuchstaben sind für die entsprechende Werkstoffgruppe vorrangig einzusetzen.

Durchmesser	**Untermaße (Richtwerte)**
< 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

Kühlmitteleinsatz:

Schneidöl, hochaktiviert, grenzflächenaktives Schmiermittel mit wirksamen Stoffen (Additiven), die chemisch reagieren und dabei einen besonders haftenden und verschleißmindernden Schmierfilm erzeugen. ■

Bohrölemulsion ■

ohne Schmiermittel □

nur Luftkühlung ⊡

Werkstoffgruppe	Werkstoffbeispiele, **neue Bezeichnung** (in Klammern alte Bezeichnung) Fettgedruckte Zahlen = Werkstoff-Nr. nach DIN EN	Zugfestigkeit MPa (N/mm²)	Härte	Kühlmittel
Allgemeine Baustähle	**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		■
Automatenstähle	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		■
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	850-1000		■
Unlegierte Vergütungsstähle	**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		■
Legierte Vergütungsstähle	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	850-≤1000		■
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	1000-1200		■
Unlegierte Einsatzstähle	**1.0301** (C10), **1.1121** C10E (Ck10)	≤750		■
Legierte Einsatzstähle	**1.7043** 38Cr4	850-≤1000		■ ■
	1.5752 15NiCr13 (15NiCr13), **1.7131** 16MnCr5, **1.7264** 20CrMo5	1000-1200		■ ■
Nitrierstähle	**1.8504** 34CrAl6	≥850-≤1000		■
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	>1000-1200		■ ■
Werkzeugstähle	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		■
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	>850-1000		■ ■
Schnellarbeitsstähle	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≥650-1000		■
Federstähle	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤330 HB	■ ■
Gehärtete Stähle	–		≤40-48 HRC	■
			>48-60 HRC	■
Rostfreie Stähle, geschwefelt	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤850		■
austenitisch	**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		■
Gusseisen	**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		■ □
Kugelgraphit- und Temperguss	**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	■
Hartguss	–		≤350 HB	■
Neue Gusswerkstoffe GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)			■ □
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo6			■ □
Neue Gusswerkstoffe 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		■ □
Sonderlegierungen	Nimonic, Inconel, Monel, Hastelloy	≤1200		■
Titan und Titan-Legierungen	**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		■
Aluminium und Al-Legierungen	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		■
Al-Knetlegierungen	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤450		■
Al-Gusslegierungen ≤ 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		■
Magnesium-Legierungen	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤450		⊡
Kupfer, niedriglegiert	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤400		■ ■
Messing, kurzspanend	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		■ ■
langspanend	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		■ ■
Bronzen, kurzspanend	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		■ ■
	2.0790 CuNi18Zn19Pb	>600-850		■
Bronzen, langspanend	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		■
	2.0980 CuAl11Ni, **2.1247** CuBe2	>850-1000		■
Kunststoffe, duroplastisch	Epoxidharz, Resopal, Pertinax, Moltopren		–	□
thermoplastisch	Plexiglas, Hostalen, Novodur, Makralon		–	■ □
Kunststoffe, aramidfaserverstärkt	Kevlar		–	□
glas-/kohlefaserverstärkt	GFK/CFK		–	□

	Nietloch-Reibahlen	NC-Maschinen-Reibahlen		Kegel-Reibahlen	Maschinen-Reibahlen					Maschinen-Schäl-Reib.
Katalog-Nr.	72680	72900	72910	72741	72640	72654	72650	72660	72670	72690
Schneidstoff	HSS	HSS-E		HSS-E	HSS-E					HSS-E
Oberfläche	nitriert	blank	blank	blank	blank	blank	blank	blank	blank	blank
DIN	311	WN	WN	2179	212	212	212	208	208	212
Form		B	B		A	B	B	A	B	C
Katalogseite	721	710	712	722	716	714	717	718	719	720

v_c m/min	VR-Code	v_c m/min	VR-Code		v_c m/min	VR-Code					v_c m/min	VR-Code
14	F	16	F	F	8	F	16	F	F	F	F	16	G
		12	F	F			12	F	F	F	F	12	G
12	F	12	F	F	8	F	12	F	F	F	F	12	G
10	F	10	E	E	8	F	10	E	E	E	E	E	
		14	F	F			14	F	F	F	F	F	14	G
10	E	12	E	E	8	E	12	E	E	E	E	E	12	G
8	E	10	E	E	8	E	10	E	E	E	E	E		
		10	E	E			10	E	E	E	E	E		
6	E	8	E	E	8	E	8	E	E	E	E	E	16	G
12	F	16	F	F	8	E	16	F	F	F	F	F		
		10	E	E			10	E	E	E	E	E		
6	E	8	E	E	6	E	8	E	E	E	E	E		
8	E	10	E	E	6	E	10	E	E	E	E	E		
		8	E	E			8	E	E	E	E	E	10	G
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		10	E	E			10	E	E	E	E	E		
5	E	6	F	F	6	E	6	F	F	F	F	F		
		6	F	F			6	F	F	F	F	F		
4	E	4	F	F	6	E	4	F	F	F	F	F		
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4	E	6	E	E	6	E	6	E	E	E	E	E	5	E
3	E	4	E	E	6	E	4	E	E	E	E	E		
		18	G	G			18	G	G	G	G	G	22	G
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18	G	20	F	F	8	G	20	F	F	F	F	F	20	G
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		18	F	F			18	F	F	F	F	F		
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16	F	18	F	F	8	F	18	F	F	F	F	F		
14	F	14	F	F	8	F	14	F	F	F	F	F		
		12	G	G			12	G	G	G	G	G	12	G
10	F	14	G	G	8	F	14	G	G	G	G	G	14	G

Hartmetall-Reibwerkzeuge

VHM-Hochleistungs-Reibahlen

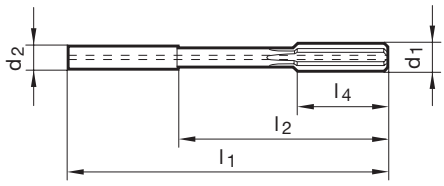
Katalog-Nr. 72870

SuperR-HS-S | WN | VHM | AlTiN nano | H7 | R | HA | 0°

P	M	K	N	S	H
●	●	●	●		●

Arbeitsrichtwerte Seite 690

- mit axialem Kühlkanal zur Bearbeitung von Grundbohrungen
- für höchste Schnittwerte und hochwertige Bohrungsqualitäten
- gerade genutet, mit extrem ungleicher Teilung
- Zylinderschaft Tol. h6 zur Aufnahme in Hydrodehnspann- oder Schrumpffutter
- erhebliche Einsparpotenziale bei den Prozesskosten möglich



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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**

Hartmetall-Reibwerkzeuge

VHM-Hochleistungs-Reibahlen

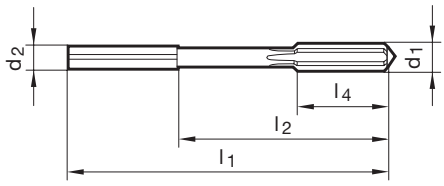
Katalog-Nr. 72871

SuperR-HS-D | WN | VHM | AlTiN nano | H7 | R | HA | 0°

P	M	K	N	S	H
●	●	●	●		●

Arbeitsrichtwerte Seite 690

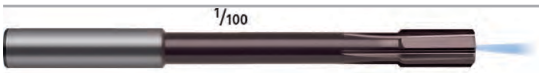
- mit Längsnuten am Schaft zur Kühlmittelzufuhr bei der Bearbeitung von Durchgangsbohrungen
- für höchste Schnittwerte und hochwertige Bohrungsqualitäten
- Zylinderschaft Tol. h6 zur Aufnahme in Hydrodehnspann- oder Schrumpffutter
- erhebliche Einsparpotenziale bei den Prozesskosten möglich



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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**

Hartmetall-Reibwerkzeuge

VHM-Hochleistungs-Reibahlen



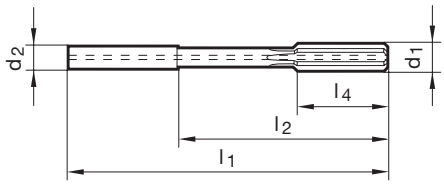
Katalog-Nr. 72872

SuperR-HS-S | WN | VHM | AlTiN nano | +0,005 | R | HA | 0°

P	M	K	N	S	H
●	●	●	●		●

Arbeitsrichtwerte Seite 690

- mit axialem Kühlkanal zur Bearbeitung von Grundbohrungen
- für höchste Schnittwerte und hochwertige Bohrungsqualitäten
- gerade genutet, mit extrem ungleicher Teilung
- Zylinderschaft Tol. h6 zur Aufnahme in Hydrodehnspann- oder Schrumpffutter
- erhebliche Einsparpotenziale bei den Prozesskosten möglich



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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	Code-Nr.
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**

Hartmetall-Reibwerkzeuge

VHM-Hochleistungs-Reibahlen

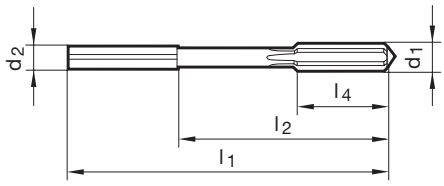
Katalog-Nr. 72873

SuperR-HS-D | WN | VHM | AlTiN nano | +0,005 | R | HA | 0°

P	M	K	N	S	H
●	●	●	●		●

Arbeitsrichtwerte Seite 690

- mit Längsnuten am Schaft zur Kühlmittelzufuhr bei der Bearbeitung von Durchgangsbohrungen
- für höchste Schnittwerte und hochwertige Bohrungsqualitäten
- Zylinderschaft Tol. h6 zur Aufnahme in Hydrodehnspann- oder Schrumpffutter
- erhebliche Einsparpotenziale bei den Prozesskosten möglich

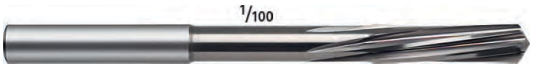


d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
2,970	4,000	68,000	40,000	12,000	4	**2,970**
2,980	4,000	68,000	40,000	12,000	4	**2,980**
2,990	4,000	68,000	40,000	12,000	4	**2,990**
3,000	4,000	68,000	40,000	12,000	4	**3,000**
3,010	4,000	68,000	40,000	12,000	4	**3,010**
3,020	4,000	68,000	40,000	12,000	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	Code-Nr.
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**

Hartmetall-Reibwerkzeuge

NC-Maschinen-Reibahlen



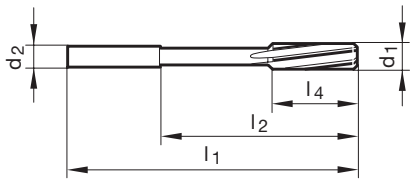
Katalog-Nr. 72920

WN | B | VHM | blank | +0,004 +0,005 | R | HA | 8°

P	M	K	N	S	H
●	●	●	●		

Arbeitsrichtwerte Seite 690

- Ø > 3,75 mm mit extrem ungleicher Teilung
- ≤ Ø 5,50 mm: 0,000/+0,004
- > Ø 5,50 mm: 0,000/+0,005
- Zylinderschaft Tol. h6 zur Aufnahme in Hydrodehnspann- oder Schrumpffutter



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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	Code-Nr.
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**

Hartmetall-Reibwerkzeuge

NC-Maschinen-Reibahlen

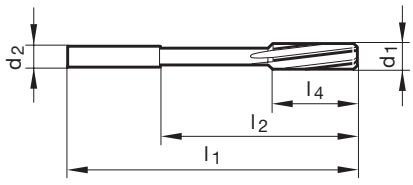
Katalog-Nr. 72930

WN | B | VHM | blank | H7 | R | HA | 8°

P	M	K	N	S	H
•	•	•	•		

Arbeitsrichtwerte Seite 690

- Ø > 3,75 mm mit extrem ungleicher Teilung
- Zylinderschaft Tol. h6 zur Aufnahme in Hydrodehnspann- oder Schrumpffutter



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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	Code-Nr.
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**

Hartmetall-Reibwerkzeuge

HM-Maschinen Reibahlen

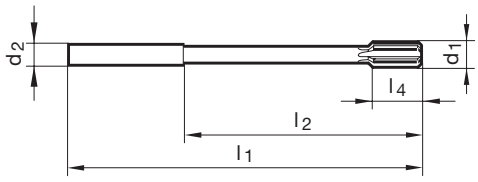
Katalog-Nr. 72868

~DIN 8050	A	HM	blank	H7	R	Cyl	0°

P	M	K	N	S	H
●	●	●	●		○

Arbeitsrichtwerte Seite 690

- > Ø 9,50 mm: HM-Schneidplatten
- ≤ Ø 9,50 mm: VHM
- ≤ Ø 9,50 mm beidseitig mit Vollspitze
- > Ø 9,50 mm beidseitig mit Innenzentrierung
- für Zugfestigkeiten bis max. 1400 N/mm² / 44 HRC



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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**

Hartmetall-Reibwerkzeuge

HM-Maschinen Reibahlen

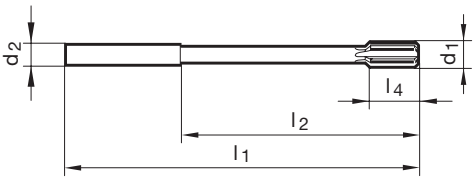
Katalog-Nr. 72867

~DIN 8050 | B | HM | blank | H7 | R | Cyl | 7°

P	M	K	N	S	H
●	●	●	●		○

Arbeitsrichtwerte Seite 690

- > Ø 9,50 mm: HM-Schneidplatten
- ≤ Ø 9,50 mm: VHM
- ≤ Ø 9,50 mm beidseitig mit Vollspitze
- > Ø 9,50 mm beidseitig mit Innenzentrierung
- für Zugfestigkeiten bis max. 1400 N/mm² / 44 HRC
- nur für Durchgangsbohrungen



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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**

Hartmetall-Reibwerkzeuge

HM-Maschinen Reibahlen

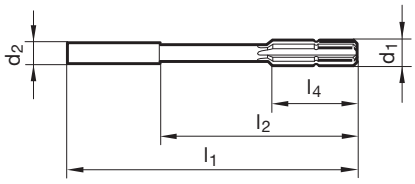
Katalog-Nr. 72880

~DIN 8093 | A | HM | blank | H7 | R | Cyl | 0°

P	M	K	N	S	H
●	●	●	●		○

Arbeitsrichtwerte Seite 690

- ≥ Ø 3,0 mm mit extrem ungleicher Teilung
- ≤ Ø 9,50 mm: VHM
- > Ø 9,50 mm: HM-Schneidplatten
- ≤ Ø 9,50 mm beidseitig mit Vollspitze
- > Ø 9,50 mm beidseitig mit Innenzentrierung
- Schaft-Ø < 10,0 mm Toleranz h9, Schaft-Ø ≥ 10,0 mm Toleranz h6
- für Zugfestigkeiten bis max. 1400 N/mm² / 44 HRC



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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**

Hartmetall-Reibwerkzeuge

HM-Maschinen Reibahlen

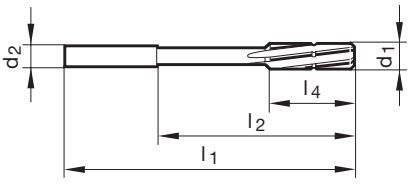
Katalog-Nr. 72881

~DIN 8093 | B | HM | blank | H7 | R | Cyl | 7°

P	M	K	N	S	H
●	●	●	●		○

Arbeitsrichtwerte Seite 690

- ≥ Ø 3,0 mm mit extrem ungleicher Teilung
- ≤ Ø 9,50 mm: VHM
- > Ø 9,50 mm: HM-Schneidplatten
- ≤ Ø 9,50 mm beidseitig mit Vollspitze
- > Ø 9,50 mm beidseitig mit Innenzentrierung
- Schaft-Ø < 10,0 mm Toleranz h9, Schaft-Ø ≥ 10,0 mm Toleranz h6
- für Zugfestigkeiten bis max. 1400 N/mm² / 44 HRC
- nur für Durchgangsbohrungen



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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**

Hartmetall-Reibwerkzeuge

HM-Maschinen Reibahlen

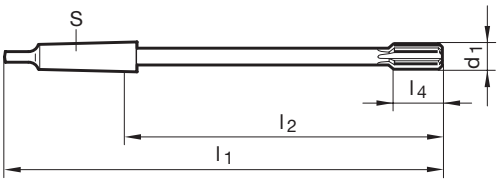
Katalog-Nr. 72860

~DIN 8051 | A | HM | blank | H7 | R | MK | 0°

P	M	K	N	S	H
●	●	●	●		○

Arbeitsrichtwerte Seite 690

- ≤ Ø 9,50 mm: VHM
- > Ø 9,50 mm: HM-Schneidplatten
- ≤ Ø 9,50 mm Schneidseite mit Vollspitze
- Schaftseite mit Innenzentrierung
- > Ø 9,50 mm beidseitig mit Innenzentrierung
- für Zugfestigkeiten bis max. 1400 N/mm² / 44 HRC



d1 mm	S	l1 mm	l4 mm	l4 mm	Z	Code-Nr.
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	8	**24,000**
25,000	MK-3	268,000	174,000	22,000	8	**25,000**
28,000	MK-3	277,000	183,000	25,000	8	**28,000**
30,000	MK-3	281,000	187,000	25,000	8	**30,000**

Hartmetall-Reibwerkzeuge

HM-Maschinen Reibahlen

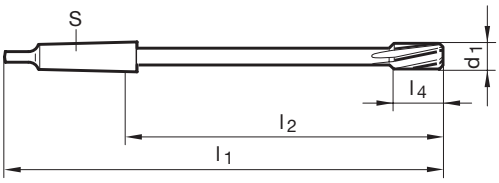
Katalog-Nr. 72859

~DIN 8051 | B | HM | blank | H7 | R | MK | 7°

P	M	K	N	S	H
●	●	●	●		○

Arbeitsrichtwerte Seite 690

- ≤ Ø 9,50 mm: VHM
- > Ø 9,50 mm: HM-Schneidplatten
- ≤ Ø 9,50 mm Schneidseite mit Vollspitze
- Schaftseite mit Innenzentrierung
- > Ø 9,50 mm beidseitig mit Innenzentrierung
- für Zugfestigkeiten bis max. 1400 N/mm² / 44 HRC



d1 mm	S	l1 mm	l4 mm	l4 mm	Z	Code-Nr.
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**

HSS-Reibwerkzeuge

NC-Maschinen-Reibahlen

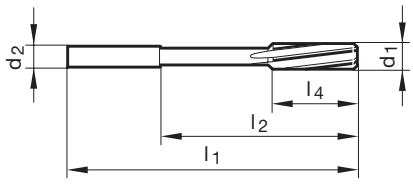
Katalog-Nr. 72900

DIN 212-3 | B | HSS-E | blank | +0,004 +0,005 | R | HA | 7°

P	M	K	N	S	H
●	●	●	●	○	

Arbeitsrichtwerte Seite 692

- > Ø 3,75 mm beidseitig mit Innenzentrierung
- ≤ Ø 3,75 mm beidseitig mit Vollspitze
- ≤ Ø 5,50 mm: 0,000/+0,004
- > Ø 5,50 mm: 0,000/+0,005
- Zylinderschaft Tol. h6 zur Aufnahme in Hydrodehnspann- oder Schrumpffutter
- für Zugfestigkeiten bis max. 1000 N/mm²



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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	Code-Nr.
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**

HSS-Reibwerkzeuge

NC-Maschinen-Reibahlen

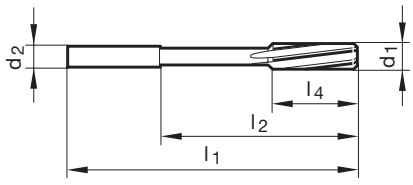
Katalog-Nr. 72910

DIN 212-3 | B | HSS-E | blank | H7 | R | HA | 7°

P	M	K	N	S	H
●	●	●	●	○	

Arbeitsrichtwerte Seite 692

- ≤ Ø 3,75 mm beidseitig mit Vollspitze
- > Ø 3,75 mm beidseitig mit Innenzentrierung
- Zylinderschaft Tol. h6 zur Aufnahme in Hydrodehnspann- oder Schrumpffutter
- für Zugfestigkeiten bis max. 1000 N/mm²



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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	Code-Nr.
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**

HSS-Reibwerkzeuge

Maschinen-Reibahlen

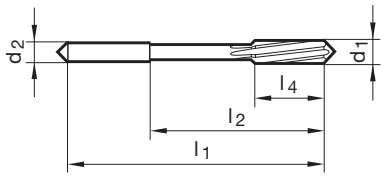
Katalog-Nr. 72654

DIN 212-2 | B | HSS-E | blank | +0,004 +0,005 | R | Cyl | 7°

P	M	K	N	S	H
●	○	●	●	○	

Arbeitsrichtwerte Seite 692

- für Serienfertigung auf Automaten
- mit kurzem Anschnitt, ≤ Ø 3,75 mm: 15°, > Ø 3,75 mm: 45°
- Ø um 0,01 mm steigend
- ≤ Ø 3,75 mm beidseitig mit Vollspitze
- > Ø 3,75 mm beidseitig mit Innenzentrierung
- Herstelltoleranz:
- Ø 0,95 - 5,50 mm: 0,000/+0,004
- Ø 5,51 - 12,05 mm: 0,000/+0,005
- für Zugfestigkeiten bis max. 1000 N/mm²



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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	34,000	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	34,000	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	Code-Nr.
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	43,000	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	63,000	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**

HSS-Reibwerkzeuge

Maschinen-Reibahlen

Katalog-Nr. 72640

DIN 212-2 | A | HSS-E | blank | H7 | R | Cyl | 0°

P	M	K	N	S	H
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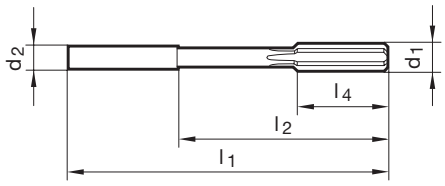
Arbeitsrichtwerte Seite 692

- ≤ Ø 3,75 mm beidseitig mit Vollspitze
- > Ø 3,75 mm beidseitig mit Innenzentrierung
- für Zugfestigkeiten bis max. 1000 N/mm²



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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	8	**14,000**
15,000	12,500	162,000	117,000	50,000	8	**15,000**
16,000	12,500	170,000	125,000	52,000	8	**16,000**
17,000	14,000	175,000	130,000	54,000	8	**17,000**
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**

HSS-Reibwerkzeuge

Maschinen-Reibahlen

Katalog-Nr. 72650

DIN 212-2 | B | HSS-E | blank | H7 | R | Cyl | 7°

P	M	K	N	S	H
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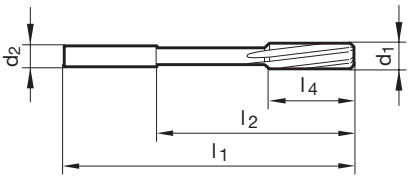
Arbeitsrichtwerte Seite 692

- > Ø 3,75 mm beidseitig mit Innenzentrierung
- ≤ Ø 3,75 mm beidseitig mit Vollspitze
- für Zugfestigkeiten bis max. 1000 N/mm²
- nur für Durchgangsbohrungen



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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	8	**14,000**
15,000	12,500	162,000	117,000	50,000	8	**15,000**
16,000	12,500	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**
20,000	16,000	195,000	147,000	60,000	8	**20,000**

HSS-Reibwerkzeuge

Maschinen-Reibahlen

Katalog-Nr. 72660

DIN 208 | A | HSS-E | blank | H7 | R | MK | 0°

P	M	K	N	S	H
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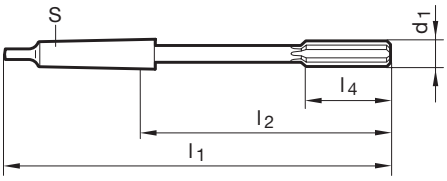
Arbeitsrichtwerte Seite 692

- Ø 3,00 mm Schneidseite mit Vollspitze, Schaftseite mit Innenzentrierung
- ≤ Ø 4,00 mm nach Werksnorm
- > Ø 3,00 mm beidseitig mit Innenzentrierung
- für Zugfestigkeiten bis max. 1000 N/mm²



d1 mm	S	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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**

HSS-Reibwerkzeuge

Maschinen-Reibahlen

Katalog-Nr. 72670

DIN 208 | B | HSS-E | blank | H7 | R | MK | 7°

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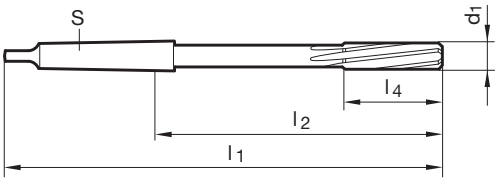
Arbeitsrichtwerte Seite 692

- ≤ Ø 4,00 mm nach Werksnorm
- > Ø 3,00 mm beidseitig mit Innenzentrierung
- Ø 3,00 mm Schneidseite mit Vollspitze, Schaftseite mit Innenzentrierung
- für Zugfestigkeiten bis max. 1000 N/mm²
- nur für Durchgangsbohrungen



d1 mm	S	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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**

HSS-Reibwerkzeuge

Maschinen-Schäl-Reibahlen

Katalog-Nr. 72690

DIN 212-2 | C | HSS-E | blank | H7 | R | Cyl | 45°

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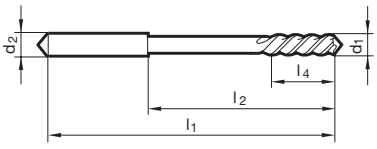
Arbeitsrichtwerte Seite 692

- mit konischem Anschnitt, ca. 1/6 der Schneidenlänge
- die besondere Geometrie des Werkzeugs erfordert eine Reibaufmaßvergrößerung der Bohrung um 50 bis 100 %
- > Ø 3,75 mm beidseitig mit Innenzentrierung
- ≤ Ø 3,75 mm beidseitig mit Vollspitze
- der Vorschub sollte 50 % höher gewählt werden als bei allen anderen Reibahlen
- für Zugfestigkeiten bis max. 1000 N/mm²



d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm	Z	Code-Nr.
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**

HSS-Reibwerkzeuge

Maschinen-Nietloch-Reibahlen

Katalog-Nr. 72680

DIN 311 | HSS | nit-riert | R | MK | 25°

P	M	K	N	S	H
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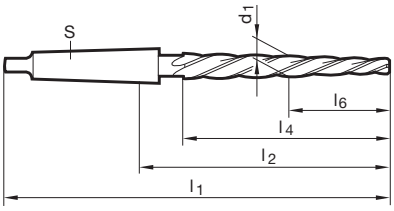
Arbeitsrichtwerte Seite 692

- mit langem, konischen Anschnitt 1:10
- korrigiert den Bohrungsversatz übereinander angeordneter Blechteile auf den gewünschten Bohrungs-Ø (z. B. zum Vernieten oder Verschrauben)
- Herstellungstoleranz k11
- beidseitig mit Innenzentrierung
- Anschnittkegel 1:10
- Hauptanwendungsgebiet:
- Stahlbau, Kessel- und Behälterbau, Schiffbau
- Werkzeug mit hoher Zerspanungsleistung
- auch für langsam laufende Handbohrmaschinen
- für Zugfestigkeiten bis max. 1000 N/mm²



d1 mm	S	l1 mm	l2 mm	l4 mm	l6 mm	Z	Code-Nr.
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**

HSS-Reibwerkzeuge

Maschinen-Kegel-Reibahlen

Katalog-Nr. 72741

DIN 2179 | HSS-E | blank | R | 45°

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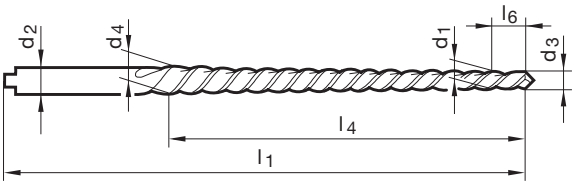
Arbeitsrichtwerte Seite 692

- für Einzelfertigung und Reparaturen
- mit Kegel 1:50 zum Reiben von Bohrungen für Kegelstifte nach DIN 1, 258, 7977 und 7978
- > Ø 4,00 mm beidseitig mit Innenzentrierung
- ≤ Ø 4,00 mm beidseitig mit Vollspitze
- Vorbohren: zylindrisch
- ≤ Ø 1,50 mm nach Werksnorm
- mit Mitnehmer nach DIN 1809
- für Zugfestigkeiten bis max. 1000 N/mm²



d1 mm	d2 mm	d3 mm	d4 mm	l1 mm	l4 mm	l6 mm	Z	**Code-Nr.**
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**

HSS-Reibwerkzeuge

Hand-Kegel-Reibahlen

Katalog-Nr. 72730

DIN 9 | A | HSS | blank | R | 0°

P	M	K	N	S	H
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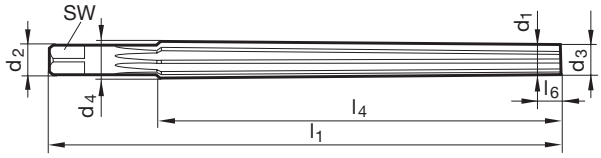
- für Einzelfertigung und Reparaturen
- mit Kegel 1:50 zum Reiben von Bohrungen für Kegelstifte
- mit Vierkant nach DIN 10
- Ø 3,50; 4,50; 5,50; 6,50; 7,00; 9,00; 13,00 und 14,00 mm nach Werksnorm
- Vorbohren: zylindrisch
- für Zugfestigkeiten bis max. 900 N/mm²



d1 mm	d2 mm	d3 mm	d4 mm	l1 mm	l4 mm	l6 mm	SW mm	Z	Code-Nr.
1,000	3,150	0,900	1,460	46,000	28,000	5,000	2,4	3	**1,000**
1,200	3,150	1,100	1,740	50,000	32,000	5,000	2,4	3	**1,200**
2,000	3,150	1,900	2,860	68,000	48,000	5,000	2,4	3	**2,000**
3,000	4,000	2,900	4,060	80,000	58,000	5,000	3,0	5	**3,000**
4,000	5,000	3,900	5,260	93,000	68,000	5,000	3,8	5	**4,000**
5,000	6,300	4,900	6,360	100,000	73,000	5,000	4,9	5	**5,000**
6,000	8,000	5,900	8,000	135,000	105,000	5,000	6,2	6	**6,000**
8,000	10,000	7,900	10,800	180,000	145,000	5,000	8,0	6	**8,000**
10,000	12,500	9,900	13,400	215,000	175,000	5,000	10,0	6	**10,000**
12,000	14,000	11,800	16,000	255,000	210,000	10,000	11,0	8	**12,000**
16,000	18,000	15,800	20,400	280,000	230,000	10,000	14,5	8	**16,000**

HSS-Reibwerkzeuge

Hand-Reibahlen

Katalog-Nr. 72600

DIN 206 | A | HSS | blank | H7 | R | Cyl | 0°

P	M	K	N	S	H
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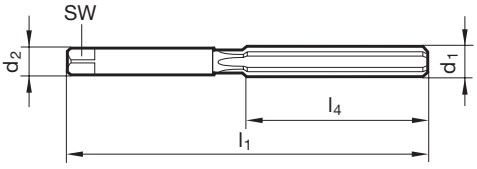
- für Einzelfertigung und Reparaturen
- mit langem, konischem Anschnitt, ca. 1/3 der Schneidenlänge
- wegen der Anschnittlänge für Grundlöcher nicht geeignet
- mit Vierkant nach DIN 10
- ≤ Ø 3,75 mm beidseitig mit Vollspitze
- > Ø 3,75 mm beidseitig mit Innenzentrierung
- ≤ 1,75 mm nach Werksnorm
- für Zugfestigkeiten bis max. 900 N/mm²



d1 mm	d2 mm	l1 mm	l4 mm	SW mm	Z	Code-Nr.
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**

HSS-Reibwerkzeuge

Hand-Reibahlen

Katalog-Nr. 72610

DIN 206 | B | HSS | blank | H7 | R | Cyl | 7°

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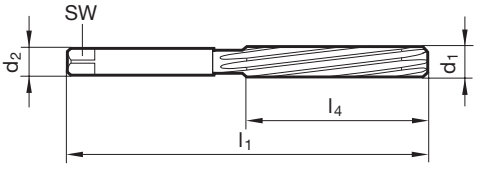
- für Einzelfertigung und Reparaturen
- mit langem, konischem Anschnitt, ca. 1/3 der Schneidenlänge
- für Bohrungen mit unterbrochenem Schnitt, z. B. geteilte Werkstücke, Wandunterbrechungen, Querbohrungen u. ä.
- mit Vierkant nach DIN 10
- ≤ Ø 3,75 mm beidseitig mit Vollspitze
- > Ø 3,75 mm beidseitig mit Innenzentrierung
- ≤ 1,75 mm nach Werksnorm
- für Zugfestigkeiten bis max. 900 N/mm²



d1 mm	d2 mm	l1 mm	l4 mm	SW mm	Z	Code-Nr.
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**

HSS-Senker

Kegelsenker 60°

Katalog-Nr. 72326

DIN 334 | C | HSS | blank | 60° | R | Cyl

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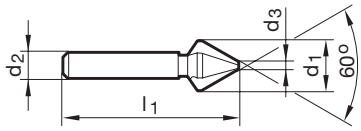
- universelles Entgrat- und Senkwerkzeug z. B. für Gewindekernlöcher
- radial hinterschliffen
- dreischneidig



d1 mm	d2 mm	d3 mm	l1 mm	Z	Code-Nr.
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**

HSS-Senker

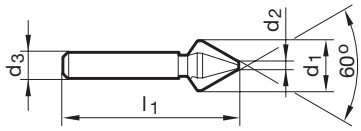
Kegelsenker 60°

Katalog-Nr. 62327

DIN 334 | C | HSS | TiN | 60° | R | Cyl

P	M	K	N	S	H
●	●	●	●	○	

- universelles Entgrat- und Senkwerkzeug z. B. für Gewindekernlöcher
- radial hinterschliffen
- dreischneidig



d1 mm	d2 mm	d3 mm	l1 mm	Z	Code-Nr.
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**

HSS-Senker

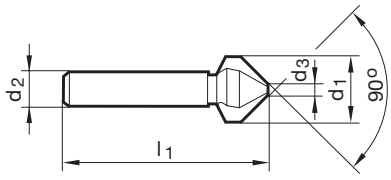
Kegelsenker 90°

Katalog-Nr. 72346

DIN 335 | C | HSS | blank | 90° | R | Cyl

P	M	K	N	S	H
●	○	●	●	○	

- universelles Entgrat- und Senkwerkzeug z. B. für Gewindekernlöcher
- radial hinterschliffen
- dreischneidig



d1 mm	d2 mm	d3 mm	l1 mm	Z	Code-Nr.
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**

HSS-Senker

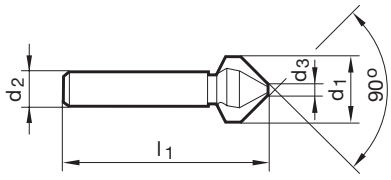
Kegelsenker 90°

Katalog-Nr. 62347

DIN 335 | C | HSS | TiN | 90° | R | Cyl

P	M	K	N	S	H
●	○	●	○	○	

- universelles Entgrat- und Senkwerkzeug z. B. für Gewindekernlöcher
- radial hinterschliffen
- dreischneidig



d1 mm	d2 mm	d3 mm	l1 mm	Z	Code-Nr.
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**

HSS-Senker

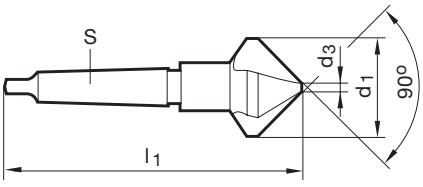
Kegelsenker 90°

Katalog-Nr. 72356

DIN 335 | D | HSS | blank | 90° | R | MK

P	M	K	N	S	H
●	○	●	●	○	

- universelles Entgrat- und Senkwerkzeug z. B. für Gewindekernlöcher
- radial hinterschliffen
- dreischneidig

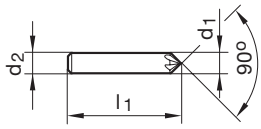


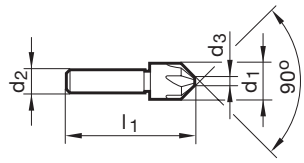
d1 mm	S	d3 mm	l1 mm	Z	Code-Nr.
15,000	MK-1	3,200	85,000	3	**15,000**
19,000	MK-2	3,500	100,000	3	**19,000**
20,500	MK-2	3,500	100,000	3	**20,500**
25,000	MK-2	3,800	106,000	3	**25,000**
30,000	MK-2	4,200	112,000	3	**30,000**
31,000	MK-2	4,200	112,000	3	**31,000**
34,000	MK-2	4,500	118,000	3	**34,000**
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**

HSS-Senker

Kegelsenker 90°

Katalog-Nr. 72345





DIN 335 | A | HSS | dampfbehandelt | 90° | R | Cyl

P	M	K	N	S	H
●	○	●	●	●	

- gerade genutet
- mehrschneidig
- mit Flächenhinterschliff

d1 mm	d2 mm	d3 mm	l1 mm	Z	Code-Nr.
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**

HSS-Senker

Kegelsenkersätze 90°

DIN 335 | C | HSS | blank | 90° | R | Cyl

P	M	K	N	S	H
●	○	●	●	○	

- Satz in Kassette, bestehend aus Katalog-Nr. 72346 Ø 6,3 / 8,3 / 10,4 / 12,4 / 16,5 / 20,5 mm
- universelles Entgrat- und Senkwerkzeug z. B. für Gewindekernlöcher
- radial hinterschliffen
- dreischneidig

Katalog-Nr. 72399

Code-Nr.	d1 mm	Stück pro Satz
8,000	**6,30-20,50**	6

HSS-Senker

Kegelsenkersätze 90°

DIN 335 | C | HSS | TiN | 90° | R | Cyl

P	M	K	N	S	H
●	○	●	○	○	

- Satz in Kassette, bestehend aus Katalog-Nr. 62347 Ø 6,3 / 8,3 / 10,4 / 12,4 / 16,5 / 20,5 mm
- universelles Entgrat- und Senkwerkzeug z. B. für Gewindekernlöcher
- radial hinterschliffen
- dreischneidig

Katalog-Nr. 62399

Code-Nr.	d1 mm	Stück pro Satz
8,000	**6,30-20,50**	6

HSS-Senker

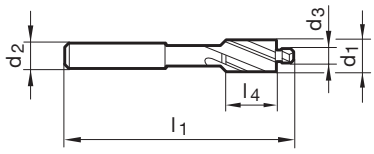
Flachsenker mit Führungszapfen, Senkung fein

Katalog-Nr. 72304

DIN 373 | HSS | blank | R | Cyl

P	M	K	N	S	H
●	○	●	●	○	

- mit festem Führungszapfen
- drallgenutet mit Rechtsdrall



d1 mm	d2 mm	d3 mm	l1 mm	l4 mm	G	Z	Code-Nr.
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**

HSS-Senker

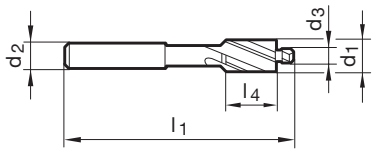
Flachsenker mit Führungszapfen, Senkung mittel

Katalog-Nr. 72305

DIN 373 | HSS | blank | R | Cyl

P	M	K	N	S	H
●	○	●	●	○	

- mit festem Führungszapfen
- drallgenutet mit Rechtsdrall
- für Senkungen nach DIN 974, Teil 1



d1 mm	d2 mm	d3 mm	l1 mm	l6 mm	d1	Z	Code-Nr.
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**

Entgrat- und Faswerkzeuge

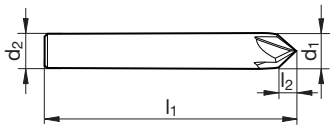
Entgratfräser 60°

Katalog-Nr. 53393

Super AF-60 | WN | VHM | Al-TiN | js9 | R | HA

P	M	K	N	S	H
•	•	•	•	•	

- Entgrat- und Anfasfräser, z.B. zur Bearbeitung des Bohrungseintritts mit Faswinkel 60°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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**

Entgrat- und Faswerkzeuge

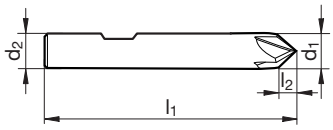
Entgratfräser 60°

Katalog-Nr. 53394

Super AF-60 | WN | VHM | Al-TiN | js9 | R | HB

P	M	K	N	S	H
•	•	•	•	•	

- Entgrat- und Anfasfräser, z.B. zur Bearbeitung des Bohrungseintritts mit Faswinkel 60°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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**

Entgrat- und Faswerkzeuge

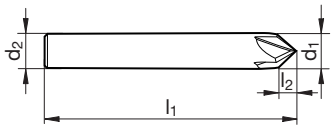
Entgratfräser 90°

Katalog-Nr. 53395

Super AF-90 | WN | VHM | Al-TiN | js9 | R | HA

P	M	K	N	S	H
•	•	•	•	•	

- Entgrat- und Anfasfräser, z.B. zur Bearbeitung des Bohrungseintritts mit Faswinkel 90°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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**

Entgrat- und Faswerkzeuge

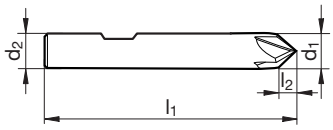
Entgratfräser 90°

Katalog-Nr. 53396

Super AF-90 | WN | VHM | Al-TiN | js9 | R | HB

P	M	K	N	S	H
•	•	•	•	•	

- Entgrat- und Anfasfräser, z.B. zur Bearbeitung des Bohrungseintritts mit Faswinkel 90°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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**

Entgrat- und Faswerkzeuge

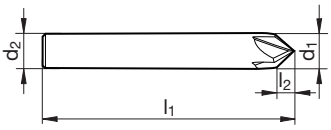
Entgratfräser 120°

Katalog-Nr. 53397

Super AF-120 | WN | VHM | Al-TiN | js9 | R | HA

P	M	K	N	S	H
•	•	•	•	•	

- Entgrat- und Anfasfräser, z.B. zur Bearbeitung des Bohrungseintritts mit Faswinkel 120°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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**

Entgrat- und Faswerkzeuge

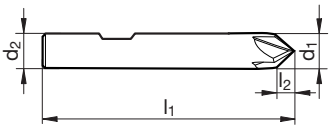
Entgratfräser 120°

Katalog-Nr. 53398

Super AF-120 | WN | VHM | Al-TiN | js9 | R | HB

P	M	K	N	S	H
•	•	•	•	•	

- Entgrat- und Anfasfräser, z.B. zur Bearbeitung des Bohrungseintritts mit Faswinkel 120°



d1 js9 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code-Nr.
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**

Entgrat- und Faswerkzeuge

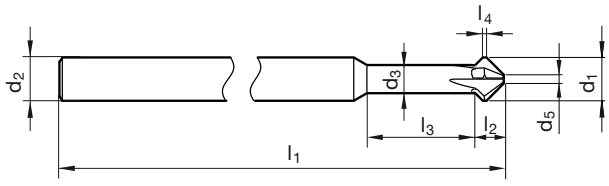
Vor- und Rückwärtsentgrater 90°

Katalog-Nr. 52365

Super AD-90 | WN | VHM | AlTiN nano | R | Cyl

P	M	K	N	S	H
•	•				

- Entgrat- und Faswerkzeug zur Bearbeitung des Bohrungsein- und -austritts mit Faswinkel 90°
- für die Aufnahme in Hydraulik-Dehnspannfutter und Schrumpffutter
- mit Schaft nach DIN 6535



d1 mm	d2 h6 mm	d3 mm	d5 mm	l1 mm	l2 mm	l3 mm	l4 mm	Z	Code-Nr.
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**

Entgrat- und Faswerkzeuge

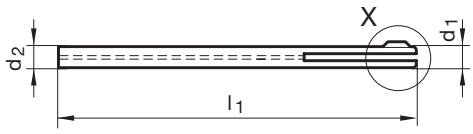
Entgratgabeln

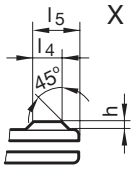
Katalog-Nr. 52360

SuperE-U | WN | VHM | blank | R | Cyl

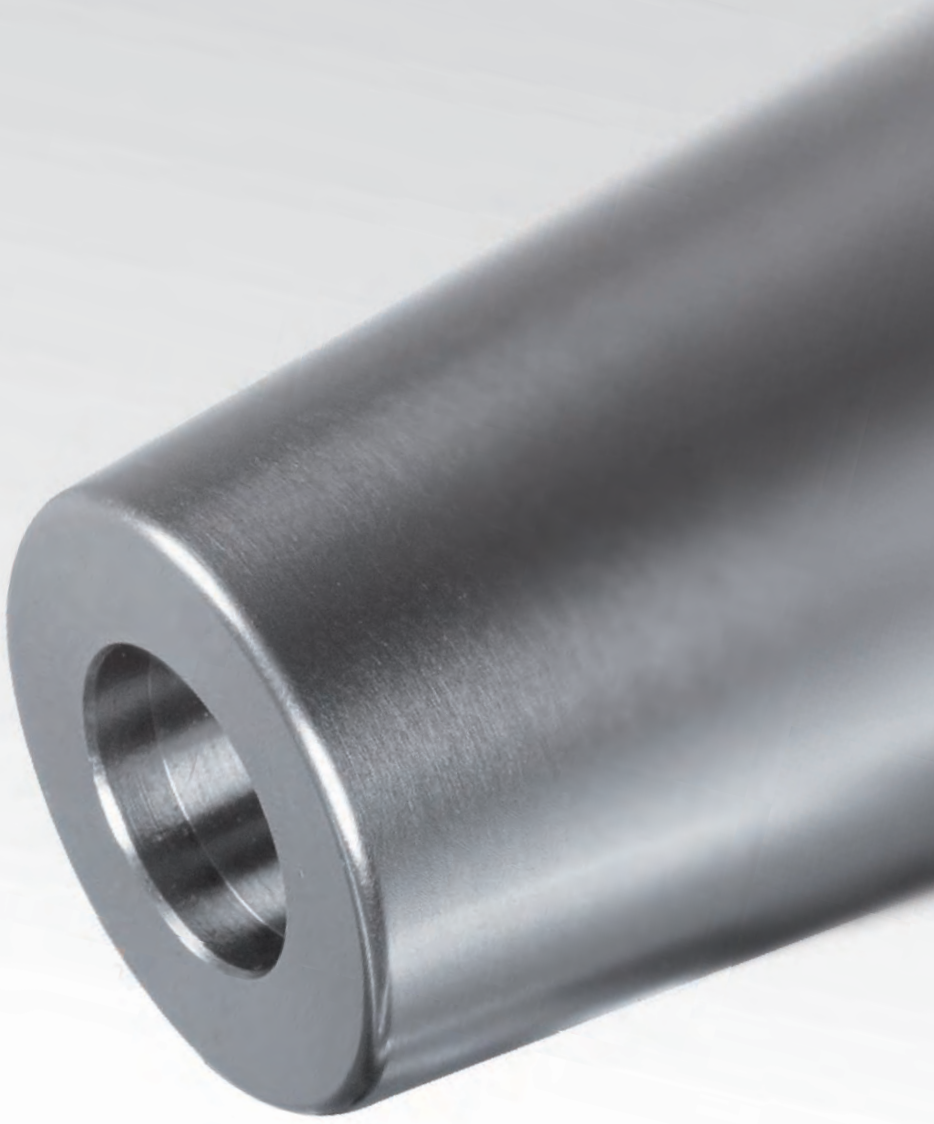
P	M	K	N	S	H
●	●		○		

- Entgratwerkzeug für die Bearbeitung von Bohrungsein- und -austritt sowie von Querbohrungen
- mit Schaft nach DIN 6535
- mit durchgängig zylindrischem Schaft für die Aufnahme in Spannzangen
- mit Innenkühlung
- universell einsetzbar





Code-Nr.	Ø-Bereich 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



WERKZEUGAUFNAHMEN

Werkzeugaufnahmen

		SK DIN 69871	MAS/BT JIS B6339	HSK-A DIN 69893
Hydraulik-Dehnspannfutter		**78213**, S. 749	**78221**, S. 750	**78299**, S. 748
Schrumpffutter		**78738**, S. 755 **78729** mit Peripherie-kühlung, S. 756	**78739**, S. 757	**78736**, S. 753 **78755** mit Peripherie-kühlung, S. 754
Zylinderschaft-Aufnahmen „Weldon“/„Whistle-Notch“		**78317** Weldon, S. 760 **78322** Whistle-Notch, S. 761	**78234** Weldon, S. 763 **78233** Whistle-Notch, S. 762	**78232** Weldon, S. 758 **78334** Whistle-Notch, S. 759
Gewindeschneid-Spannfutter		* **78326** Synchrofutter, Zylinderschaft mit IK, S. 767 * **78340** Schnellwechsel-Gewindeschneidfutter ohne IK, S. 769	* **78326** Synchrofutter, Zylinderschaft mit IK, S. 767 * **78340** Schnellwechsel-Gewindeschneidfutter ohne IK, S. 769	* **78326** Synchrofutter, Zylinderschaft mit IK, S. 767 * **78340** Schnellwechsel-Gewindeschneidfutter ohne IK, S. 769

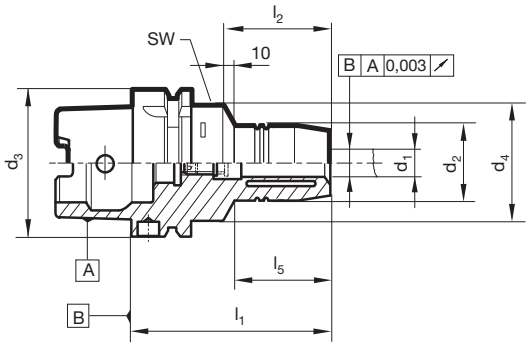
*) in Kombination mit entsprechender Zylinderschaft- oder Grundaufnahme

Spannfutter/ Werkzeugaufnahme für zylindrische Werkzeugschäfte	Schrumpffutter	Hydraulik-Dehnspannfutter	Zylinderschaft-Aufnahmen „Weldon“/ „Whistle-Notch“
Eigenschaften	höchste Rundlaufgenauigkeit; sehr schlanke Störkontur; gute Steifigkeit; hohe Spannkraft; modular verlängerbar; patentierte Dämpfungsschraube sichert den Rundlauf	hohe Dämpfung bei höchster Rundlaufgenauigkeit; einfachste Handhabung; flexibler Einsatz durch Reduzierbüchsen auch mit Peripheriekühlung	robustes, günstiges Spannfutter für schwere Zerspanung im niedrigeren Drehzahl- und Genauigkeitsbereich
Hauptanwendung	Bohren, Senken, Fräsen, Reiben, universell und HPC anwendbar	Reiben, Bohren, Senken, HPC-Anwendung, leichtes Fräsen	Schruppzerspanung, Fräsen, Bohren
Haupteigenschaft	präzise und universell; schlank; hohe Spannkraft	einfachste Handhabung	einfache Bedienung; sichere Spannung
Rundlauf	< 3µm	< 3µm	< 10µm
bei 5xD	< 5µm	< 5µm	< 25µm
Spannkraft	sehr hoch	sehr hoch	sehr sicher
Steifigkeit	sehr hoch	hoch	sehr hoch
Dämpfung	gering	sehr hoch	gering
Störkontur	klein / kleinst	mittel	groß
Handhabung	gut	sehr gut / sehr flexibel	gut
Betätigung	Schrumpfgerät	Sechskant-Schlüssel	Sechskant-Schlüssel

Hydrodehnspannfutter

Hydraulik-Dehnspannfutter HSK-A mit erhöhter Spannkraft

Katalog-Nr. 78299



DIN 69882-7 | blank

- Wuchtgüte: G 2,5 / 25.000 U/min
- axiale Längeneinstellung
- geeignet für Werkzeuge mit Innenkühlung
- für Werkzeugschafttoleranz h6
- Überlängen l1= 150 mm, 160 mm (Rundlauf 5 µm) und 200 mm (Rundlauf 7 µm)
- HSK-A nach ISO 12164-1 / DIN 69893-1
- Lieferumfang:
- inkl. Einstellschraube
- inkl. Spannschlüssel
- Kühlmittelübergabesatz separat bestellen

d3	d1	d2	d4	l1	l2	l5	SW		Code-Nr.
	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**

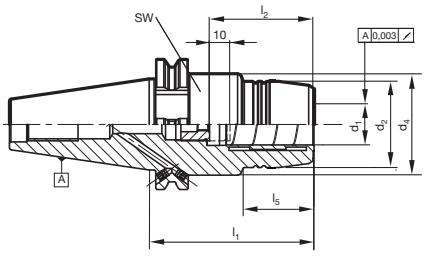
Hydrodehnspannfutter

Hydraulik-Dehnspannfutter SK mit erhöhter Spannkraft

Katalog-Nr. 78213

WN blank

- SK nach DIN ISO 7388-1 Form AD/AF
- Bohrungen für Form B bei Lieferung mit Gewindestiften verschlossen
- Wuchtgüte: G 2,5 / 25.000 U/min
- axiale Längeneinstellung
- für Werkzeugschafttoleranz h6
- geeignet für Werkzeuge mit Innenkühlung
- Lieferumfang:
- inkl. Einstellschraube
- inkl. Spannschlüssel
- Anzugsbolzen separat bestellen



d3	d1	d2	d4	l1	l2	l5	SW		Code-Nr.
	mm	mm	mm	mm	mm	mm	mm	kg	
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**

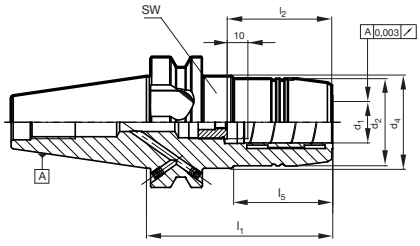
Hydrodehnspannfutter

Hydraulik-Dehnspannfutter MAS/BT mit erhöhter Spannkraft

Katalog-Nr. 78221

WN | blank

- Wuchtgüte: G 2,5 / 25.000 U/min
- axiale Längeneinstellung
- für Werkzeugschafttoleranz h6
- geeignet für Werkzeuge mit Innenkühlung
- MAS/BT nach DIN ISO 7388-2 Form JD/JF (Form AD/B)
- Lieferumfang:
- inkl. Einstellschraube
- inkl. Spannschlüssel
- Anzugsbolzen separat bestellen



d3	Form	d1 mm	d2 mm	d4 mm	l1 mm	l2 mm	l5 mm	SW mm	kg	Code-Nr.
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**

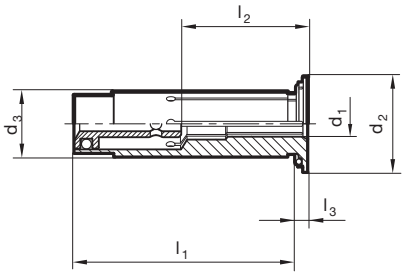
Hydrodehnspannfutter

Reduzierbuchsen abgedichtet für Hydraulik-Dehnspannfutter

Katalog-Nr. 78368

WN

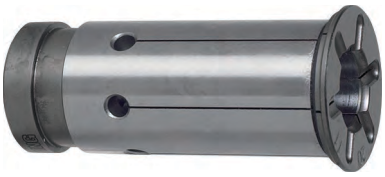
- zur Spannung kleinerer Schaft-Ø im Hydraulik-Dehnspannfutter
- Spann-Ø für Werkzeugschafttoleranz h6
- Stirnseite geschlossen, dadurch kühlmitteldicht bis 80 bar
- Rundlaufgenauigkeit ≤ 2 µm
- mit verstellbarem Anschlag
- bei Verwendung von Reduzierbuchsen kann das zulässig übertragbare Drehmoment um ca. 25% gesteigert werden gegenüber der Direktspannung
- Lieferumfang:
- inkl. Anschlagelement



d3 mm	d1 mm	d2 mm	l1 mm	l3 mm	l2 mm	Code-Nr.
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**

Hydrodehnspannfutter

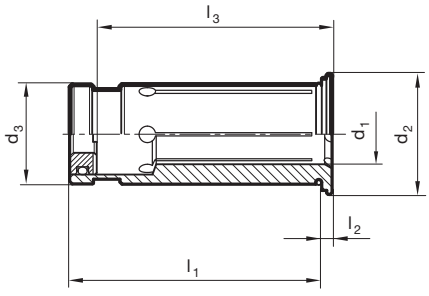
Reduzierbuchsen für Hydraulik-Dehnspannfutter



Katalog-Nr. 78369

WN

- zur Spannung kleinerer Schaft-Ø im Hydraulik-Dehnspannfutter
- Spann-Ø für Werkzeugschafttoleranz h6
- mit Kühlschlitzen für Peripheriekühlung, dadurch Prozess- und Standzeitverbesserung
- Rundlaufgenauigkeit ≤ 2 µm
- mit verstellbarem Anschlag
- bei Verwendung von Reduzierbuchsen kann das zulässig übertragbare Drehmoment um ca. 25% gesteigert werden gegenüber der Direktspannung
- Lieferumfang:
- inkl. Anschlagelement



d3 mm	d1 mm	d2 mm	l1 mm	l3 mm	l2 mm	Code-Nr.
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**

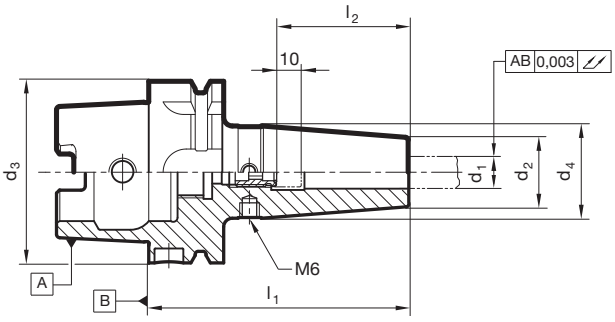
Schrumpffutter

Schrumpffutter HSK-A

Katalog-Nr. 78736

DIN 69882-8 | blank

- Wuchtgüte: G 2,5 / 25.000 U/min oder U < 1 gmm
- inkl. Wuchtgewinde 4xM6/6xM6
- für Werkzeugschafttoleranz h6
- Überlängen l1 = 120 mm, 160 mm (Rundlauf 5 µm) und 200 mm (Rundlauf 7 µm)
- HSK-A nach ISO 12164-1 / DIN 69893-1
- geeignet für Werkzeuge mit Innenkühlung
- Lieferumfang:
- inkl. Einstellschraube
- für konventionelle Kühlung Kühlmittelübergabe-Satz separat bestellen



d3	d1 mm	d2 mm	d4 mm	l1 mm	l2 ± mm	kg	Code-Nr.
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**

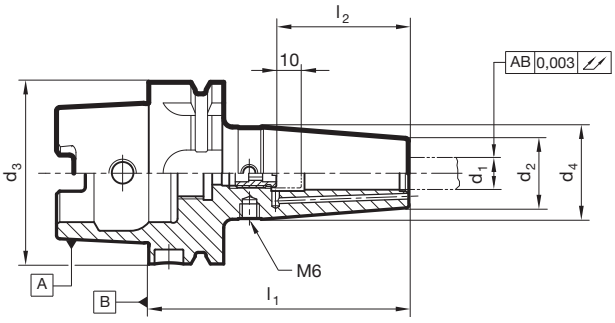
Schrumpffutter

Schrumpffutter HSK-A mit Peripheriekühlung

Katalog-Nr. 78755

WN | blank

- Wuchtgüte: G 2,5 / 25.000 U/min oder U < 1 gmm
- inkl. Wuchtgewinde 4xM6/6xM6
- für Werkzeugschafttoleranz h6
- Kühlkanäle: d1 = 6 - 10 mm mit zwei Kühlkanälen, d1 = 12 - 32 mm mit vier Kühlkanälen
- HSK-A nach ISO 12164-1 / DIN 69893-1
- auch für Werkzeuge mit Innenkühlung geeignet
- Lieferumfang:
- inkl. Einstellschraube
- für konventionelle Kühlung Kühlmittelübergabe-Satz separat bestellen

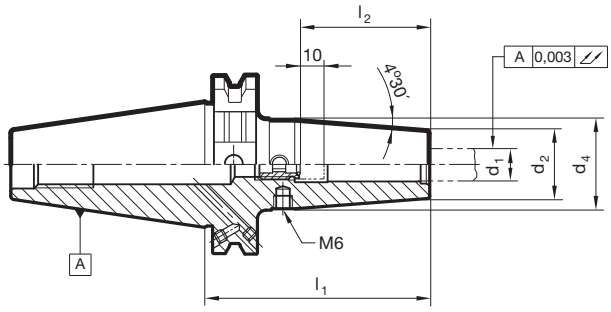


d3	d1 mm	d2 mm	d4 mm	l1 mm	l2 ± mm	kg	Code-Nr.
HSK-A 63	6,000	21,000	27,000	80,000	36,000	0,859	**6,063**
HSK-A 63	8,000	21,000	27,000	80,000	36,000	0,800	**8,063**
HSK-A 63	10,000	24,000	32,000	85,000	41,000	0,927	**10,063**
HSK-A 63	12,000	24,000	32,000	90,000	46,000	0,938	**12,063**
HSK-A 63	14,000	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**

Schrumpffutter

Schrumpffutter SK

Katalog-Nr. 78738



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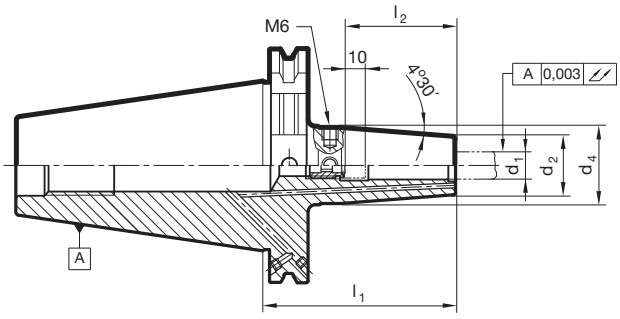
- Wuchtgüte: G 2,5 / 25.000 U/min oder U < 1 gmm
- inkl. Wuchtgewinde 4xM6/6xM6
- SK nach DIN ISO 7388-1 Form AD/AF
- für Werkzeugschafttoleranz h6
- Überlängen l1 = 120 mm, 160 mm (Rundlauf 5 µm) und 200 mm (Rundlauf 7 µm)
- geeignet für Werkzeuge mit Innenkühlung
- Lieferumfang:
- inkl. Einstellschraube
- Anzugsbolzen separat bestellen

d3	d1 mm	d2 mm	d4 mm	l1 mm	l2 ± mm	kg	Code-Nr.
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**

Schrumpffutter

Schrumpffutter SK

Katalog-Nr. 78729



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- Wuchtgüte: G 2,5 / 25.000 U/min oder U < 1 gmm
- inkl. Wuchtgewinde 4xM6/6xM6
- SK nach DIN ISO 7388-1 Form AD/AF
- für Werkzeugschafttoleranz h6
- Kühlkanäle: d1 = 6 - 10 mm mit zwei Kühlkanälen, d1 = 12 - 32 mm mit vier Kühlkanälen
- auch für Werkzeuge mit Innenkühlung geeignet
- Lieferumfang:
- inkl. Einstellschraube
- Anzugsbolzen separat bestellen

d3	d1	d2	d4	l1	l2		Code-Nr.
	mm	mm	mm	mm	± mm	kg	
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**

Schrumpffutter

Schrumpffutter MAS/BT

Katalog-Nr. 78739

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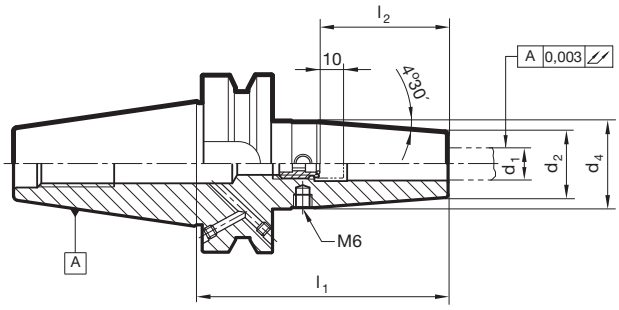
- Wuchtgüte: G 2,5 / 25.000 U/min oder U < 1 gmm
- inkl. Wuchtgewinde 4xM6/6xM6
- MAS/BT nach DIN ISO 7388-2 Form JD/JF (Form AD/B)
- für Werkzeugschafttoleranz h6
- geeignet für Werkzeuge mit Innenkühlung
- Lieferumfang:
- inkl. Einstellschraube
- Anzugsbolzen separat bestellen



d3	Form	d1 mm	d2 mm	d4 mm	l1 ± mm	l2 mm	kg	Code-Nr.
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**

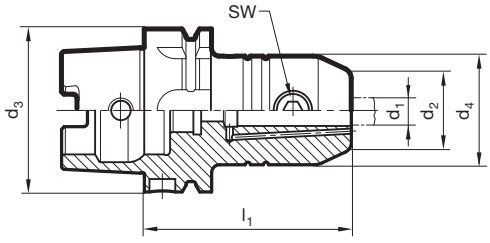
Werkzeugaufnahmen

Zylinderschaftaufnahmen Weldon HSK-A

Katalog-Nr. 78232

DIN 69882-4 | blank

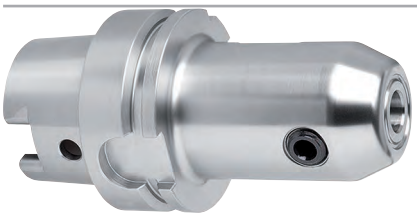
- Wuchtgüte: G 6,3 / 15.000 U/min
- für Werkzeugschafttoleranz h6
- mit Aufnahmebohrung DIN 1835-2 Form B „Weldon“
- ab Aufnahme d1 = 25 mit zwei Spannschrauben
- mit Kühlkanälen für Peripheriekühlung, dadurch Prozess- und Standzeitverbesserung
- Kühlkanäle: d1 = 6 - 14 mm mit zwei Kühlkanälen, d1 = 16 - 40 mm mit vier Kühlkanälen
- HSK-A nach ISO 12164-1 / DIN 69893-1
- geeignet für Werkzeuge mit Innenkühlung
- Lieferumfang:
- inkl. Spannschraube
- Kühlmittelübergabesatz separat bestellen



d3	d1 mm	d2 mm	d4 mm	l1 mm	SW ± mm	kg	Code-Nr.
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**

Werkzeugaufnahmen

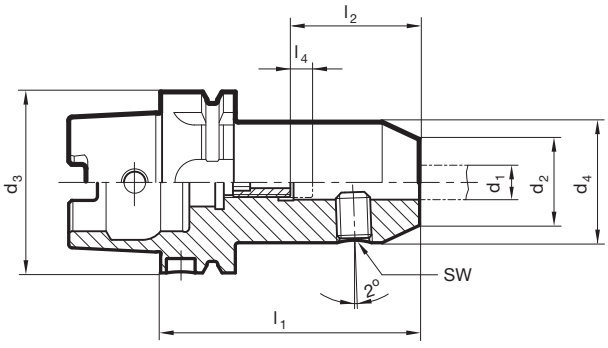
Zylinderschaftaufnahmen Whistle Notch HSK-A



Katalog-Nr. 78334

DIN 69882-5 | blank

- Wuchtgüte: G 6,3 / 15.000 U/min
- für Werkzeugschafttoleranz h6
- mit Aufnahmebohrung DIN 1835-2 Form E „Whistle Notch“ mit stirnseitiger Rille zur Identifikation
- ab Aufnahme d1 = 25 mit zwei Spannschrauben
- HSK-A nach ISO 12164-1 / DIN 69893-1
- geeignet für Werkzeuge mit Innenkühlung
- Lieferumfang:
- inkl. Spannschraube und Einstellschraube
- Kühlmittelübergabesatz separat bestellen



d3	d1	d2	d4	l1	l2	l4	SW		Code-Nr.
	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**

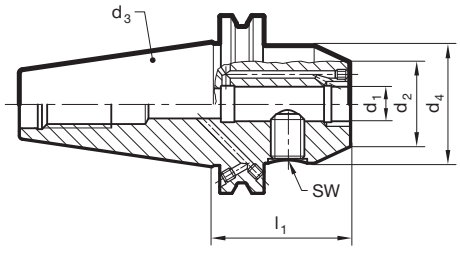
Werkzeugaufnahmen

Zylinderschaftaufnahmen Weldon SK

Katalog-Nr. 78317

WN | brüniert

- Wuchtgüte: G 6,3 / 15.000 U/min
- für Werkzeugschafttoleranz h6
- mit Aufnahmebohrung DIN 1835-2 Form B „Weldon“
- SK nach DIN ISO 7388-1 Form AD/AF
- Bohrungen für Form B bei Lieferung mit Gewindestiften verschlossen
- mit Kühlkanälen in der Spannbohrung für Peripheriekühlung, dadurch Prozess- und Standzeitverbesserung
- ab Aufnahme d1 = 25 mit zwei Spannschrauben
- Kühlkanäle: d1 = 6 - 14 mm mit zwei Kühlkanälen, d1 = 16 - 32 mm mit vier Kühlkanälen
- geeignet für Werkzeuge mit Innenkühlung
- Lieferumfang:
- inkl. Spannschraube
- Anzugsbolzen separat bestellen



d3	Form	d1 mm	d2 mm	d4 mm	l1 ± mm	SW mm	kg	Code-Nr.
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**

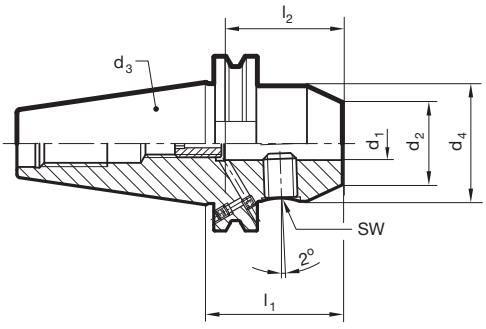
Werkzeugaufnahmen

Zylinderschaftaufnahmen Whistle Notch SK

Katalog-Nr. 78322

WN | brüniert

- Wuchtgüte: G 6,3 / 15.000 U/min
- für Werkzeugschafttoleranz h6
- mit Aufnahmebohrung DIN 1835-2 Form E „Whistle Notch“
- SK nach DIN ISO 7388-1 Form AD/AF
- ab Aufnahme d1 = 25 mit zwei Spannschrauben
- geeignet für Werkzeuge mit Innenkühlung
- Lieferumfang:
- inkl. Spannschraube und Einstellschraube
- Anzugsbolzen separat bestellen

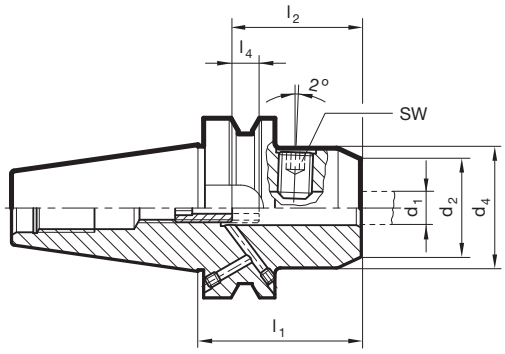


d3	d1 mm	d2 mm	d4 mm	l1 mm	l2 ± mm	SW mm	kg	Code-Nr.
SK 40	6,000	15,000	25,000	50,000	36,000	3,0	0,900	**6,040**
SK 40	8,000	20,000	28,000	50,000	36,000	4,0	0,900	**8,040**
SK 40	10,000	25,000	35,000	50,000	40,000	5,0	1,000	**10,040**
SK 40	12,000	30,000	42,000	50,000	45,000	6,0	1,200	**12,040**
SK 40	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**

Werkzeugaufnahmen

Zylinderschaftaufnahmen WhistleNotch MAS/BT

Katalog-Nr. 78233



WN | brüniert

- Wuchtgüte: G 6,3 / 15.000 U/min
- für Werkzeugschafttoleranz h6
- MAS/BT nach DIN ISO 7388-2 Form JD/JF
- mit Aufnahmebohrung DIN 1835-2 Form E „Whistle Notch“
- ab Aufnahme d1 = 25 mit zwei Spannschrauben
- Kühlmittelzufuhr Form JD/JF (* BT50 in Ausführung JD ohne Kühlmittelzufuhr über den Bund)
- geeignet für Werkzeuge mit Innenkühlung
- Lieferumfang:
- inkl. Spannschraube und Einstellschraube
- Anzugsbolzen separat bestellen

d3	Form	d1 mm	d2 mm	d4 mm	l1 mm	l2 mm	l4 mm	SW mm	kg	Code-Nr.
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**

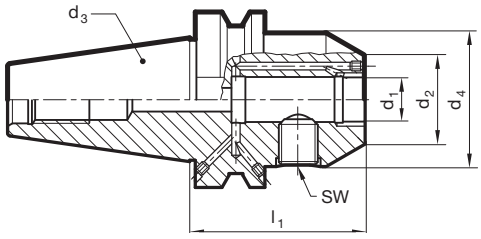
Werkzeugaufnahmen

Zylinderschaftaufnahmen Weldon MAS/BT

Katalog-Nr. 78234

WN **brüniert**

- Wuchtgüte: G 6,3 / 15.000 U/min
- für Werkzeugschafttoleranz h6
- mit Aufnahmebohrung DIN 1835-2 Form B „Weldon“
- ab Aufnahme d1 = 25 mit zwei Spannschrauben
- mit Kühlkanälen für Peripheriekühlung, dadurch Prozess- und Standzeitverbesserung
- Kühlmittelzufuhr Form JD/JF
- auch für Werkzeuge mit Innenkühlung geeignet
- Lieferumfang:
- inkl. Spannschraube
- Anzugsbolzen separat bestellen



d3	Form	d1 mm	d2 mm	d4 mm	l1 ± mm	SW mm	kg	Code-Nr.
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**

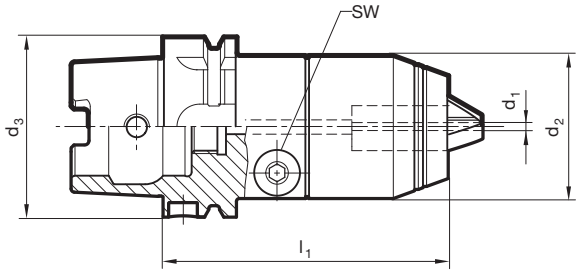
Werkzeugaufnahmen

NC-Bohrfutter HSK-A mit Innenkühlung

Katalog-Nr. 78346

WN

- zum Spannen aller zylindrischen Werkzeugschäfte
- HSK-A nach ISO 12164-1 / DIN 69893-1
- stufenloser Ø-Spannbereich
- hohe Spannkraft durch robustes Schneckengetriebe
- Kühlmitteldruck max. 50 bar
- die NC-Bohrfutter sind für Drehzahlen bis 7.000 U/min geeignet. Bei optionaler Feinwuchtung bis max. 18.000 U/min
- auch für Werkzeuge mit Innenkühlung geeignet
- Lieferumfang:
- inkl. Spannschlüssel
- Kühlmittelübergabesatz separat bestellen



d3	d1	d2	l1	SW		Code-Nr.
		mm	mm	mm	kg	
HSK-A 63	1,0-16	63,000	98,000	4,0	1,900	**16,063**
HSK-A 100	1,0-16	100,000	104,000	4,0	3,300	**16,100**

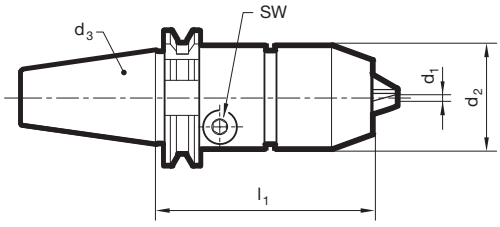
Werkzeugaufnahmen

NC-Bohrfutter SK mit Innenkühlung

Katalog-Nr. 78242

WN

- zum Spannen aller zylindrischen Werkzeugschäfte
- SK nach DIN ISO 7388-1 Form AD
- stufenloser Ø-Spannbereich
- hohe Spannkraft durch robustes Schneckengetriebe
- Kühlmitteldruck max. 50 bar
- die NC-Bohrfutter sind für Drehzahlen bis 7.000 U/min geeignet. Bei optionaler Feinwuchtung bis max. 18.000 U/min
- auch für Werkzeuge mit Innenkühlung geeignet
- Lieferumfang:
- inkl. Spannschlüssel
- Anzugsbolzen separat bestellen



d3	d1	d2	l1	SW		Code-Nr.
		mm	mm	mm	kg	
SK 40	1,0-16	68,400	80,000	4,0	1,557	**16,040**
SK 50	1,0-16	101,750	80,000	4,0	3,500	**16,050**

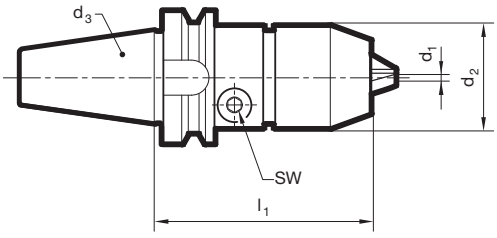
Werkzeugaufnahmen

NC-Bohrfutter MAS/BT mit Innenkühlung

Katalog-Nr. 78240

WN

- zum Spannen aller zylindrischen Werkzeugschäfte
- MAS/BT nach DIN ISO 7388-2 Form JD
- stufenloser Ø-Spannbereich
- hohe Spannkraft durch robustes Schneckengetriebe
- Kühlmitteldruck max. 50 bar
- die NC-Bohrfutter sind für Drehzahlen bis 7.000 U/min geeignet. Bei optionaler Feinwuchtung bis max. 18.000 U/min
- auch für Werkzeuge mit Innenkühlung geeignet
- Lieferumfang:
- inkl. Spannschlüssel
- Anzugsbolzen separat bestellen



d3	d1	d2	l1	SW		Code-Nr.
		mm	mm	mm	kg	
BT 40	1,0-16	68,400	88,000	4,0	1,500	**16,040**
BT 50	1,0-16	101,750	99,000	4,0	3,500	**16,050**

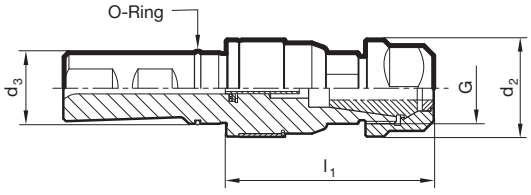
Gewindeschneid-Spannfutter

Synchrofutter Zylinderschaft mit Innenkühlung

Katalog-Nr. 78326

WN

- kompensiert Synchronisationsfehler
- Minimallängenausgleich in Druck- und Zugrichtung zwischen Synchronspindel und Gewindewerkzeug reduziert hohe Gewindeflankenreibungskräfte und erhöht Gewindequalität und Standzeit
- Einstellschraube ermöglicht 2-3 mm Nachstellung
- geeignet für Innenkühlung
- Kühlmitteldruck max. 50 bar
- Lieferumfang:
- inkl. abgedichteter IC/ER Spannmutter
- inkl. Einstellschlüssel für Einstellschrauben
- Einstellschrauben „plan“ Kat.-Nr. 78364, Gewindebohr-Spannzange Kat.-Nr. 78308, Dichtscheiben Kat.-Nr. 78335 und Spannschlüssel separat bestellen



d3 mm	Nenngröße	d2 mm	G	l1 mm	Zug/Druck ± mm	Anzugsmoment Nm	kg	Code-Nr.
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**

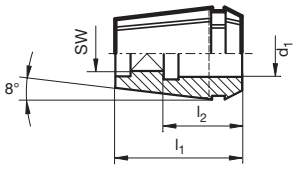
Gewindeschneid-Spannfutter

Gewindebohr-Spannzangen

Katalog-Nr. 78308

WN

- zum Spannen von Gewindewerkzeugen mit Vierkant-Schaft in Synchro-Gewindefuttern oder Spannzangenaufnahmen



Nenngröße	d1 mm	SW mm	l1 mm	l2 mm	**Code-Nr.**
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**

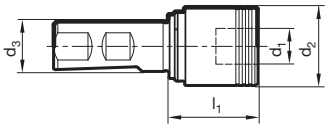
Gewindeschneid-Spannfutter

Schnellwechsel-Gewindeschneidfutter ohne Innenkühlung

WN

- die Schnellwechsel-Gewindeschneidfutter sind mit einem leichtgängigen kugelgeführten Längenausgleich ausgestattet, der die Differenzen zwischen Spindelvorschub und Gewindesteigung ausgleicht.

Katalog-Nr. 78340



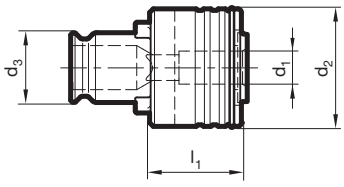
für Gewinde	d1 mm	d2 mm	d3 mm	l1 mm	Zug/Druck ± mm	kg	Code-Nr.
M3-M12	19,000	36,000	25,000	39,000	7,500	0,431	**19,025**
M8-M20	31,000	53,000	25,000	63,000	10,000	0,900	**31,025**

Gewindeschneid-Spannfutter

Einsätze für Schnellwechsel-Gewindeschneidfutter

Katalog-Nr. 78206

- mit Sicherheitskupplung
- für HSS-Gewindewerkzeuge geeignet
- bei VHM-Gewindewerkzeugen wird eine Spannut am Schaft benötigt, um zusätzlichen Halt des Werkzeuges zu gewährleisten
- geeignet für Innenkühlung
- Kühlmitteldruck max. 50 bar



Nenngröße	d1 mm	SW mm	d3 mm	d2 mm	l1 mm	Code-Nr.
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**

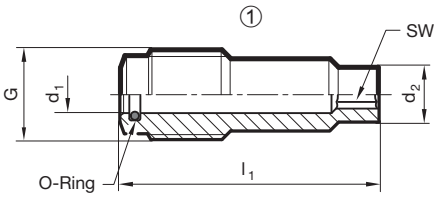
Gewindeschneid-Spannfutter

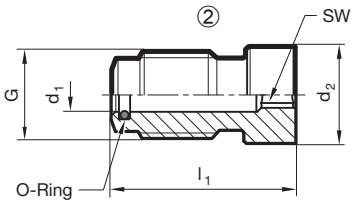
Einstellschrauben „plan“ für Synchrofutter mit Innenkühlung

Katalog-Nr. 78364

WN

- für Synchrofutter mit zyl. Schaft Kat.-Nr. 78326
- für konventionelle Innenkühlung
- mit planem Anschlag für normale Schaftenden
- Einstellschraube an Gewindebohrerschaft anlegen
- Einstellschraube ermöglicht 3 mm Längennachstellung
- Lieferumfang:
- mit O-Ring zur sicheren Abdichtung





Nenngröße	□ mm	G	d1 mm	d2 mm	l1 mm	SW mm	Tip	**Code-Nr.**
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**

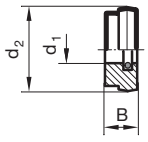
Gewindeschneid-Spannfutter

Dichtscheiben

Katalog-Nr. 78335

WN

- Der Anwendungsbereich der Dichtscheibe Kat.-Nr. 78335 reicht vom Nenn-Ø d1 bis zur nächsten darunterliegenden Abmessung, d.h. für einen Ø von 6,3 mm (bei Nenngröße ER20) muss eine Dichtscheibe mit d1 = 6,5 mm (Code-Nr. 6,520) bestellt werden.



Nenngröße	d1 mm	d2 mm	l1 mm	**Code-Nr.**
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**

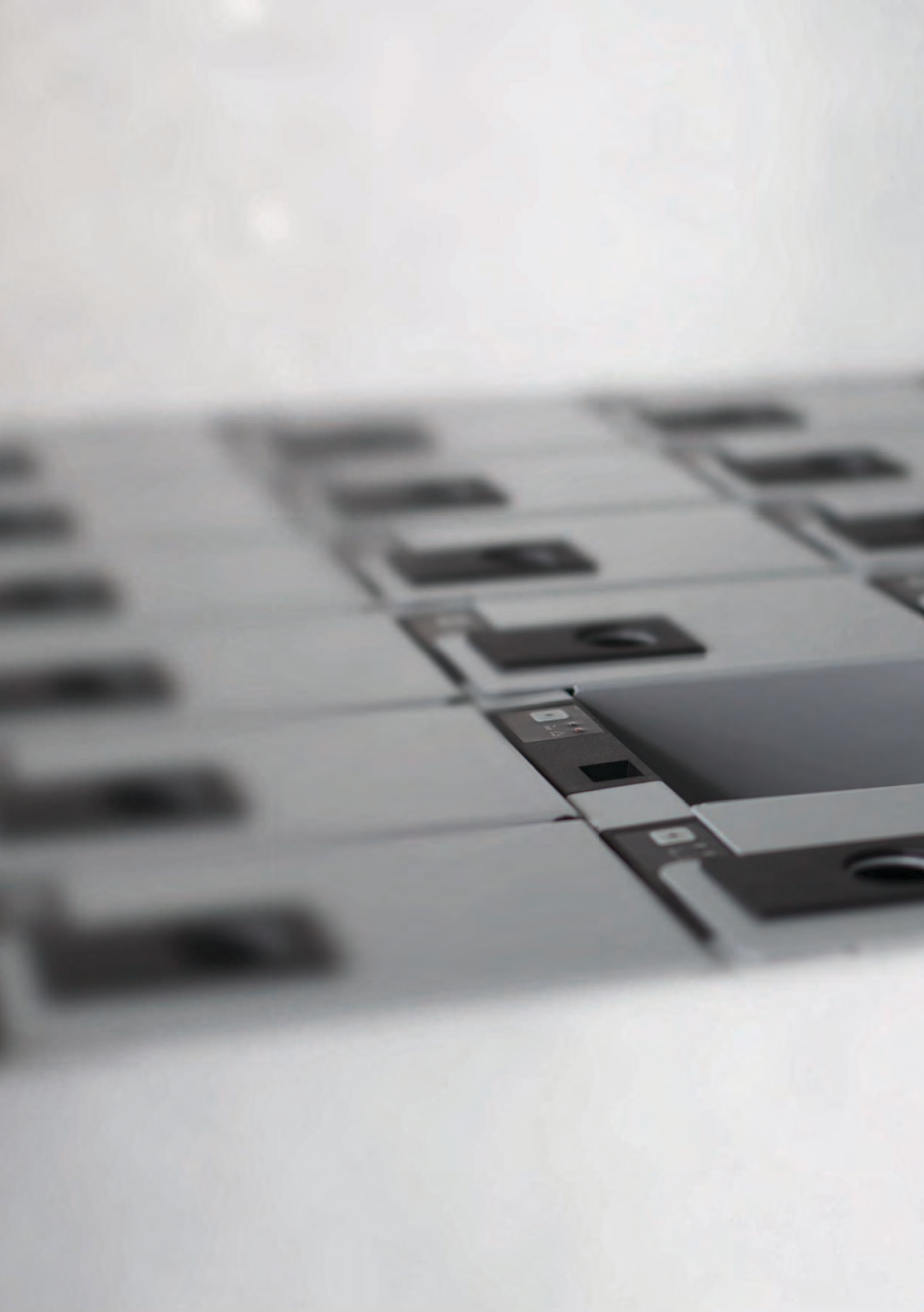
Nenngröße	d1 mm	d2 mm	l1 mm	**Code-Nr.**
ER 25	6,000	21,000	4,000	**6,025**
ER 25	6,500	21,000	4,000	**6,525**
ER 25	7,000	21,000	4,000	**7,025**
ER 25	7,500	21,000	4,000	**7,525**
ER 25	8,000	21,000	4,000	**8,025**
ER 25	8,500	21,000	4,000	**8,525**
ER 25	9,000	21,000	4,000	**9,025**
ER 25	9,500	21,000	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**

Nenngröße	d1 mm	d2 mm	l1 mm	**Code-Nr.**
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 SONDERWERKZEUGE

Kundenspezifische Sonderlösungen für individuelle Anforderungen.

Anfrageformulare ab Seite 816.



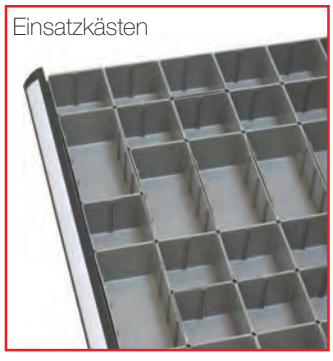
WERKZEUG-DEPOT-SYSTEME

TSC mini

Das TSC mini ist ein elektronisch gesteuertes, modular erweiterbares System mit allen Funktionalitäten der TSC Software.
Elektronisch verriegelte Schubladen ermöglichen die kontrollierte Werkzeugentnahme. Die Schubladen können in Bauhöhe und Einteilung den individuellen Kundenwünschen angepasst werden.

Werkzeughalter

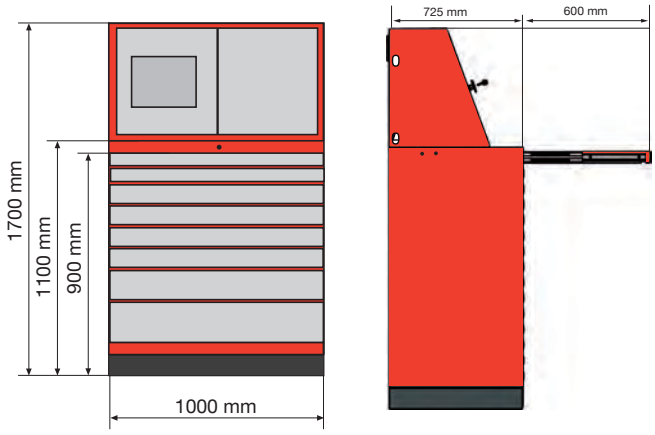
verriegelbare Lagerfächer


Einsatzkästen

Muldensets

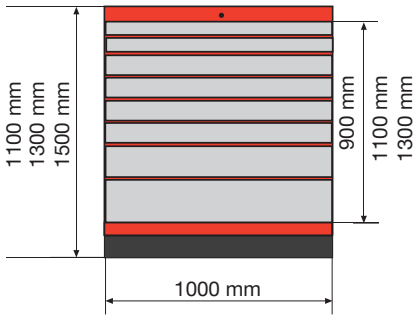
Trennwände

TSC mini - Ausführungen und Baumaße



Grundeinheit

- elektronisch verriegelndes Ausgabesystem in stabiler Stahlblech-Konstruktion
- manuell zu betätigende Schubladen mit Vollauszug (Tragkraft je Schublade max. 200 kg)
- individuelle Schubladenhöhen
- individuelles Einteilungsmaterial für Schubladen
- TSC Software
- PC inkl. Microsoft-Betriebssystem (Windows)
- Barcode-Scanner
- offenes System (mehrlieferantenfähig)
- Steuerungsfunktion auch für Erweiterungssysteme nutzbar (TSC maxi, TSC midi)
- Hubwagensockel mit abnehmbarer Frontblende
- Betriebsspannung: 230 V / 50 Hz
- Sonderfarben nach RAL-Standard auf Anfrage



Erweiterungseinheit

- elektronisch verriegelndes Ausgabesystem in stabiler Stahlblech-Konstruktion
- manuell zu betätigende Schubladen mit Vollauszug (Tragkraft je Schublade max. 200 kg)
- individuelle Schubladenhöhen
- individuelles Einteilungsmaterial für Schubladen
- drei verschiedenen Bauhöhen verfügbar
  1100 mm / 1300 mm / 1500 mm

- **Standardschubladen**
  Innenmaß: 600 x 900 mm
  Höhen: 75 mm / 100 mm / 125 mm / 150 mm
  200 mm / 250 mm / 300 mm / 400 mm

  verfügbares Unterteilungsmaterial:
  - Antirutschmatte
  - Muldensets
  - Einsatzkästen
  - Trennwände
  - verschiedene Werkzeughaltersysteme

- **Schubladen mit Spiraleinsatz**
  Schubladenhöhe: 150 mm
  Spiraleinsatz für maximal 10 Spiralen

  zusätzlich erforderlich:

  Entnahmeschublade mit Entnahmeschacht und 3 manuell verriegelbaren Fächern,
  Schubladenhöhe: 150 mm

- **Verfügbare Schubladen mit einzeln elektronisch verriegelten Lagerfächern**

  verfügbar in den Höhen: 75 / 100 / 150 / 200 / 250 mm

Fächer je Schublade	Innenmaß je Fach Breite x Tiefe	Aufteilung Fächer Breite x Tiefe
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

Mit dem TSC midi haben Sie die volle Kontrolle über die Warenentnahme. Die Schubfächer des TSC midi öffnen sich im Raster nur so weit, dass die zuvor ausgewählte Stückzahl an Werkzeugen entnommen werden kann. Die Buchung der Entnahme erfolgt, für maximale Transparenz, kostenstellenbezogen.

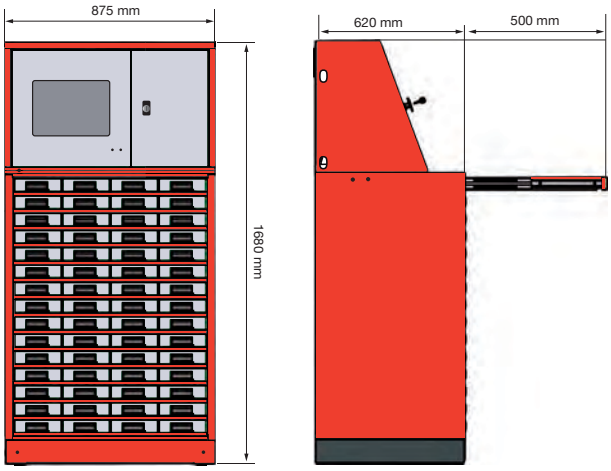
Schubladenvarianten

Die Schubladenauslegung ist variabel
und somit den Kundenwünschen anpassbar.

mögliche Nutzhöhen: 42 / 60 / 113 / 186 / 258 mm

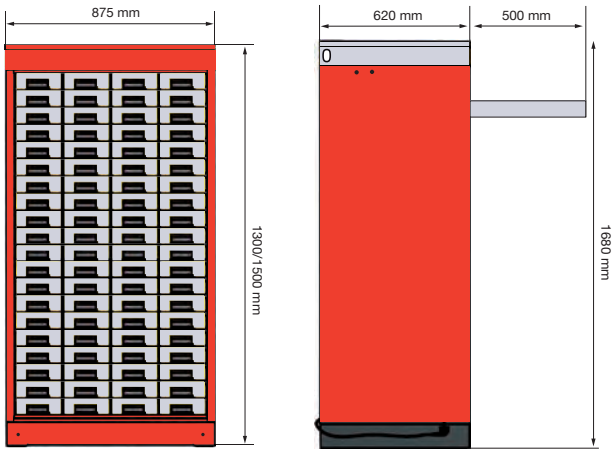
mögliche Nutzbreiten: 50 mm / 8 Schubladen pro Ebene
110 mm / 5 Schubladen pro Ebene
150 mm / 4 Schubladen pro Ebene
215 mm / 3 Schubladen pro Ebene
350 mm / 2 Schubladen pro Ebene

TSC midi - Ausführungen und Baumaße



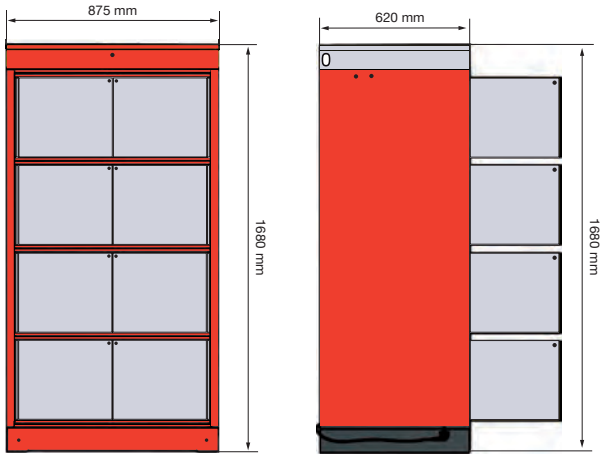
Grundeinheit

- elektronisch verriegelndes Ausgabesystem in stabiler Stahlblech-Konstruktion
- manuell zu betätigende Schubladen mit elektronisch begrenztem Auszug (Tragkraft je Fach max. 20 kg)
- individuelle Schubladenhöhen und -breiten
- TSC Software
- PC inkl. Microsoft-Betriebssystem (Windows)
- Barcode-Scanner
- offenes, mehrlieferantenfähiges System
- Steuerungsfunktion auch für Erweiterungssysteme nutzbar (TSC mini, TSC maxi)
- Hubwagensockel mit abnehmbarer Frontblende
- Betriebsspannung: 230 V / 50 Hz
- Sonderfarben nach RAL-Standard auf Anfrage



Erweiterungseinheit Schublade

- zwei verschiedene Bauhöhen verfügbar 1300 mm / 1500 mm
- elektronisch verriegelndes Ausgabesystem in stabiler Stahlblech-Konstruktion
- manuell zu betätigende Schubladen mit elektronisch begrenztem Auszug (Tragkraft je Fach max. 20 kg)
- individuelle Schubladenhöhen und -breiten



Erweiterungseinheit Schließfach

- Schließfachvarianten mit 8 oder 16 Schließfächern

8-Fach	360 x 340 x 590 mm (BxHxT)
16-Fach	360 x 150 x 590 mm (BxHxT)

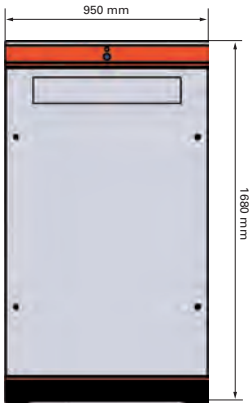
TSC maxi

Das TSC maxi ist die perfekte Lösung zur Lagerung großer Mengen kompakter Werkzeuge auf kleinstem Raum. Denn in den Spiralsystemen des TSC maxi lagern Werkzeuge extrem platzsparend und gleichzeitig absolut sicher. Die Ausgabe der ausgewählten Werkzeuge erfolgt mittels Liftsystem.

TSC maxi - Ausführungen und Baumaße

Steuereinheit

- 3 manuelle Lagerfächer
- TSC Software
- PC inkl. Microsoft-Betriebssystem (Windows)
- Barcode-Scanner
- offenes, mehrlieferantenfähiges System
- Steuerungsfunktion auch für TSC mini & midi
- Hubwagensockel mit abnehmbarer Frontblende
- Betriebsspannung: 230 V / 50 Hz
- Sonderfarben nach RAL-Standard auf Anfrage



Lager-/Ausgabeeinheit

- Entnahme nach Fifo-Prinzip
- max. Tragkraft 90 kg pro Spiralebene
- Warenausgabe oben
- Transportlift für Werkzeuge integriert

- **Spiralebenen**

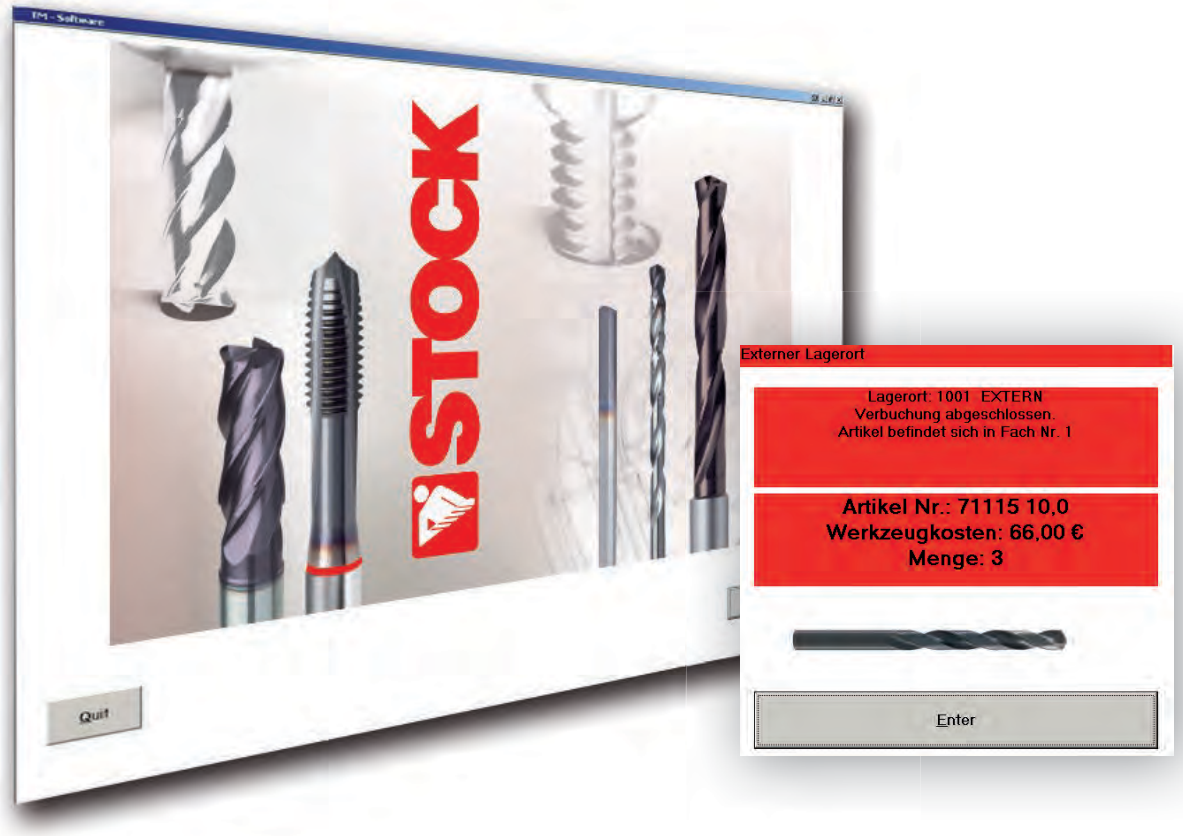
  6 / 7 oder 8 Stück mit bis zu 10 Spiralen

- **Spiraleinteilungen**

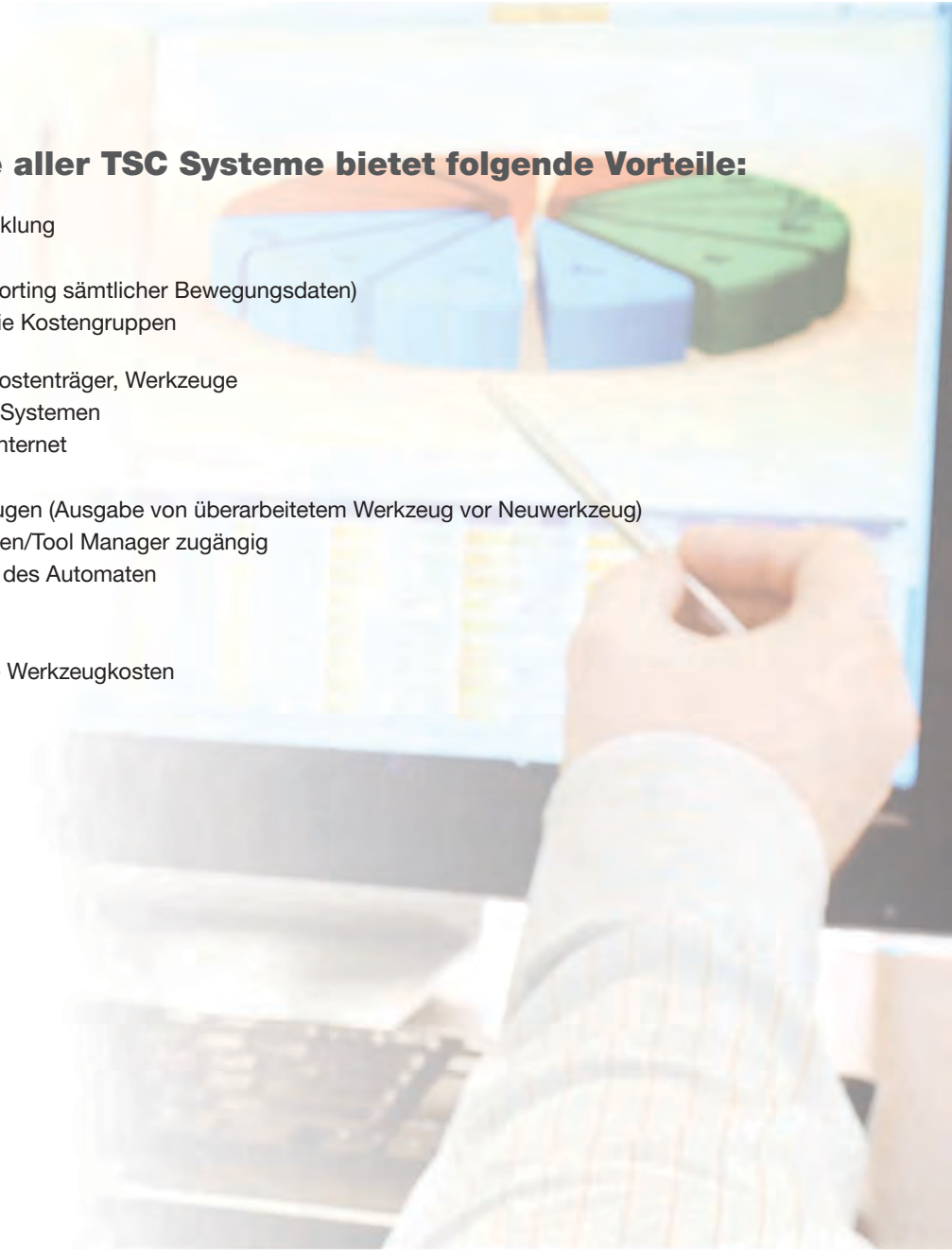
  für 9 / 13 / 15 / 21 / 24 / 31 Verpackungseinheiten

Einteilungsmaterial zur optimalen Führung von Produkten auf Anfrage.

TSC Software



Die Software lässt sich an alle bestehenden Warenwirtschafts- und IT-Systeme anbinden. Des Weiteren besteht die Möglichkeit, Fremdsysteme wie Paternoster oder Liftsysteme anzusteuern und zu verwalten. Durch Einbindung der Software in die bestehende Infrastruktur kann außerdem jederzeit Zugriff durch Arbeitsvorbereitung, Konstruktion und Einkauf erfolgen.



Die einheitliche Software aller TSC Systeme bietet folgende Vorteile:

- Stock ist Lizenzgeber, da Eigenentwicklung
- einfache, intuitive Handhabung
- permanente Verbrauchskontrolle (Reporting sämtlicher Bewegungsdaten)
- Zuordnung der Werkzeugkosten auf die Kostengruppen (z.B. Kostenstellen)
- ABC-Analyse auf z.B. Kostenstellen/Kostenträger, Werkzeuge
- Schnittstellen zu externen WWS/ERP-Systemen
- Online-Anbindung an Zulieferer über Internet
- Rücklagern von Werkzeugen
- Verwalten von überarbeiteten Werkzeugen (Ausgabe von überarbeitetem Werkzeug vor Neuwerkzeug)
- Offenes System, für mehrere Lieferanten/Tool Manager zugängig
- Verwalten von Werkzeugen außerhalb des Automaten
- Nachschleifverwaltung
- Messmittelverwaltung
- Sensibilisierung der Mitarbeiter für die Werkzeugkosten (z.B. durch Preisanzeige)

HSCO
HSS-E

TiN

1.7149

1010

1 ½

9 S 20

ISO

blank

K20-K40
+34
H11
Co-Gehalt
[M-%]
Steigung
P
X 53
CrMnNiN
21 9
BT (min)
SCR 415 (H)
<700°
9,3*10-6
N7

TABELLEN

Schneidstoffe für Stock-Werkzeuge

Die wichtigsten Hartmetall-Anwendungsgruppen

Sorte	Co-Gehalt [M-%]	WC-Einsatzkorn [µm]	Härte [HV]	ISO-Klassifikation [ISO 513]	Charakterisierung
DK460UF	10	0,5	1620	K20-K40 beschichtet: P, M20-M40, H, S, N25	Sehr breitbandig einsetzbare Sorte, die, meist beschichtet eingesetzt, Stähle, weiche Aluminium-Legierungen, Gusseisen, aber auch Superlegierungen wie Inconel 718 schneidet. Diese Sorte stellt das Rückgrat unserer Produktion dar.
DK500UF	12	0,5	1680	K25 beschichtet: P, M, H, S, N25	Speziell für die Hartbearbeitung wurde diese Sorte entwickelt. Sie zeichnet sich durch gegenüber DK460UF erhöhte Härte und größere Verformungstoleranz aus. Aufgrund des hohen Co-Gehaltes wird ein beschichteter Einsatz dringend empfohlen.
DK255F	8	0,7	1720	K20 beschichtet: P, M, H, S, N20	Diese Sorte wird für die Hartbearbeitung, die Bearbeitung von hochfesten Graugusssorten und harten AlSi-Legierungen empfohlen. Trockenbearbeitung ist möglich. Beschichteter Einsatz ist anzustreben.
DK120	6	1,3	1620	K15 beschichtet: N15	Insbesondere für den Einsatz mit Diamantbeschichtung ist diese Sorte geeignet.
DK120UF	7	0,5	1850	K05	Ultrafeinstkornsorte mit höchster Verschleißfestigkeit, geeignet für absolut stabile Maschinen, bevorzugt für Reibahlen
K55SF	9	0,2 -0,5	1920	K10-K30	Für den Einsatz bei hochverschleißfesten Materialien, rostfreien Stählen, Verbundwerkstoffen wie Kevlar und GFK, Hochgeschwindigkeits- und Trockenbearbeitung
DK400N	10	0,7	1580	K35M beschichtet: P, M, S, N35M	Hochzähe Sorte für die Bearbeitung hochtemperaturfester Metalle

Schnellarbeitsstähle

Schnellstahl-Werkzeuge fertigen wir nur aus hochwertigen, sorgfältig ausgewählten Stahlsorten. Je nach Legierungsbestandteil erhalten die Werkzeuge spezifische, auf den Einsatzfall abgestimmte Eigenschaften:
Wolfram, Molybdän: erhöht die Anlassbeständigkeit und Verschleißfestigkeit. Vanadium: erhöht die Verschleißfestigkeit
Kobalt: erhöht die Verschleißfestigkeit, steigert die Warmhärte.

Bezeichnung	Stahl-bezeichnung	Werkstoff-Nr. (Stahlschlüssel)	Anwendungsgebiet, Eigenschaften	vergleichbare ausländische Stähle					
				USA	Frankreich	Italien	Groß-britannien	China	Japan
HSS	HS 6-5-2 (DMo5)	1.3343	Standardschneidstoff für universelle Anwendungen	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	hohe Warmhärte, besonders geeignet bei hohen Schnitttemperaturen oder bei ungünstiger Kühlung	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	hohe Abriebfestigkeit und Schneidkanten-stabilität, wichtig insbesondere beim Reiben	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	erhöhte Warmfestigkeit und Härte, geeignet für Arbeiten in schwer zerspanbarem Werkstoff	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	hohe Härte, Warmfestigkeit und Schneidkanten-stabilität, sehr dichtes, gleichmäßiges Gefüge	–					

Grundlegende Eigenschaften

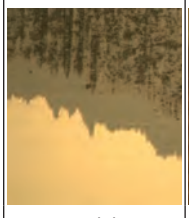
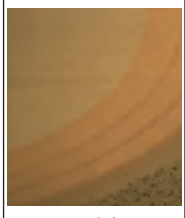
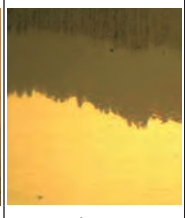
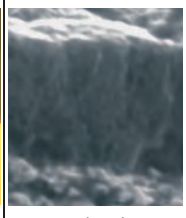
blank
Werkzeuge aus Schnellarbeitsstahl oder Hartmetall bieten auch ohne Oberflächenveredlung oder Beschichtung schon allgemein gute Grundeigenschaften. Außerdem dienen die blanken Werkzeuge im Standardprogramm als Basiswerkzeuge für eine kostengünstige Beschichtung nach Kundenwunsch mit allen Schichten.

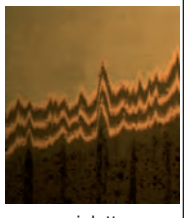
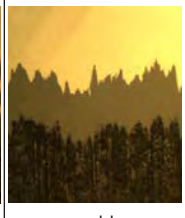
Oberflächen-Veredlungsverfahren
Für spezielle Einsatzfälle empfiehlt sich eine Oberflächenveredlung, die die Verschleißfestigkeit sowie Gleitfähigkeit erhöht und die Aufschweißneigung mindert. Da Hart- bzw. Weichstoffschichten sehr viel bessere Ergebnisse liefern, verliert die Oberflächenveredlung jedoch zunehmend an Bedeutung.

dampfnitriert
Fasen nitriert
Empfehlenswert für die Bearbeitung von Werkstoffen wie Grauguss, Al mit hohem Si-Gehalt, Kunststoffen, Stählen mit hohem Perlitgehalt u.a. Das Nitrieren erfolgt durch unterschiedliche, anwendungsorientierte Verfahren.

dampfbehandelt
Dampfbehandelte Werkzeuge können Kaltverschweißungen, wie sie beispielsweise bei der Bearbeitung von kohlenstoffarmen Stählen auftreten, vermeiden. Sie sind allerdings ausschließlich für die Bearbeitung von Eisenwerkstoffen geeignet.

Schichten

	AlTiN	AlTiN + AlTiN nano	TiSiN	TiCN	DLC	Diamant
						
Farbe	violett	grauviolett	kupfer	grauviolett	schwarz	anthrazit
Härte	3200 HV	3400 HV	4000 HV	3000 HV	> 6000 HV	> 8000 HV
Reibungskoeffizient	0,55	0,6	0,5	0,4	< 0,1	< 0,1
max. Anwendungstemperatur	< 800°	< 900°	< 800°	< 400°	< 700°	< 700°
Kurzbeschreibung	Harte Schicht für abrasive Anwendungen, HPC und MMS	Harte Schicht für Schwer- und Hartzerspanung, HPC sowie MMS	Sehr harte und verschleißfeste Schicht	Zäh-harte Schicht	Extrem harte Schicht	Extrem harte Diamant-Schicht

	TiAlN/ TiAlN nano	AlCrN	TiN	TiAlSiN	AlTiZrN	CrN
						
Farbe	violett	grau-blau	goldgelb	bronzerot	blassgold	graumetallisch
Härte	3300 HV	3200 HV	2300 HV	5500 HV	3400 HV	3500 HV
Reibungskoeffizient	0,6	0,35	0,5	0,55	0,5	0,6
max. Anwendungstemperatur	< 800°	< 1100°	< 600°	< 800°	< 800°	< 1000°
Kurzbeschreibung	Verschleißfeste Mehrlagenschicht, auch für MMS	Verschleißfeste Schicht mit hoher Oxidations-beständigkeit und Warmhärte	Kostengünstige Standardschicht	Hochharte, warmfeste Mehrlagenschicht	Harte und verschleißfeste Schicht	Harte, hoch warmfeste Schicht

Grundlagen Gewindebohren

Anschnittformen - Auswahl und Anwendung

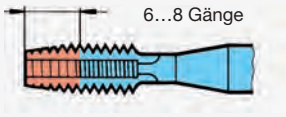
Beim Innengewindeschneiden wird die gesamte Zerspanungsarbeit von den Zähnen des Anschnitts geleistet. Die Entscheidung über die bestgeeignete Anschnittform ist deshalb sehr sorgfältig zu treffen. Davon werden in hohem Maße sowohl die Standzeit des Gewindebohrers als auch die Qualität des Gewindes beeinflusst.

Form und Länge des Anschnitts sind grundsätzlich abhängig von der Art des Kernlochs. Die Durchgangsbohrung bedarf keiner weiteren Definition. Als Grundbohrung dagegen werden alle Bohrungen bezeichnet, aus denen beim Gewindeschneiden die Späne entgegen der Vorschubrichtung abgeführt und beim Rücklauf des Gewindebohrers abgeschert werden müssen. Grundbohrungen können also sehr wohl auch durchgehende Bohrungen sein.

Die Anschnittlänge bestimmen an und für sich gegensätzliche Überlegungen. Um Überlastung, vorzeitige Abstumpfung und zu große Gewinde zu vermeiden, sollte die Anzahl der Anschnittgänge nicht zu klein gehalten werden. Andererseits erhöht ein zu langer Anschnitt das Drehmoment und damit die Bruchgefahr. Der Schälanschnitt, Form B, gewährleistet, dass die Spanabfuhr stets in Vorschubrichtung erfolgt.

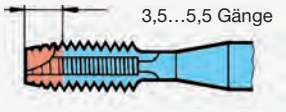
Anschnittformen nach DIN 2197

Form A



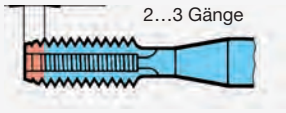
lang, 6 - 8 Gänge
für kurze
Durchgangsbohrungen

Form B



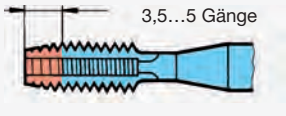
mittel, 3,5 - 5,5 Gänge,
mit Schälanschnitt,
für alle Durchgangsbohrungen und
große Gewindetiefen in mittel-
und langspanenden Werkstoffen

Form C



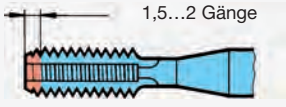
kurz, 2 - 3 Gänge
für Grundbohrungen
und ganz allgemein
für Alu, Grauguss
und Messing

Form D



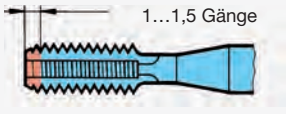
mittel, 3,5 - 5 Gänge
für kurze
Durchgangsbohrungen

Form E



extrem kurz, 1,5-2 Gänge,
für Grundbohrungen
mit sehr kurzem
Gewindeauslauf.

Form F



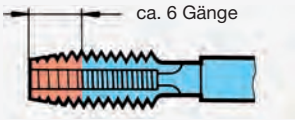
extrem kurz, 1-1,5 Gänge,
für Grundbohrungen
mit sehr kurzem
Gewindeauslauf.
Möglichst vermeiden.

Grundlagen Gewindebohren

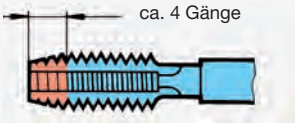
Anschnittformen - Auswahl und Anwendung

Anschnittlängen
bei 3-teiligen Satzgewindebohrern

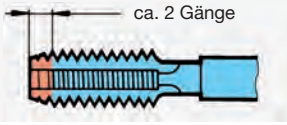
Form A
für Vorschneider



Form D
für Mittelschneider

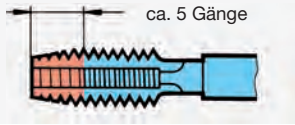


Form C
für Fertigschneider

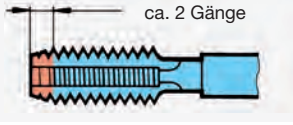


Anschnittlängen
bei 2-teiligen Satzgewindebohrern

Form D
für Vorschneider



Form C
für Fertigschneider



Anwendungsempfehlungen
Während die Art des Kernlochs primär den Anschnitt bestimmt, ist die weitere Gewindebohrergeometrie wie Form, Anzahl und Richtung der Spannuten, Schnittwinkel usw. auch vom zu bearbeitenden Werkstoff und vom Einsatzfall abhängig. So haben Gewindebohrer für die Herstellung Metrischer ISO-Gewinde oder ganz allgemein für die Stahlbearbeitung bis M 16 in der Regel 3, darüber 4 und mehr Spannuten.

Links genutete Gewindebohrer sowie Gewindebohrer mit Schälanschnitt fördern die Späne in Schneidrichtung bzw. Vorschubrichtung und eignen sich deshalb besonders gut für die Bearbeitung von Durchgangsbohrungen. Auch gerade genutete mit längerem Anschnitt (Form D) bringen hier gute Ergebnisse.

Für Grundbohrungen empfehlen wir rechts genutete Gewindebohrer oder gerade genutete Gewindebohrer mit kurzem Anschnitt. Die rechts genuteten Werkzeuge führen die Späne nach hinten in Richtung Schaft ab. Der Anschnitt ist konstruktiv so ausgelegt, dass beim Rücklauf die Späne sich nicht verklemmen, sondern zuverlässig abgeschert werden.

Für die Bearbeitung von Aluminium, Grauguss und Messing brauchen Sie Gewindebohrer mit kurzem Anschnitt, gleichgültig ob für Durchgangsbohrung oder Grundbohrung. Ein langer Anschnitt würde in diesen Materialien wie ein Aufbohrer mit Spanbrechernuten wirken und nur das Kernloch auf den Gewinde-Nenndurchmesser ausbohren anstatt das Gewinde zu schneiden.

Gerade genutete Gewindebohrer ohne Schälanschnitt sind Allround-Werkzeuge mit dem Nachteil, keine optimalen Ergebnisse in den einzelnen Werkstoffen zu bringen. Es lohnt, sich die Mühe zu machen, das für die jeweilige Zerspanungsaufgabe bestgeeignete Werkzeug auszuwählen.

Durchgangsbohrung

Geradegenuteter Gewindebohrer mit Schälanschnitt

Linksgenuteter Gewindebohrer

Geradegenuteter Gewindebohrer mit langem Anschnitt

Grundbohrung

Rechtsgenuteter Gewindebohrer

Geradegenuteter Gewindebohrer mit kurzem Anschnitt

Kernlochdurchmesser für das Gewindeschneiden

Metrische ISO-Regelgewinde DIN 13

Nenn-Ø	Steigung P mm	Kernloch-(Bohr-)Ø DIN 336 mm	Kern-Ø Muttergewinde 6H* min. mm	Kern-Ø Muttergewinde 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 bis M 1,4 Kern-Ø Muttergewinde 5H

Metrische ISO-Feingewinde DIN 13

Nenn-Ø x Steigung P mm	Kernloch-(Bohr-)Ø DIN 336 mm	Kern-Ø Muttergewinde 6H min. mm	Kern-Ø Muttergewinde 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
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

UNC-Gewinde ASME B1.1

Nenn-Ø	Gang pro inch	Kernloch-(Bohr-)Ø DIN 336 mm	Kern-Ø Muttergewinde 2B min. mm	Kern-Ø Muttergewinde 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

MJ-Gewinde DIN ISO 5855

Nenn-Ø x Steigung P mm	Kernloch-(Bohr-)Ø mm	Kern-Ø Muttergewinde 5H* min. mm	Kern-Ø Muttergewinde 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

UNJC-Gewinde ISO 3161

Nenn-Ø Gang pro inch	Kernloch-(Bohr-)Ø mm	Kern-Ø Muttergewinde 3B min. mm	Kern-Ø Muttergewinde 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

UNJF-Gewinde ISO 3161

Nenn-Ø Gang pro inch	Kernloch-(Bohr-)Ø mm	Kern-Ø Muttergewinde 3B min. mm	Kern-Ø Muttergewinde 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

Kernlochdurchmesser für das Gewindeschneiden

UNF-Gewinde ASME B1.1

Nenn-Ø	Gang pro inch	Kern-loch-(Bohr-)Ø DIN 336 mm	Kern-Ø Muttergewinde 2B min. mm	Kern-Ø Muttergewinde 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

BSW-(Whitworth)-Gewinde BS84

Nenn-Ø inch	Gang pro inch	Kern-loch-(Bohr-)Ø mm	Kern-Ø Muttergewinde min. mm	Kern-Ø Muttergewinde 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

(Whitworth-) Rohrgewinde (nach DIN-ISO 228-1)

Nenn-Ø inch	Gang pro inch	Kern-loch-(Bohr-)Ø DIN 336 mm	Kern-Ø Muttergewinde min. mm	Kern-Ø Muttergewinde 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

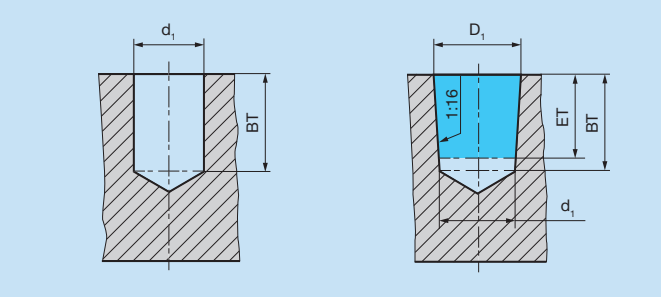
Stahlpanzerrohr-Gewinde nach DIN 40430

Nenn-Ø	Gang pro inch	Kern-loch-(Bohr-)Ø mm	Kern-Ø Muttergewinde min. mm	Kern-Ø Muttergewinde 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

NPT ANSI B 2.1
Amerik. kegeliges Rohrgewinde Kegel 1:16

Ausführung A (möglichst vermeiden)

Ausführung B



Nenn-Ø	Gang pro inch	Kernloch-Ø zylindr. (A) d_1	Kernloch-Ø konisch (B) D_1	Einschneidtiefe ET mm	Bohrtiefe 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

EG-Gewinde Metr./Metr. Fein (EG M 14 x 1,25) für Gewindedrahteinsätze DIN 8140

Nenn-Ø	x Steigung P mm	Kern-loch-(Bohr-)Ø mm	Kern-Ø Muttergewinde min. mm	Kern-Ø Muttergewinde 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

EG UNC (UNC-STI) Gewinde für Gewindedrahteinsätze ASME B18.29.1

Nenn-Ø	Gang pro inch	Kern-loch-(Bohr-)Ø mm	Kern-Ø Muttergewinde min. mm	Kern-Ø Muttergewinde 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

EG UNF (UNF-STI) Gewinde für Gewindedrahteinsätze ASME B18.29.1

Nenn-Ø	Gang pro inch	Kern-loch-(Bohr-)Ø mm	Kern-Ø Muttergewinde min. mm	Kern-Ø Muttergewinde 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

Bohrdurchmesser für das Gewindeformen

Metrische ISO-Gewinde DIN 13

Nenn-Ø mm	Steigung P mm	Bohr-Ø mm	Bohr-Ø min. mm	Bohr-Ø max. mm	Kern-Ø Muttergewinde 7H* min. mm	Kern-Ø Muttergewinde 7H* 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 bis M 2,5 Kern-Ø Muttergewinde 6H

Metrische ISO-Feingewinde DIN 13

Nenn-Ø x Steigung P mm	Bohr-Ø mm	Bohr-Ø min. mm	Bohr-Ø max. mm	Kern-Ø Muttergewinde 7H* min. mm	Kern-Ø Muttergewinde 7H* 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 bis M 4 x 0,35 Kern-Ø Muttergewinde 6H

Nenn-Ø x Steigung P mm	Bohr-Ø mm	Bohr-Ø min. mm	Bohr-Ø max. mm	Kern-Ø Muttergewinde 7H* min. mm	Kern-Ø Muttergewinde 7H* 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

Kerndurchmesser-Toleranzfeld beim Gewindeformen (nach DIN 13, Teil 50)
Aus Festigkeitsgründen ist es nicht erforderlich, die Kerndurchmessertoleranzen der Toleranzklasse 6H einzuhalten; die Toleranzklasse 7H genügt dem Anspruch, dass die Flankenüberdeckung von Bolzen- und Muttergewinde 0,32 x P nicht unterschreiten soll. Außerdem haben geformte Gewinde wegen des nicht unterbrochenen Faserverlaufs und der erfolgten Kaltverfestigung im Regelfall eine höhere Festigkeit als geschnittene Gewinde.

Bohrdurchmesser für das Gewindeformen

UNC-Gewinde ASME B1.1						
Nenn-Ø	Gang	Bohr-Ø	Bohr-Ø		Kern-Ø Muttergewinde 2B	
	pro inch	mm	min. mm	max. mm	min. mm	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

UNF-Gewinde ASME B1.1						
Nenn-Ø	Gang	Bohr-Ø	Bohr-Ø		Kern-Ø Muttergewinde 2B	
	pro inch	mm	min. mm	max. mm	min. mm	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

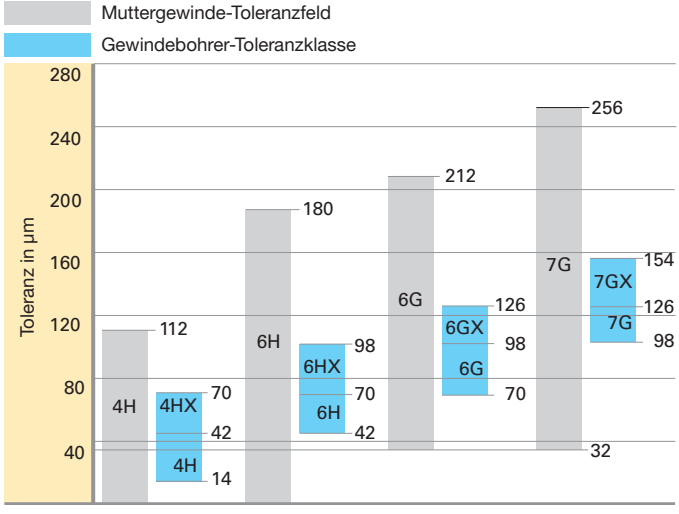
(Whitworth-) Rohrgewinde G DIN EN ISO 228-1						
Nenn-Ø	Gang	Bohr-Ø	Bohr-Ø		Kern-Ø Muttergewinde	
inch	pro inch	mm	min. mm	max. mm	min. mm	max. mm
G 1/16	28	**7,30**	7,28	7,35	6,561	6,843
G 1/8	28	**9,30**	9,28	9,35	8,566	8,848
G 1/4	19	**12,50**	12,48	12,55	11,445	11,890
G 3/8	19	**16,00**	15,98	16,05	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

Die Toleranzfelder (Muttergewinde)/Toleranzklassen (Gewindebohrer)

Toleranzqualität und Toleranzlage bestimmen das Toleranzfeld. Seine Kennzeichnung erfolgt durch Verwendung der jeweiligen Ziffern und Buchstaben.
Das Kurzzeichen für die Toleranzklasse des Gewindebohrers entspricht dem Toleranzfeld des Muttergewindes, für welches der Gewindebohrer überwiegend Anwendung findet.

Es ist also nicht in jedem Anwendungsfall identisch mit dem Toleranzfeld des geschnittenen Muttergewindes. Gewindebohrer mit abweichenden Toleranzwerten nach DIN 802 Teil 1 werden durch den zusätzlichen Buchstaben »X« gekennzeichnet (6 HX, 6 GX). Wir empfehlen, die Gewindebohrer gemäß nachfolgender Grafik einzusetzen:

Toleranzfeld-/Toleranzklassen-Zuordnung



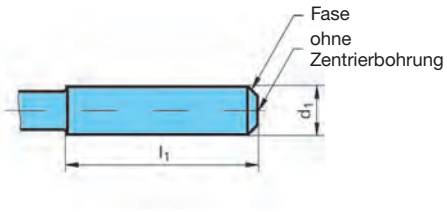
DIN EN 22857							DIN 802 Teil1 (zurückgezogen)
Anwendungsklasse des Gewindebohrers Benennung*	Kennzeichn.	Toleranzfeld des zu schneidenden Muttergewindes					Toleranzklasse des Gewindebohrers
Klasse 1	ISO 1	4H	5H				4H
Klasse 2	ISO 2			6H			6H
Klasse 3	ISO 3				6G		6G
–	–					7G	7G

* Die Toleranzen der drei Anwendungsklassen werden gemäß den nachstehenden Angaben in Abhängigkeit von einer Toleranzeinheit t errechnet, deren Wert dem der Flankendurchmessertoleranz T_{D2} bei Toleranzklasse 5 des Muttergewindes entspricht (extrapoliert bis 0,2 mm Steigung):
$t = T_{D2}$ Toleranzklasse 5 des Muttergewindes

Schaftausführungen

Zylinderschäfte für Spiralbohrer und Schaftfräser aus Hartmetall DIN 6535

Form HA, glatt

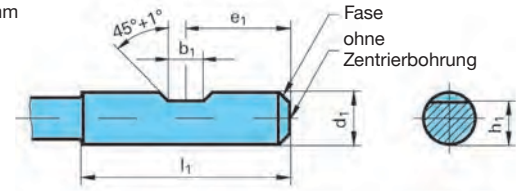


Maße in mm

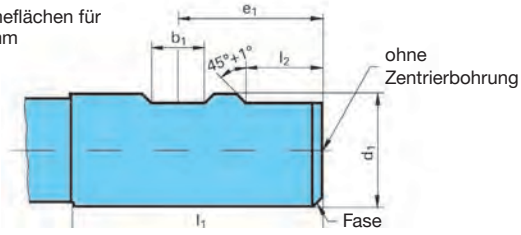
d_1 h6	l_1 +2 0	d_1 h6	l_1 +2 0
2	28	14	45
3	28	16	48
4	28	18	48
5	28	20	50
6	36	25	56
8	36	32	60
10	40		
12	45		

Form HB, mit seitlicher Mitnahmefläche

mit einer Mitnahmefläche für d_1 = 6 und 20 mm



mit zwei Mitnahmeflächen für d_1 = 25 und 32 mm



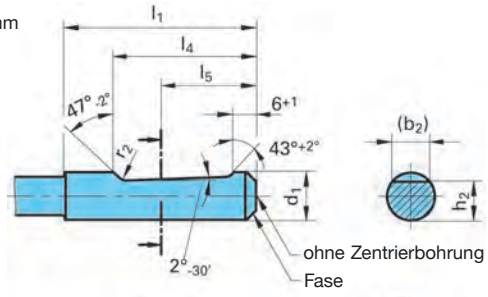
Maße in mm

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

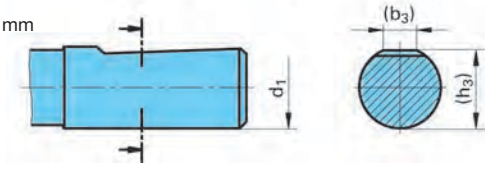
Form HE, mit geneigter Spannfläche ohne Kühlkanäle*

* Ausführung: Zylinderschäfte nach DIN 6535 werden ohne oder mit Kühlkanälen ausgeführt. Anwendung der Ausführung für unterschiedliche Werkzeuge sowie Maßangaben und Bezeichnung für die Lage der Kühlkanäle sind in den entsprechenden Maßnormen enthalten.

für d_1 = 6 bis 20 mm



für d_1 = 25 und 32 mm



Maße in mm

d_1 h6	(b_2) ≈	(b_3)	h_2 h11	(h_3)	l_1 +2 0	l_4 0 -1	l_5 Nenn-maß	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

Die HSK-Schnittstelle

Technik und Vorteile

• Hohe Drehmomentübertragung und definierte radiale Positionierung

Der Hohlschaftkegel ist in der Aufnahme bzw. Spindel so verspannt, dass ein hoher Reibschluss über die gesamte Kegelmantelfläche und Plananlagefläche entsteht (Bild 1). Zwei Nutensteine greifen am Schaftende der Werkzeugaufnahme in das Werkzeug und sorgen so für eine formschlüssige, definierte, radiale Positionierung.

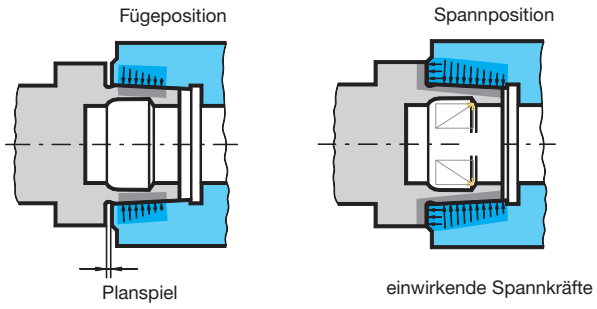
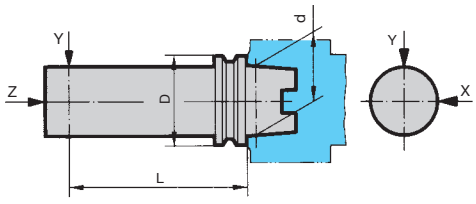


Bild 1
Vorspann- und Reibkräfte des Hohlkegelschaftes in der Schnitt- und Trennstelle.

• Hohe Wechsel- und Wiederholgenauigkeit

Der ringförmige Eingriff der Spannklauen im Inneren des Hohlschaftwerkzeugs gewährleistet die absolut spielfreie Verbindung von Schaft und Spindel bzw. Aufnahme (Bild 1, Bild 2).



HSK-Größe 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

Bild 2
Radiale und axiale Wiederholgenauigkeit der Schnitt- und Trennstelle.

• Hochgeschwindigkeitstauglichkeit

Je höher die Drehzahl, desto besser die Kraftverstärkung, desto intensiver die Verriegelung der keilgetriebeförmigen Anordnung der Spannmechanik. Die gezielte Vorspannung zwischen Hohlschaftkegel und Spindelaufnahme kompensiert die durch Zentrifugalkraft entstehende Spindelaufweitung, sodass keinerlei Radialspiel auftreten kann (Bild 1). Die Plananlage verhindert ein Nachrutschen in Axialrichtung.

• Kurze Wechselzeiten

Rationeller Werkzeugwechsel durch kurze Baulänge (ca. 1/3 des konventionellen Steilkegels) und geringes Gewicht (ca. 50% des Steilkegels).

• Einfache, kostengünstige Schaftkonstruktion

Keine bewegten Teile am Werkzeugschaft bedeuten auch keine Verschleißteile.

• Schmutz-Unempfindlichkeit

Die ringförmige Plananlage ist zur vereinfachten Sauberhaltung der Kupplung nicht unterbrochen. Bei automatischem Werkzeugwechsel in der Schnittstelle ist die Reinigung mittels Luft während des Wechsels zu empfehlen.

• Codierung bzw. Identifizierung

Zur Aufnahme handelsüblicher Identifikationssysteme ist im Greifbund eine Bohrung mit Ø 10 mm und 4,5 mm Tiefe für Datenträger (Codier-Chips) vorgesehen.

• Standardisierung, Normung der Schnittstelle

Entspricht ISO 12164-1/DIN 69893.

• Kühlmittelzufuhr

Die automatisch wechselbaren Werkzeuge HSK-A sind für zentrale Kühlmittelzufuhr mittels Übergaberohr ausgelegt. Bei Werkzeugen für manuellen Werkzeugwechsel erfolgt die Kühlmittelzuführung ebenfalls zentral. Die Spannelemente sind komplett abgedichtet. Somit kann das Spindelinnere nicht mit Kühlmittel in Kontakt kommen.

• Montage des Kühlmittelübergabe-Satzes

Die Kühlmittelübergabe-Sätze müssen separat bestellt werden. Die Montage des Kühlmittelrohres erfolgt durch den Anwender.

Werkzeugaufnahmen SK DIN 69871/ISO 7388-1 und MAS/BT JIS B 6339-2/ISO 7388-2

Technik und Vorteile

Im Bereich der SK- und MAS/BT-Werkzeugaufnahmen haben wir unser Programm deutlich erweitert. Selbstverständlich bieten wir auch diese Aufnahmen ausschließlich in höchster Qualität an. Das heißt: SK- und MAS/BT-Aufnahmen fertigen wir aus speziellem, legiertem Einsatzstahl mit einer Zugfestigkeit im Kern von mindestens 900 N/mm^2, der in einem verzugsarmen Härteverfahren auf HRC 58 bei einer Einsatzhärtetiefe von 0,8 bis 1,0 mm gehärtet wird. Die Oberfläche der Aufnahmen ist für eine lange Lebensdauer brüniert und korrosionsgeschützt.

Qualität durch Präzision
Höchste Präzision ist auch im Bereich der Werkzeugaufnahmen unser Anspruch. Deshalb sind die SK- und MAS/BT-Futter präzisionsgeschliffen: im Bereich des Steilkegels auf Ra ≤ 0,2, aufnahmeseitig auf Ra ≤ 0,4. Die Kegeltoleranz ist besser als AT 3 bei einer Messsicherheit ≤ 1µm.

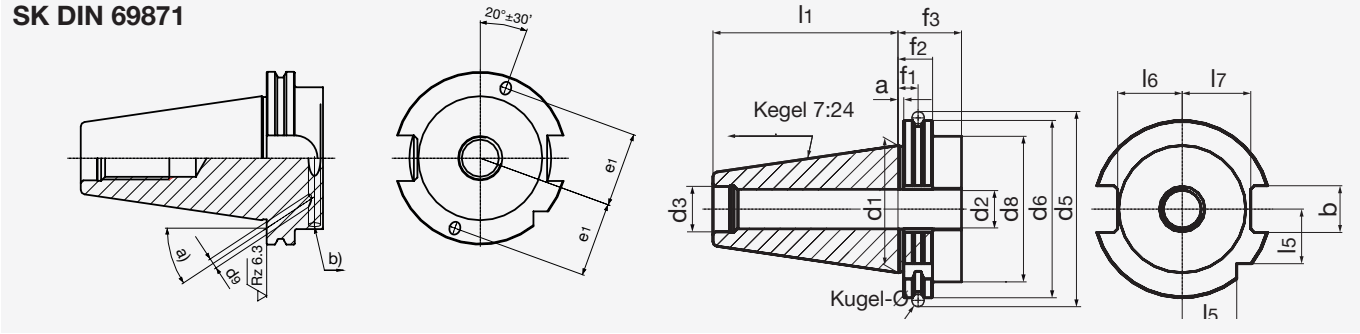
Angaben zu den Form- und Lagetoleranzen finden Sie im Detail bei den einzelnen Werkzeugaufnahmen auf den jeweiligen Katalogseiten. Die Toleranzen der Aufnahmebohrungen und Aufnahmezapfen betragen max. 2/3 der DIN-Toleranz.

Wuchtgüte
Für höhere Drehzahlen geeignete Werkzeugaufnahmen sind generell vorgewuchtet. Zu diesem Zweck haben wir die Unwucht ermittelt und Wuchtflächen sowie Wuchtbohrungen in den Zeichnungen eingetragen. Damit ist die Unwucht weitestgehend ausgeglichen und bis ca. 8000 U/min kann auf Feinwuchten verzichtet werden. Bei höheren Drehzahlen müssen die vorgewuchteten Aufnahmen auf G 6,3 bzw. G 2,5 feingewuchtet werden.

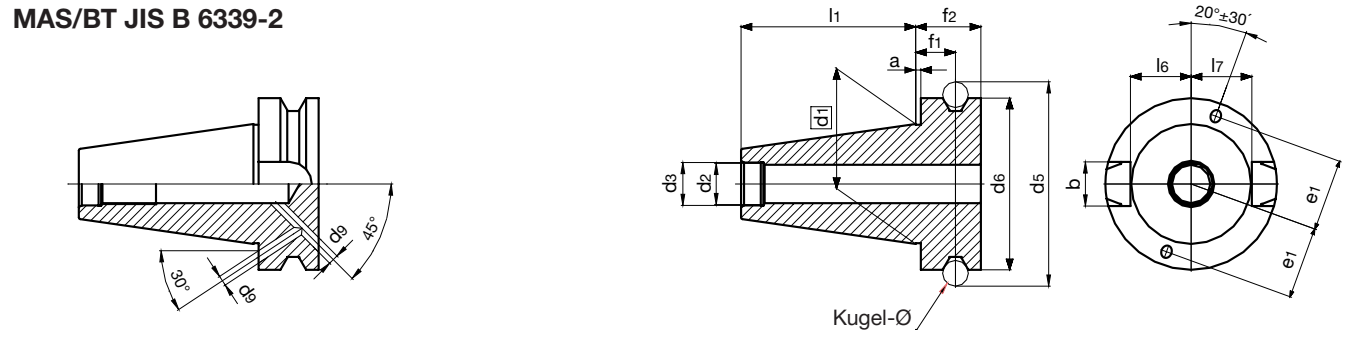
Ausführung AD/B
SK- und MAS/BT-Werkzeugaufnahmen fertigen wir generell in der Ausführung AD/B. Geliefert wird in Ausführung AD, die Kühlbohrungen am Bund sind mit Schrauben verschlossen.

Generelle Abmessungen und Toleranzen
Für unsere SK- und MAS/BT-Werkzeugaufnahmen gelten die folgenden Maße:

SK DIN 69871



MAS/BT JIS B 6339-2



Steil-kegel	a mm	Kugel-Ø 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

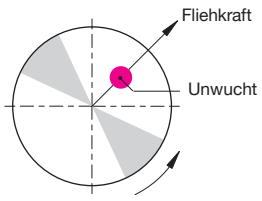
Unwuchteinflüsse auf Maschinenspindeln, Werkzeugaufnahmen und Werkzeuge

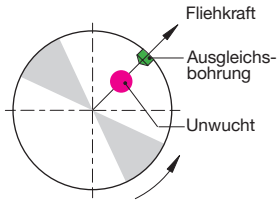
Die Unwucht
Eine Unwucht erzeugt bei der sich drehenden Spindel eine Fliehkraft, die die Laufruhe des Werkzeugs stört. Diese Unwucht hat Einfluss auf den Arbeitsprozess und die Lebensdauer des Spindellagers.
Die Fliehkraft F wächst linear mit der Unwucht U und quadratisch mit der Drehzahl nach untenstehender Formel.

Auswuchten
Um unerwünschte Fliehkräfte auszugleichen, muss die symmetrische Massenverteilung wiederhergestellt werden, mit dem Ziel, dass auf die Spindellagerung keine Fliehkräfte wirken. Bei Werkzeugaufnahmen sind Ausgleichsbohrungen oder -flächen üblich. Dadurch tendiert die Summe aller auf die Achse wirkenden Fliehkräfte gegen Null (s. DIN ISO 1940).

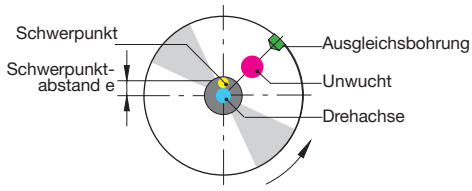
Schwerpunktverlagerung
Durch die Unwucht einer Welle wird deren Schwerpunkt aus der Drehachse um einen Abstand in Richtung der Unwucht verlagert. Dieser Schwerpunktabstand wird auch Restexzentrizität e oder Schwerpunktverlagerung genannt.
Je größer die Wuchtkörpermasse m ist, desto größer kann die zulässige Restunwucht U sein.

$$F = U \cdot \omega$$





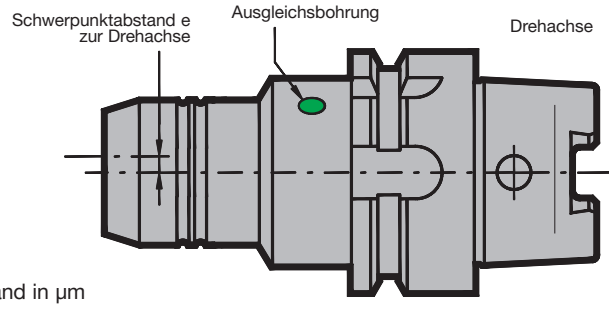
$$e = \frac{U}{m}$$



Unwuchtberechnung
Die Unwucht ist ein Maß, das angibt, wieviel unsymmetrisch verteilte Masse in radialer Richtung von der Drehachse entfernt ist.
Die Unwucht wird in gmm angegeben. Das Abstandmaß e sagt aus, wie weit der Schwerpunkt eines Teils von der Drehachse entfernt ist. Die Unwucht ergibt sich aus:

$$U = m \cdot e$$

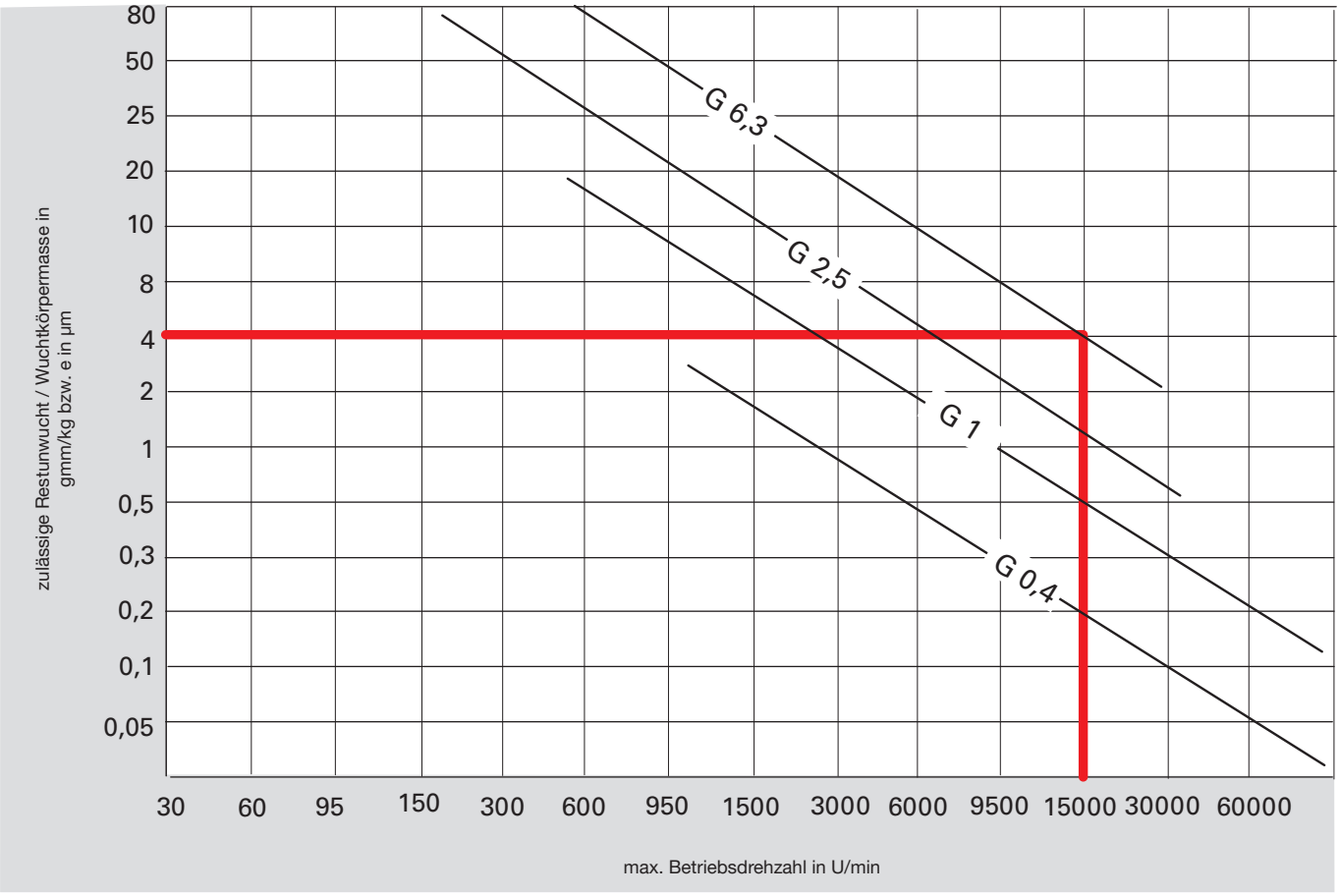
U = Unwucht in gmm
e = Schwerpunktabstand in µm
m = Masse in kg



Wuchtgrenzen
Entsprechend DIN ISO 1940 wird die Auswuchtgüte mit G sowie den Einheiten gmm/kg bzw. µm bezeichnet und ist drehzahlbezogen. Bei einer Drehzahl von 15.000 U/min und einem Gewicht von 1 kg entspricht G6,3 einem zulässigen Mittenversatz zwischen Rotationsachse und Schwerpunktachse der Spindel von 4 µm.

Bei doppelter Drehzahl von 30.000 U/min wären es 2 µm. Wiegt der Werkzeughalter nur noch die Hälfte, also 0,5 kg, halbiert sich auch die zulässige Auswuchttoleranz.
Ziel des Auswuchtens muss es sein, einen Kompromiss zwischen dem technisch Machbaren und dem wirtschaftlich Sinnvollen zu finden. Da die radiale Wechselgenauigkeit bei einer fabrikneuen HSK-Aufnahme bereits 2 - 3 µm und bei einer SK-Aufnahme bereits 5 bis 10 µm betragen kann, bedeutet das bereits eine Qualitätsgrenze von G2,5 bzw. G6,3 bei 10.000 U/min.
Die nachstehende Grafik zeigt die Gütestufen nach DIN ISO 1940-1, also die zulässigen, auf die Wuchtkörpermasse bezogene Restunwuchten für verschiedene Auswuchtgüten G in Abhängigkeit von der höchsten Betriebsdrehzahl.

Unwuchteinflüsse auf Maschinenspindeln, Werkzeugaufnahmen und Werkzeuge



Stock Werkzeugaufnahmen werden auf G2,5/25.000 U/min bzw. auf G6,3/15.000 U/min gewuchtet. Bei Bedarf, insbesondere bei Vorschriften der Maschinenhersteller, können wir optional feinwuchten mit Wuchtprotokoll bis zur Restunwucht von 0,3 gmm.

Schrumpffutter und Schrumpfgeräte

Technik und Vorteile

Schrumpffutter erzielen einen optimalen Formschluss zwischen Werkzeugaufnahme und Schaftwerkzeug. Während einige Produktanbieter handelsüblichen Einsatzstahl verwenden, verarbeiten wir einen speziellen, einsatzorientierten Werkzeugstahl. Das Ergebnis ist eine höhere Dehnrate sowie eine bessere Temperaturverträglichkeit. Ein- und Ausschrumpfen sind beliebig oft möglich.

Ihre Vorteile:
- Kurze Schrumpfzeiten
- Maximale Spannkraft
- Schrumpffutter für Werkzeugschaft-Durchmesser von 3 mm bis 32 mm
- Längere Lebensdauer

Von diesen Vorteilen profitieren vor allem die Bereiche HPC-Fräsen, Schwer- und Schruppzerspanung, Bohren, Reiben und Innenschleifen sowie die Holzbearbeitung.

Überzeugende Eigenschaften:
- Exzellente Rundlaufgenauigkeit
- Extreme Spannkraft und Steifigkeit
- Verlängerte Standzeiten
- Geringste Unwucht durch Rotationssymmetrie
- Wirtschaftlichkeit

Das spannende Prinzip
Bei der Werkzeugspannung im Schrumpffutter sind einzig Erwärmen und Abkühlen des Futters die ausschlaggebenden Faktoren für den sicheren Halt des Werkzeugs in der Aufnahme. Durch Erwärmen dehnt sich das Schrumpffutter aus, sodass ein Werkzeug ein- bzw. ausgespannt werden kann. Beim Abkühlen zieht es sich wieder zusammen und spannt das eingesetzte Werkzeug mit maximaler Spannkraft. Da die Schrumpffutter durch das Erwärmen örtlich sehr heiß werden können und zudem scharfkantige Werkzeuge ein- bzw. ausgespannt werden, sollten beim Schrumpfen unbedingt Kevlar-Handschuhe zum Schutz vor Verbrennungen und Schnittverletzungen getragen werden.

Schrumpfverlängerungen: Die Leistungssteigerer
Schrumpfverlängerungen erhöhen die Leistungsbreite eines Werkzeugs und reduzieren die Werkzeug-Störkanten. Wie beim Schrumpffutter wird das Werkzeug in die Schrumpfverlängerung und dann idealerweise im Hydraulik-Dehnspannfutter eingespannt. Selbstverständlich können Schrumpfverlängerungen aber auch in Schrumpffutter eingespannt werden.

Perfektes Team: Schrumpffutter und Schrumpfgeräte
Für das Aus- und Einspannen von Werkzeugen in unsere Schrumpffutter bieten wir verschiedene Schrumpfgeräte für die spezifischen Anforderungen in Ihrer Fertigung an.

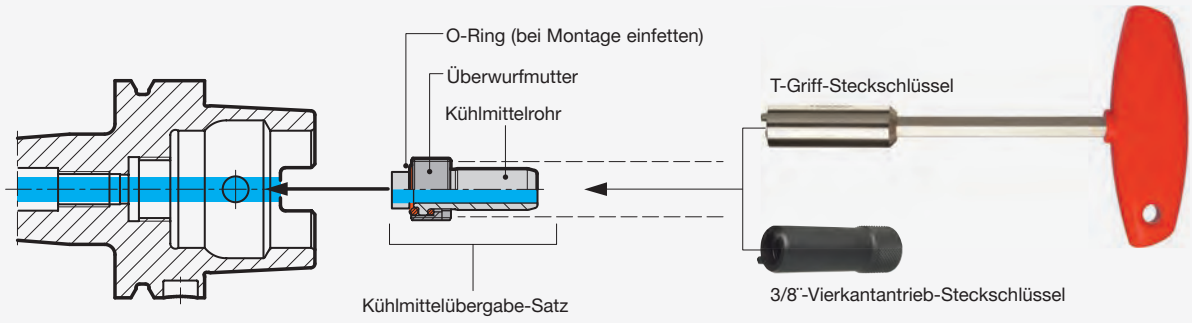
Montage Kühlmittelübergabe-Satz/MMS Kühlmittelübergabe-Einheit

1. Die HSK-Aufnahme muss sauber und frei von Spänen und Beschädigungen sein.
2. Die O-Ringe vor Montage einfetten.
3. Den Kühlmittelübergabe-Satz vollständig (Kühlmittelrohr, Überwurfmutter und 2 O-Ringe) mit Hilfe des Steckschlüssels zentrisch in den HSK einführen.
   Beim Einführen der MMS-Kühlmittelübergabe-Einheit unbedingt darauf achten, dass das MMS-Röhrchen zentrisch und ohne Beschädigung in die MMS-Längeneinstellschraube eingeführt wird (nicht abknicken).
4. Den Kühlmittelübergabe-Satz/die Kühlmittelübergabe-Einheit einschrauben und fest anziehen (Drehmoment s. Tabelle rechts)
5. Das Kühlmittelrohr auf radiale Beweglichkeit prüfen.

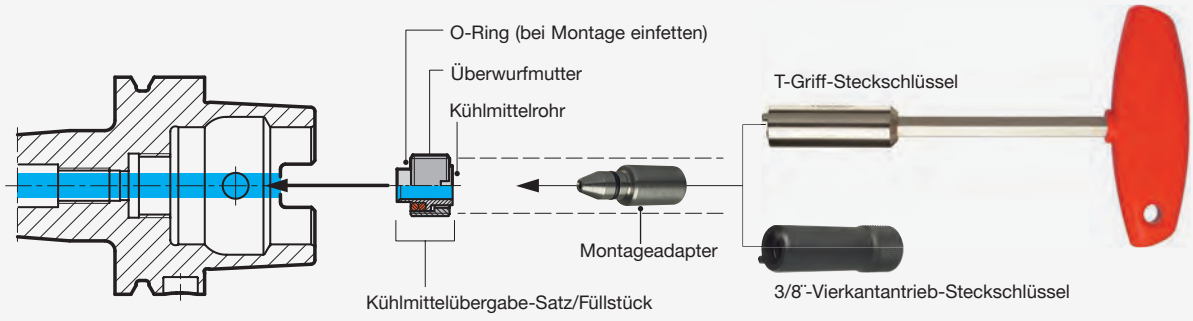
Drehmoment

für HSK	MA Nm
32	7
40	11
50	15
63	20
80	25
100	30

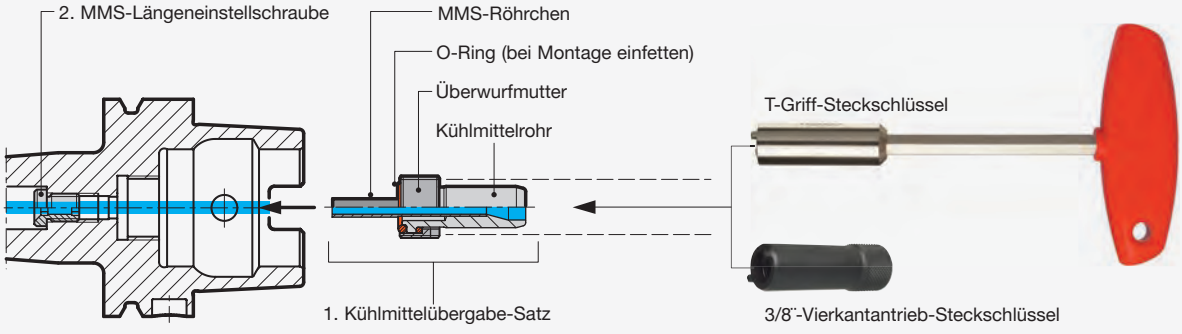
Montage MMS-Kühlmittelübergabe-Satz



Montage MMS-Kühlmittelübergabe-Satz Füllstück



Montage MMS-Kühlmittelübergabe-Satz



Bedienungshinweise für Hydraulik-Dehnspannfutter

Technik und Vorteile

Spannen genormter Werkzeugschäfte nach DIN 6535 im Hydraulik-Dehnspannfutter

Werkzeugschäfte für Direkteinspannung Rundlauf ≤ 0,003 mm

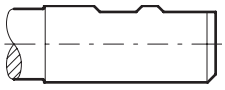
Form HA Ø 6 ... 20 mm

Form HA Ø 25 ... 32 mm

Form HB Ø 6 ... 20 mm

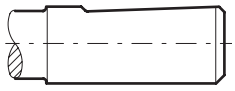
Werkzeugschäfte für Spannung mit Hilfe von Reduzierbuchsen Rundlauf ≤ 0,005 mm

Form HB Ø 25 ... 32 mm



Form HE Ø 6 ... 20 mm

Form HE Ø 25 ... 32 mm

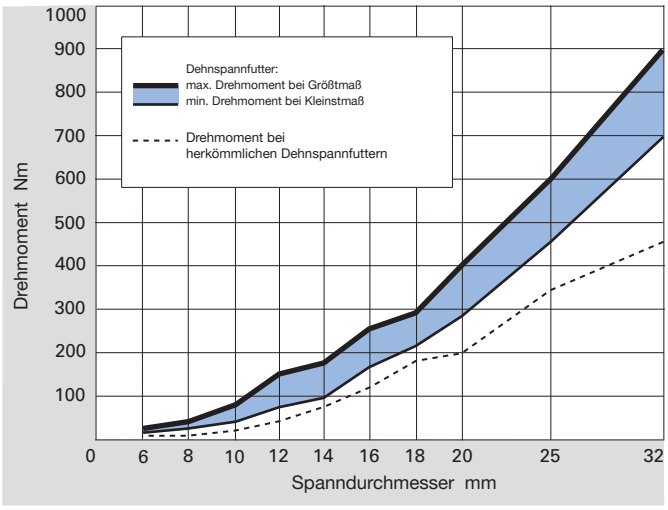


Allgemeine Hinweise:
Unsere Hydraulik-Dehnspannfutter dürfen nicht mit motorisch angetriebenen Werkzeugen betätigt werden (Impulsschrauber oder Ähnliches). Der Sechskantschlüssel sollte (über die ganze Länge) die Schlüsselweite nicht überschreiten, dadurch wird eine zu hohe Drehmomentübertragung weitgehend verhindert. Wir empfehlen die gängigen Sechskant-Spannschlüssel. Ein Anzugsmoment von 10 Nm sollte nicht überschritten werden.

Hydraulik-Dehnspannfutter eignen sich zum Spannen von rotationssymmetrischen Werkzeugen oder Werkstücken. Bei Schaftwerkzeugen können sowohl glatte, zylindrische Schäfte bis Ø 32 mm als auch Schäfte nach DIN 6535 Form HA und HB bis Ø 20 mm direkt gespannt werden. Bei Gebrauch dürfen die Werte der Tabelle nicht überschritten werden. Bei Nichteinhaltung der Mindest-Einspanntiefe oder Verwendung anderer als der genannten Schäfte droht Genauigkeits- und Spannkraftverlust!

Vor allem die hohen Drehzahlen beim High-Speed-Cutting stellen spezielle Anforderungen an die Werkzeugaufnahme. Der Werkzeugspannung im Dehnspannfutter kommt dabei eine besondere Bedeutung zu. Deshalb haben wir ein Dehnspannfutter entwickelt, das mit einem höheren Drehmoment sicher und kraftvoll spannt, also für einen besonders guten Halt des Werkzeugs in der Aufnahme sorgt.

Zusammen mit dem exakten Rundlauf (Rundlauffehler max. 3 µm), dem sehr schnellen und einfachen Werkzeug-Wechsel sowie der vibrationsdämpfenden Wirkung der Dehnspannkammer zeigt sich das neue Dehnspannfutter auch anspruchsvollsten Bearbeitungsaufgaben gewachsen. Resultate sind optimale Werkzeug-Standzeiten und beste Oberflächengüte bzw. Maßhaltigkeit am Werkstück.



Deutlich höher:
Die Spannkraft des neuen Stock Dehnspannfutters HSK-A gegenüber herkömmlichen Dehnspannfuttern.

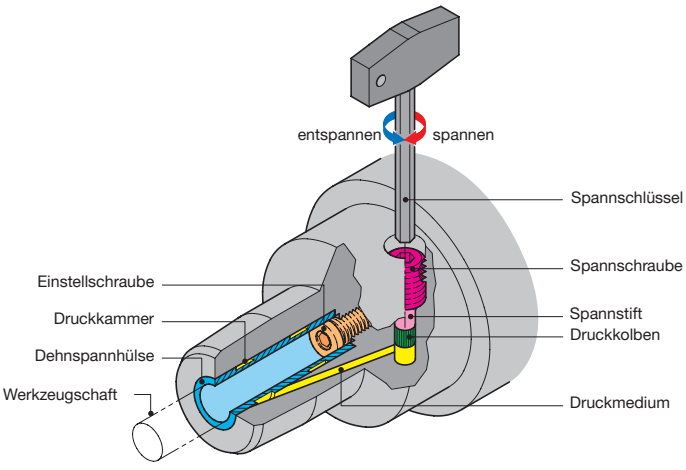
Hydraulik-Dehnspannfutter

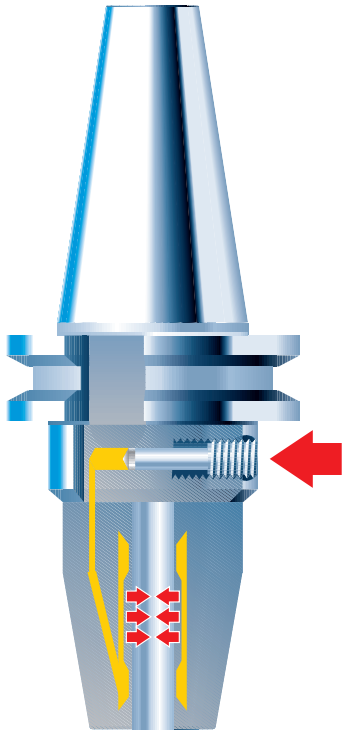
Technik und Vorteile

Moderne Zerspanungsprozesse stellen besondere Anforderungen an die Werkzeugaufnahme. Hydraulik-Dehnspannfutter bieten deshalb guten Halt, verbunden mit einem exakten Rundlauf. Zudem ermöglichen sie einen leichten und schnellen Werkzeugwechsel, wozu ein spezieller Ausziehschlüssel entscheidend beiträgt.
Durch Drehen der Druckschraube entsteht in der Druckkammer ein ausreichend hoher Druck, der zur elastischen Verformung der Dehnspannhülse führt, wodurch das Werkzeug kraftvoll gespannt wird - und das bei exaktem Rundlauf. Dies sorgt für einen sicheren und kraftschlüssigen Sitz. Werden Reduzierbuchsen, die unterschiedliche Werkzeugdurchmesser aufnehmen können, benutzt, dann lässt sich der Werkzeugeinsatz beliebig erweitern. Wird jedoch auf sie verzichtet, muss unbedingt die minimale Einspanntiefe beachtet werden!

Die Vorteile im Überblick:

- Präzise Werkzeugspannung bei maximal 3 µm Rundlauffehler
- Übertragung hoher Drehmomente durch optimiertes Dehnhülsensystem (hohe Spannung)
- Hochgeschwindigkeitstauglich (keine Fliehkräfte durch Spannsegmente)
- Exakter Rundlauf, dadurch hervorragende Oberflächengüte und Maßhaltigkeit am Werkstück
- Rascher Werkzeugwechsel mittels leicht betätigbarer Spannschraube
- Optimale Werkzeugstandzeiten
- Vibrationsdämpfende Wirkung durch Hydro-Polster





Von überzeugender Wirkung: Über eine Schraube wird das Druckmedium komprimiert und sorgt so für einen sicheren Sitz des Werkzeugs.

für Schaft-Ø in mm	**max. Drehzahl in 1/min**	zul. übertragbares Drehmoment in Nm	Mindest-Einspanntiefe in mm	max. Verstell-weg l_3 mm	zul. rad. Kraft F auf Futter bei 50 mm Auskraglänge in N	Betriebs-temperatur in °C	max. Kühl-mitteldruck 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

Internationaler Werkstoffvergleich

Deutschland		Groß-britannien		Japan	USA
Mat.-Nr.	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

Internationaler Werkstoffvergleich

Deutschland		Groß-britannien		Japan	USA
Mat.-Nr.	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

Internationaler Werkstoffvergleich

Deutschland		Groß-britannien		Japan	USA
Mat.-Nr.	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

Internationaler Werkstoffvergleich

Deutschland		Groß-britannien		Japan	USA
Mat.-Nr.	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

Internationaler Werkstoffvergleich

Deutschland		Groß-britannien		Japan	USA
Mat.-Nr.	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	-	-	-	-

Internationaler Werkstoffvergleich

Deutschland		Groß-britannien		Japan	USA
Mat.-Nr.	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

Fräsergrundlagen

Härtevergleich

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

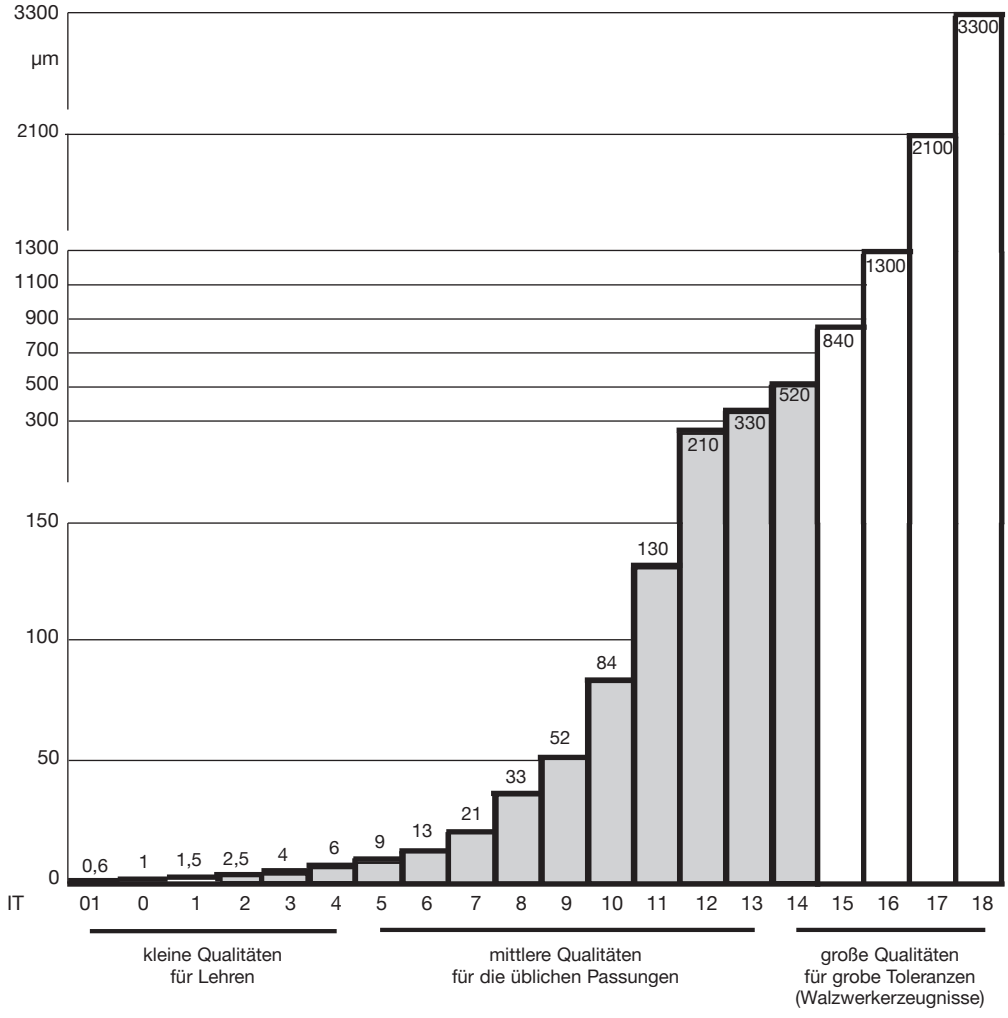
Rm (N/mm²)	HRC	HB30	HV10
1110	35	328	345
1140	36	337	355
1170	37	346	364
1200	38	354	373
1230	39	363	382
1260	40	372	392
1300	41	383	403
1330	42	393	413
1360	43	402	423
1400	44	413	434
1440	45	424	446
1480	46	435	458
1530	47	449	473
1570	48	460	484
1620	49	472	497
1680	50	488	514
1730	51	501	527
1790	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

Herstellungstoleranzen

ISO-Grundtoleranzen für Längenmaße von 1 - 120 mm DIN ISO 286-1

Nennmaß-bereich mm		IT in µm											
		3	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
von bis	1 3	2	3	4	6	10	14	25	40	60	100	140	250
über bis	3 6	2.5	4	5	8	12	18	30	48	75	120	180	300
über bis	6 10	2.5	4	6	9	15	22	36	58	90	150	220	360
über bis	10 18	3	5	8	11	18	27	43	70	110	180	270	430
über bis	18 30	4	6	9	13	21	33	52	84	130	210	330	520
über bis	30 50	4	7	11	16	25	39	62	100	160	250	390	620
über bis	50 80	5	8	13	19	30	46	74	120	190	300	460	740
über bis	80 120	6	10	15	22	35	54	87	140	220	350	540	870

Beispiel ISO-Grundtoleranz für Nennmaßbereich über 18 bis 30 mm



Grenzabmaße für Bohrungen in µm

Nennmaßbereich in mm über	bis	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

Nennmaßbereich in mm über	bis	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					

Grenzabmaße für Bohrungen in µm

Nennmaßbereich in mm über	bis	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

Nennmaßbereich in mm über	bis	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				

Grenzabmaße für Bohrungen in µm

Nennmaßbereich in mm über	bis	N 6	N 7	N 8	N 9	N 10	N 11	P 6	P 7	P 9	R 6	R 7
0	3	-4 -10	-4 -14	-4 -8	-4 -29	-4 -44	-4 -64	-6 -12	-6 -16	-6 -31	-10 -16	-10 -20
3	6	-5 -13	-4 -16	-2 -20	0 -30	0 -48	0 -75	-9 -17	-8 -20	-12 -42	-12 -20	-11 -23
6	10	-7 -16	-4 -19	-3 -25	0 -36	0 -58	0 -90	-12 -21	-9 -24	-15 -51	-16 -25	-13 -28
10	18	-9 -20	-5 -23	-3 -30	0 -43	0 -70	0 -110	-15 -26	-11 -29	-18 -61	-20 -31	-16 -34
18	30	-11 -24	-7 -28	-3 -36	0 -52	0 -84	0 -130	-18 -31	-14 -35	-22 -74	-24 -37	-20 -41
30	50	-12 -28	-8 -33	-3 -42	0 -62	0 -100	0 -160	-21 -37	-17 -42	-26 -88	-29 -45	-25 -50
50	65	-14 -33	-9 -39	-4 -50	0 -74	0 -120	0 -190	-26 -45	-21 -51	-32 -106	-35 -54	-30 -60
65	80	-14 -33	-9 -39	-4 -50	0 -74	0 -120	0 -190	-26 -45	-21 -51	-32 -106	-37 -56	-32 -62
80	100	-16 -38	-10 -45	-4 -58	0 -87	0 -140	0 -220	-30 -52	-24 -59	-37 -124	-44 -66	-38 -73
100	120	-16 -38	-10 -45	-4 -58	0 -87	0 -140	0 -220	-30 -52	-24 -59		-47 -69	-41 -76

Nennmaßbereich in mm über	bis	S 6	S 7	T 6	U 6	U 7	U 10	X 10	X 11	Z 10	Z 11
0	3	-14 -20	-14 -24	-18 -24	-18 -24	-18 -28	-18 -58	-20 -60	-20 -80	-26 -66	-26 -86
3	6	-16 -24	-15 -27	-20 -28	-20 -28	-19 -31	-23 -71	-28 -76	-28 -103	-35 -83	-35 -110
6	10	-20 -29	-17 -32	-25 -34	-25 -34	-22 -37	-28 -86	-34 -92	-34 -124	-42 -100	-42 -132
10	14	-25 -36	-21 -39	-30 -41	-30 -41	-26 -44	-33 -103	-40 -110	-40 -150	-50 -120	-50 -160
14	18	-25 -36	-21 -39	-30 -41	-30 -41	-26 -44	-33 -103	-45 -115	-45 -155	-60 -130	-60 -170
18	24	-31 -44	-27 -48	-37 -50	-37 -50	-33 -54	-41 -125	-54 -138	-54 -184	-73 -157	-73 -203
24	30	-31 -44	-27 -48	-37 -50	-44 -57	-40 -61	-48 -132	-64 -148	-64 -194	-88 -172	-88 -218
30	40	-38 -54	-34 -59	-43 -59	-55 -71	-51 -76	-60 -160	-80 -180	-80 -240	-112 -212	-112 -272
40	50	-38 -54	-34 -59	-49 -65	-65 -81	-61 -86	-70 -170	-97 -197	-97 -257	-136 -236	-136 -296
50	65	-47 -66	-42 -72	-60 -79	-81 -100	-76 -106	-87 -207	-122 -242	-122 -312	-172 -292	-172 -362
65	80	-53 -72	-48 -78	-69 -88	-96 -115	-91 -121	-102 -222	-146 -266	-146 -336	-210 -330	-210 -400
80	100	-64 -86	-58 -93	-84 -106	-117 -139	-111 -146	-124 -264	-178 -318	-178 -398	-258 -398	-258 -478
100	120	-72 -94	-66 -101	-97 -119	-137 -159	-131 -166	-144 -284	-210 -350	-210 -430	-310 -450	-310 -530

BOHREN

Fragebogen für Sonderlösungen

☐ **Anfrage** ☐ **Bestellung** ☐ **Wiederholauftrag, Sobo-Nr.** _____

Stückzahl _____ **altern. Anzahl Bohrungen** _____

Werkstoff

zu bearb. Werkstoff _____ Zugfestigkeit/ Härte _____ N/mm² HRC

Werkstück

Bohrtiefe _____ mm Bohrungstoleranz _____

Schneidstoff

☐ VHM ☐ HSS-E HSCO ☐ HSS

Kühlung

☐ Intern ☐ Extern

IK-Druck _____ bar

ähnlich Katalogwerkzeug ☐

_____

Schaftform

☐ Einheitsschaft HA
Glattschaft

☐ Einheitsschaft HB
Weldon

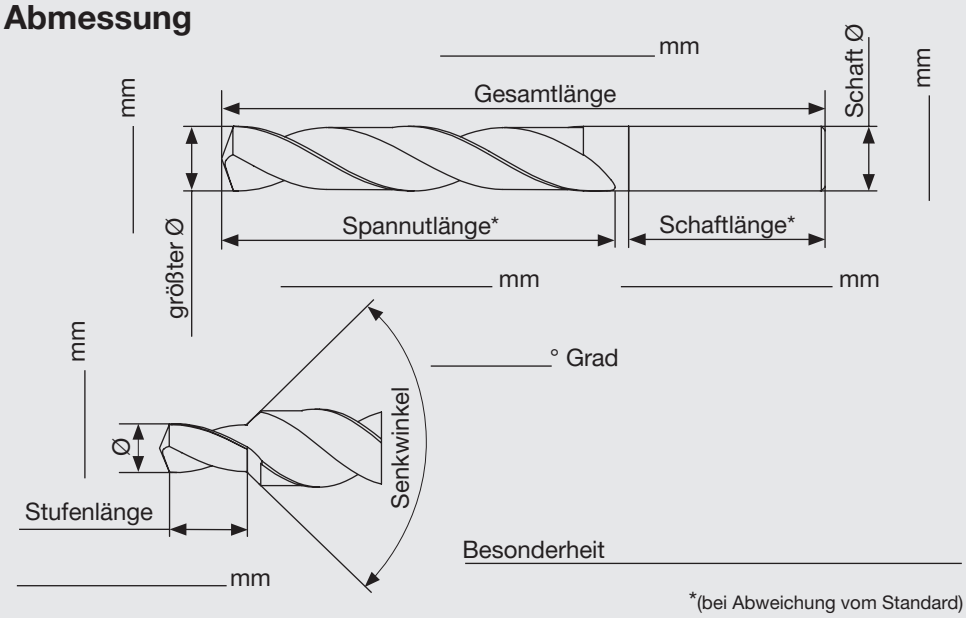
☐ Einheitsschaft HE
Whistle Notch

☐ Zylinderschaft DZ

☐ MK Schaft

_____ Größe

Abmessung



Besonderheit _____

*(bei Abweichung vom Standard)

Beschichtung

☐ blank ☐ TiN ☐ TiAlN ☐ AlTiN nano ☐ TiAlSiN ☐ _____ (sonstige)

Kontakt

Firma _____ Firmenstempel

Ansprechpartner _____

Telefon/Fax _____ Datum _____

E-Mail _____ Unterschrift _____

GEWINDEN

Fragebogen für Sonderlösungen

☐ **Anfrage** ☐ **Bestellung** ☐ **Wiederholauftrag, Sobo-Nr.** _____

Stückzahl _____ **altern. Anzahl Bohrungen** _____

Werkstoff

zu bearb. Werkstoff _____ Zugfestigkeit/ Härte _____ N/mm² HRC

Werkstück

Gewindetiefe _____ mm Gewindebezeichnung _____
z.Bsp. M18x0,5 ISO3/6H

Schneidstoff

☐ VHM ☐ HSS-E-PM ☐ HSS-E

Kühlung

☐ Intern ☐ Extern

ähnlich Katalogwerkzeug ☐

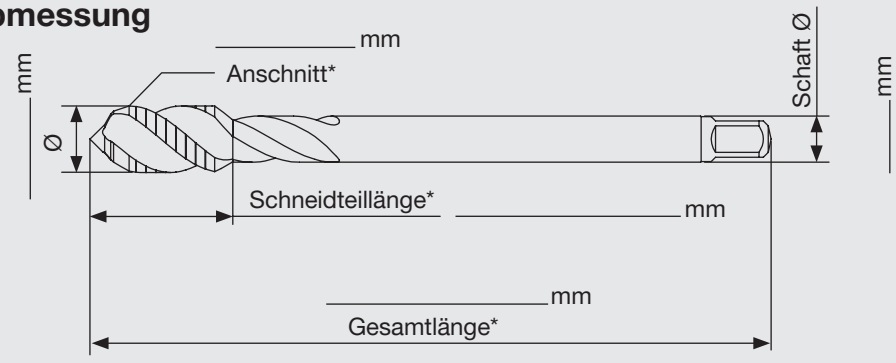
_____

Schaftform

☐ DIN 371 verstärkter Schaft

☐ DIN 374 / DIN 376 Überlaufschaft

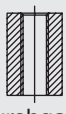
Abmessung



Besonderheit _____

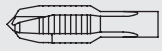
*(bei Abweichung vom Standard)

Gewindeart

☐ 
Durchgang

☐
Grundbohrung

Gewindeverfahren

☐ 
Schneiden

☐
Formen

Beschichtung

☐ blank ☐ Dampf ☐ TiN ☐ TiCN ☐ TiAlN ☐ AlCrN

Kontakt

Firma _____ Firmenstempel

Ansprechpartner _____

Telefon/Fax _____ Datum _____

E-Mail _____ Unterschrift _____

FRÄSEN

Fragebogen für Sonderlösungen

☐ **Anfrage** ☐ **Bestellung** ☐ **Wiederholauftrag, Sobo-Nr.** _____

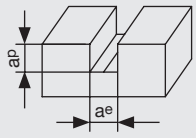
Stückzahl ☐ 5 ☐ 10 ☐ >10 _____ Stk.

Werkstoff

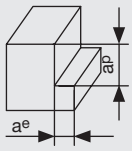
zu bearb. Werkstoff _____

Zugfestigkeit/ Härte _____ N/mm² HRC

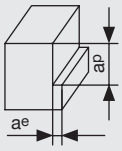
Bearbeitungsaufgabe

☐ 

Nuten

☐ 

Schruppen

☐ 

Schlichten

Schnitttiefe ap: _____ mm

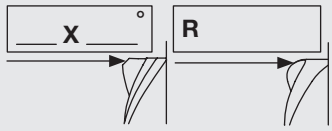
Schnittbreite ae: _____ mm

Schneidstoff

☐ VHM ☐ HSS-E-PM ☐ HSCO ☐ M 42

Ausführung Ecke

☐
Vollradius

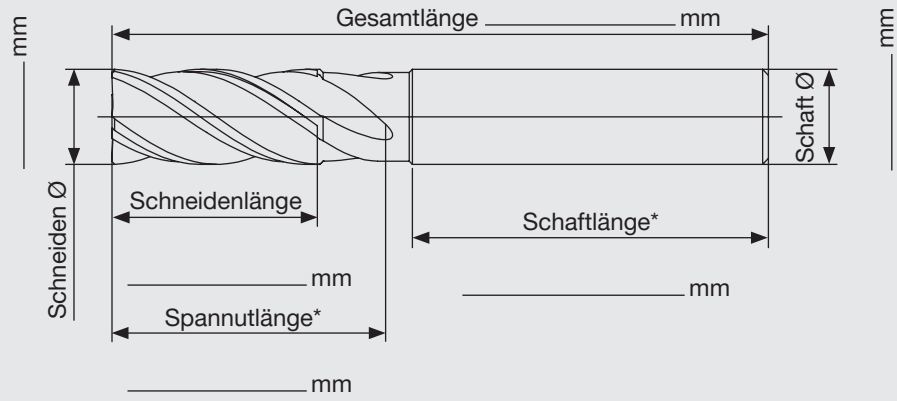


Eckenfase Eckenradius

ähnlich Katalogwerkzeug ☐

_____

Abmessung



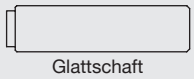
Halsfreistich

☐ ja ☐ nein

Besonderheit _____

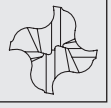
*(bei Abweichung vom Standard)

Schaftform

☐ 
Einheitsschaft HA
Glattschaft

☐
Einheitsschaft HB
Weldon

Anzahl Schneiden

_____ 

Zentrumschnitt

☐

Beschichtung

☐ blank ☐ TiN ☐ TiAlN

☐ AlTiN nano ☐ TiAlSiN ☐ _____ (sonstige)

Profilform

☐ ☐ ☐

Kontakt

Firma _____

Ansprechpartner _____

Telefon/Fax _____

E-Mail _____

Firmenstempel

Datum _____

Unterschrift _____

REIBEN

Fragebogen für Sonderlösungen

☐ **Anfrage** ☐ **Bestellung** ☐ **Wiederholauftrag, Sobo-Nr.** _____

Stückzahl _____
(Mindestabnahme 5 Stück)

ähnlich Katalogwerkzeug _____

Werkstoff

zu bearb. Werkstoff _____

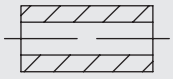
Zugfestigkeit/ Härte _____ N/mm² HRC

Werkstück

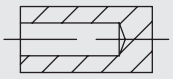
Reibtiefe _____ mm Bohrungs-Ø _____ mm Bohrungstoleranz _____

Bohrung

☐ Durchgangsbohrung



☐ Grundbohrung



Kühlung

☐ Außen

☐ Innen

☐ _____
Kühlmitteldruck in bar

Werkzeugkonzept

☐ VHM

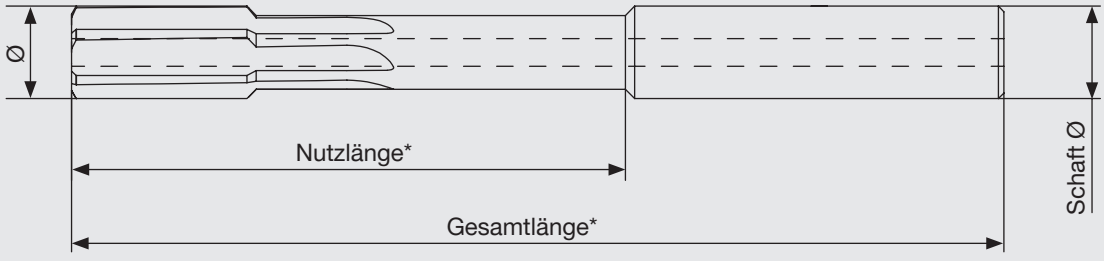
☐ HM bestückt

☐ HSS-E

☐ Cermet bestückt

☐ Super R-HS

Abmessung



Beschichtung

☐ nein ☐ ja _____

Besonderheit _____

*(bei Abweichung vom Standard)

Kontakt

Firma _____

Firmenstempel

Ansprechpartner _____

Telefon/Fax _____

Datum _____

E-Mail _____

Unterschrift _____

seit
1887
R.STOCK&Co
WERKZEUG
STOCK